

Research articles

EUROPEAN ANTIBIOTIC AWARENESS DAY, 2008 – THE FIRST EUROPE-WIDE PUBLIC INFORMATION CAMPAIGN ON PRUDENT ANTIBIOTIC USE: METHODS AND SURVEY OF ACTIVITIES IN PARTICIPATING COUNTRIES

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Antibiotic resistance is a major European and global public health problem and is, for a large part, driven by misuse of antibiotics. Hence, reducing unnecessary antibiotic use, particularly for the treatment of certain respiratory tract infections where they are not needed, is a public health priority. The success of national awareness campaigns to educate the public and primary care prescribers about appropriate antibiotic use in Belgium and France stimulated a European initiative coordinated by the European Centre for Disease Prevention and Control (ECDC), and named "European Antibiotic Awareness Day" (EAAD), to take place each year on 18 November. Specific campaign materials, including key messages, logos, slogans and a media toolkit, were developed and made available for use in European countries. The focus of the first EAAD campaign was about not taking antibiotics for viral infections such as colds and flu. A post-campaign survey was conducted in January 2009. Thirty-two European countries participated in the first EAAD, producing information materials and implementing activities to mark EAAD. Media coverage peaked on 18 and 19 November. At EU level, EAAD was launched at a scientific meeting in the European Parliament, Strasbourg. The event received EU political engagement through support from the EU Commissioner for Health, the Slovenian and French EU Presidencies, and Members of the European Parliament. Critical factors that led to the success of the first EAAD were good cooperation and process for building the campaign, strong political and stakeholder support and development of campaign materials based on scientific evidence. Countries indicated wide support for another EAAD in 2009. For this purpose, ECDC is developing several TV spots as well as a second set of EAAD campaign materials targeting primary care prescribers.

Introduction

Antibiotic resistance is a major European and global public health problem, and international efforts are necessary to counteract the selection and spread of resistance. There are substantial geographical differences in the proportions of resistance to various classes of antibiotics in Europe [1], the reasons being, on the one

hand, differences in selection pressure from antibiotic usage and, on the other hand, differences in infection control practices [2-4].

The largest volume of antibiotics for systemic use are prescribed to outpatients in primary care, with respiratory tract infections (RTIs) being the most common indication. In some European countries, patients suffering from a respiratory tract infection are able to obtain antibiotics over the counter, without a prescription. Hence, reducing unnecessary antibiotic use, particularly for treatment of certain RTIs is a clear public health priority.

In November 2001, the European Union (EU) Health Ministers adopted a Council Recommendation on the prudent use of antimicrobial agents in human medicine [5] which stated that EU Member States should inform the general public of the importance of prudent use of antimicrobial agents by, in particular, raising awareness of the problem of antimicrobial resistance and encouraging realistic public expectations for the prescription of antimicrobial agents. As a result, for example, in Belgium and France, national awareness campaigns to educate the public and primary care prescribers about appropriate outpatient antibiotic use have successfully resulted in a decrease in antibiotic prescriptions [6-9]. Additionally, in both countries, the savings from reductions in antibiotic expenses for the national insurance system as a result of the public campaign largely outweighed the cost of the public campaign itself [6-7,10]. Importantly, these campaigns have included strategies to address behavioural aspects of the problem (e.g. taking antibiotics for viral illnesses), targeting both the public and primary care prescribers [11]. The success of these campaigns stimulated a European initiative coordinated by the European Centre for Disease Prevention and Control (ECDC), and named "European Antibiotic Awareness Day" (EAAD), to take place each year on 18 November.

ECDC endeavoured throughout 2008 to provide countries with a core set of tools (including visuals, key messages, a dedicated website and campaign materials) for use at country level. We present here the various steps in preparation for the first EAAD that took place on 18 November 2008, together with a post-

campaign survey regarding the materials used, and the types of activities carried out at national level, as well as suggestions for future improvement, based on a questionnaire distributed to all the participating countries in January 2009.

Materials and methods

At the beginning of 2008, ECDC set up a Technical Advisory Committee for the EAAD, including representatives from Belgium (chair), France, Greece, Poland, Spain, Sweden and the United Kingdom, as well as the Standing Committee of European Doctors (CPME), the European Society of Clinical Microbiology and Infectious Diseases (ESCMID), European Commission's Directorate-General for Health and Consumers (DG SANCO) and Directorate-General for Research (DG RTD) and World Health Organization Regional Office for Europe (WHO/Europe). The Technical Advisory Committee's terms of reference are to discuss in detail the strategy for EAAD, including campaign objectives, target audience, key messages and evaluation methodology.

Preparation of EAAD was achieved through a collaboration amongst ECDC, the Technical Advisory Committee and the Network of National Antimicrobial Resistance (AMR) Focal Points, which is a network of country AMR experts designated by their national authorities to support ECDC in information exchange, coordination, and strategic and scientific inputs on AMR issues. In some cases, members of the Technical Advisory Committee representing Member States were also members of the National AMR Focal Points. ECDC therefore took care to regularly report the work of the Technical Advisory Committee to the National AMR Focal Points.

A good working partnership among all these institutions and Member State representatives was achieved through regular meetings, as well as exchange of information and ideas, in preparation of EAAD. ECDC hosted two meetings of the National AMR Focal Points (in September 2007 and March 2008), where draft campaign materials were proposed and discussed, and feedback was given. The second National AMR Focal Points meeting was held in cooperation with the Slovenian EU Presidency, and included a joint meeting with the Chief Medical Officers from all EU Member States. In addition, regular electronic updates were circulated to the group for comments. The Technical Advisory Committee also met twice at ECDC (in January 2008 and June 2008).

Gaining political support for the campaign was identified early on as an important success factor. Therefore, a lunch seminar for Members of the European Parliament was held in the European Parliament, Brussels, in October 2007, where the concept of an EAAD was publicly launched. In June 2008, ECDC Director Zsuzsanna Jakab also presented plans for EAAD to EU Health Ministers at the Employment, Social Policy, Health and Consumer Affairs Council (EPSCO) under the EU Presidency of Slovenia.

In the development of the campaign, ECDC and its partners decided to apply a social marketing approach. Social marketing is a process based on the application of marketing principles and techniques to create, communicate and deliver social values designed to influence target audience behaviours so that both society and the target audience benefit, according to the ideological framework used [12]. Taking such an approach when developing key messages, logos and slogans of a campaign can provide a greater chance to achieve sustainable behaviour changes amongst

the target population. Through the gathering of consumer insights, a social marketer is able to formulate / offer messages in a way that promotes new behaviours that are more appealing and rewarding than old ones [13]. For the EAAD, such an approach was achieved through the identification of a desired behavioural change, the

FIGURE 1
Campaign themes with the European Antibiotic Awareness Day logo, hedgehog mascot visual and key messages

A) Logo



A European Health Initiative



B) First visual and key message



A European Health Initiative



C) Second visual and key message



A European Health Initiative



setting up of focus groups to test the key campaign messages and visuals, and deciding on the section of the general public that would be most receptive to these messages as the main target audience. In addition, a post-campaign survey was conducted to gather feedback on EAAD via a questionnaire distributed to participating countries.

ECDC agreed with its partners to initially target the general public with messages about rational antibiotic use, in particular about not taking antibiotics for viral infections such as colds and flu. Other target audiences, mainly primary care prescribers, will be addressed in subsequent years. As the general public is a very broad target group, it was agreed to focus the campaign on parents and carers of children aged one to six years, as this age group has the highest rates of antibiotic consumption [7,9].

The EAAD campaign materials were developed by ECDC in close consultation with the National AMR Focal Points and the Technical Advisory Committee, as well as ECDC's Advisory Forum. The challenge of creating key messages, logos, visuals and slogans meeting the needs of 32 different countries, with many varying cultures and languages, was great. The solution was to develop a generic pill and stethoscope logo and a name that would be so uncontroversial as to be accepted by all countries. For the visuals and slogans designed to illustrate key messages on rational antibiotic use, a catalogue was developed from which countries could select visuals and slogans and adapt them at national level. The visuals included a number of hedgehog and scarf logos animating the slogans "cold, flu, get well without antibiotics" and "cold, flu, take care, not antibiotics" (Figure 1). The hedgehog was chosen as a mascot for the campaign, as it illustrates a character that is recognised as a vulnerable animal that tries to protect itself, but is nonetheless all too often the victim of human carelessness, (rather like the antibiotics).

Focus groups were set up to pre-test the key messages, logos, visuals and slogans with members of the general public representative of the main target audience in seven countries (Belgium, France, Greece, Poland, Spain, Sweden and UK). Each focus group consisted of three to four unrelated parents of children aged one to six years, and one to two unrelated day care professionals or other trained child care professionals. The feedback received from the focus groups was presented at the second National AMR Focal Points meeting in March 2008 and taken into account in the refinement of the campaign materials.

With the exception of the name of the day, which was provided translated into all 25 official EU languages, final campaign materials (key messages, logos, visuals, slogans and template materials for posters and brochures) were provided in English and translated in participating countries. These final campaign materials were disseminated to the countries in June 2008, and in September 2008, ECDC launched a campaign website aimed at the general public, with links provided to national campaign websites. A few weeks before EAAD, a complete media toolkit was made available to the National AMR Focal Points and the ECDC network of communication contact points in Member States for use by countries in the launch of national campaigns for 18 November. The media toolkit included a summary of the most recently available European data on antibiotic resistance from the European Antimicrobial Resistance Surveillance System (EARSS) [1] and on antibiotic consumption from the European

Surveillance of Antimicrobial Consumption (ESAC) [2]. It also contained template press materials, such as a press release, presentation slides, photographs and audiovisual materials, as well as individual country antibiotic resistance and consumption data reports. Data on antibiotic consumption rates from ESAC and on antibiotic resistance rates from EARSS were analysed and compiled by ECDC experts into country reports showing the current situation in comparison to previous years. In addition, an EU report on the data was included in the media toolkit to illustrate the differences in rates of antibiotic consumption and antibiotic resistance across Europe.

A European workshop on public awareness campaigns on the prudent use of antibiotics was organised by the French EU Presidency on 6-7 November 2008 [14]. Finally, two special issues of *Eurosurveillance* [8, 15-24], published in November, were devoted to the issue of antibiotic resistance, including previous successful campaigns in some Member States.

In addition to the 27 EU Member States, two EEA/EFTA countries (Iceland and Norway), and three candidate countries (Croatia, the Former Yugoslav Republic of Macedonia and Turkey) participated in the campaign. The campaign also received support from ten partnering pan-European organisations: CPME, European Federation of Nurses (EFN), Pharmacist Group of EU (PGEU), European Patients' Federation (EPF), European Respiratory Society (ERS), European Older People's Platform (AGE), European Public Health Alliance (EPHA), European Association of Bio Industries (Europabio), European Federation of Pharmaceutical Industries and Associations (EFPIA) and European Generics Association (EGA).

An EU-level launch event, with the participation of the European Health Commissioner Androulla Vassiliou, the French EU Presidency and eight Members of the European Parliament, was held in the European Parliament, Strasbourg, while activities were coordinated at national level in the 32 countries.

With regard to monitoring the impact of EAAD, ECDC contracted a media monitoring company to track media articles published during the period from 14 November to 14 December 2008 that specifically mentioned "European Antibiotic Awareness Day". Furthermore, ECDC conducted a post-campaign survey to gather feedback on EAAD. ECDC distributed electronically in January 2009 a questionnaire (see Appendix) to the National AMR Focal Points in all 32 participating countries, aiming at identifying the countries' use of the campaign materials, the types of activities carried out at national level, and the lessons learned. The questionnaire included questions on national activities, government support, stakeholders, ECDC support and EAAD campaign materials, as well as a call for information on campaign evaluation that was planned or ongoing at national level. The National AMR Focal Points were asked to coordinate with other persons involved in the campaign at national level, and produce one completed questionnaire per country. We asked for all of the questionnaires to be returned to ECDC for evaluation within a two-week deadline that was met by all countries. Finally, a score measuring the uptake of the EAAD campaign in each country was calculated as the sum of national activities, campaign materials and use of EAAD materials; giving one point for each activity/material/use listed in the Table. Association of this score with having previously had a national campaign on prudent use of antibiotics was assessed with the independent-sample t-test for equality of means. Correlation with overall outpatient antibiotic

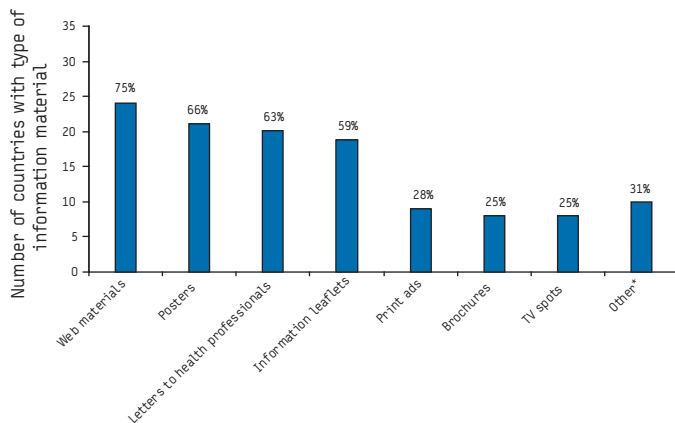
use (ATC J01) in Defined Daily Doses per 1,000 inhabitants and per day in 2006 [2] and with the percentage of penicillin-non susceptible *Streptococcus pneumoniae* from bloodstream and cerebrospinal fluid in 2007 [1] was assessed with the two-tailed Spearman's coefficient.

Results

National activities

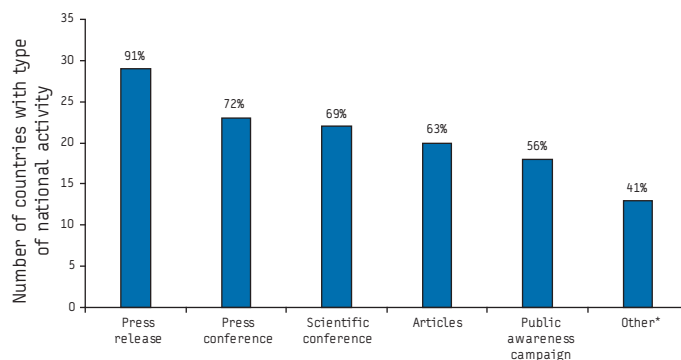
Thirty-two European countries participated in the first EAAD; all of these countries provided responses to ECDC's questionnaire. All countries produced information materials (summarised in Figure 2) and implemented at least two activities to mark the EAAD,

FIGURE 2
Information materials produced in participating countries for European Antibiotic Awareness Day in 2008



*Other: Treatment guidelines for primary care physicians (Greece), video spots in cinemas (Italy, Poland), radio spots (Luxembourg), emails to stakeholders (Spain), participation of antibiotic experts in TV game show (Bulgaria), DVD for professionals who care for children (France), and billboards outdoors (Ireland, Malta), on buses (Italy) and in the metro (Greece). Belgium reported that its awareness campaign included volunteer work to place swim armbands, the symbol of their campaign, on statues in some 30 cities across the country.

FIGURE 3
National activities on European Antibiotic Awareness Day in 2008)



*Other: TV and radio interviews, an exhibition and poster campaign, launch of a national antibiotic resistance campaign, publication of guidelines on appropriate use of antibiotics, launch of dedicated websites, an in-school competition and launch of a pilot information campaign at regional level.

with the exception of Turkey which organised a press conference (Table and Figure 3). Twenty countries reported the publication of scientific/technical articles and 18 countries had implemented public awareness campaigns. Other activities reported by different countries included television (TV) and radio interviews (Croatia, Lithuania, Belgium), an exhibition and posters campaign (Poland), the launch of a national AMR campaign (Germany), the publication of guidelines on the appropriate use of antibiotics and the launch of dedicated websites (Belgium), competitions in schools (England), a prevalence survey on antibiotic prescriptions in paediatric primary care (Slovenia) and the launch of pilot information campaigns at regional level (Greece).

Media coverage varied across the countries, with half reporting one to ten media articles, while 11 countries reported 11 to 50 articles. A survey of media articles published in the period from 14 November to 14 December 2008 tracked 355 news articles that specifically mentioned "European Antibiotic Awareness Day". Coverage peaked on 18 and 19 November, with 113 and 88 media articles, respectively. According to the survey, the regional press generated the highest number of EAAD references (146 articles), accounting for 42% of the overall coverage. The Internet and the national press followed with 103 (29%) and 67 (19%) items, respectively, ahead of the trade press with 23 (6%) items. The highest number of articles tracked originated in Finland (45 articles), the United Kingdom (41 articles) and Poland (37 articles), while the Polish, Belgian and Finnish media recorded the highest potential audience reach (2.4, 1.6 and 1.2 million persons, respectively).

Government support

Most respondents indicated that their governments supported the EAAD campaign politically and financially. Thus, 27 (84%) countries reported having political support from their governments, mainly through the endorsement of the national campaigns, the organisation of press events and scientific meetings. Twenty (63%) countries reported that senior Ministry of Health officials (minister, deputy minister, chief medical officer) attended events organised at national level. In most countries, the Ministry of Health was identified as the main contributor and supporter of the campaign.

In terms of financial support, 22 (69%) countries reported that the government allocated funds to the organisation of the EAAD at national level. Financial contributions were varied in terms of direct funding, ranging from organising a press conference and production of materials, to providing support of more than €500,000 for a national awareness campaign.

From the countries' responses it emerged that all country teams invested significant effort and time in the EAAD campaign, based on the human resources and budget available in their countries. Some of the responses pointed out that the teams involved in EAAD were handling this campaign in addition to their regular work.

Twenty respondents reported that they had already secured political support for the organisation of the EAAD in 2009. However, only a few of the respondents have a clear picture of the funding that will be available to the organisation of the Day in their respective countries in 2009.

Non-governmental stakeholders

A significant number of national campaigns (72%) had support from health professionals' organisations. In 53% of the national

campaigns, EAAD 2008 was supported by professional societies, and in 41% of the campaigns, pharmacies were identified as partners in the campaigns. Croatia and Cyprus reported financial

support by pharmaceutical companies. None of the countries reported support from patient groups.

TABLE

Summary of national activities, type of campaign materials, governmental and stakeholder support and use of materials for European Antibiotic Awareness Day in 32 European countries

Country	National activities						Campaign materials						Govt. support		Stakeholder support						Use of EAAD materials				Received the media toolkit in time								
	Awareness campaign	Scientific conference	Press conference	Press release	Articles	Other	Posters	Brochures	Leaflets	TV spot	Web materials	Print advertisements	Letters	Other	Political support	Financial support	Health professionals	Pharmacies	Patient groups	Non-governmental organisations	Non-pharmaceutical companies	Pharmaceutical companies	Professional societies	Insurance system		Other	Logo	Sitting Hedgehog	Kicking Hedgehog	Scarf	Film		
Austria		•	•	•	•	•		•		•				•	•	•	•		•	•	•	•	•			•	•			•	•		
Belgium	•		•	•	•	•		•	•	•		•	•	•	•	•	•	•				•	•	•		•	•	•			•	•	
Bulgaria		•	•	•						•		•			•		•	•		•	•		•			•	•	•					
Cyprus	•	•	•	•				•		•	•				•	•	•	•				•				•	•	•				•	
Czech Republic		•	•	•	•			•		•	•	•			•								•	•	•		•	•				•	
Denmark	•	•		•	•					•					•		•								•	•	•	•				•	
Estonia	•	•	•	•	•					•			•	•	•		•						•			•	•					•	
Finland			•	•						•					•	•									•	•						•	
France	•			•	•					•			•		•		•						•	•	•		•	•				•	
Germany		•		•	•	•				•			•		•		•							•		•	•					•	
Greece	•		•	•	•	•	•	•	•				•		•		•							•		•	•					•	
Hungary	•	•	•	•				•		•		•			•											•	•	•					
Ireland	•	•	•	•				•		•	•			•	•	•	•	•							•	•	•					•	
Italy	•	•	•	•				•	•	•	•			•	•	•	•						•		•	•		•	•			•	
Latvia		•	•	•	•					•			•				•			•					•	•						•	
Lithuania				•	•	•	•			•		•	•	•	•	•	•			•					•	•		•					
Luxembourg	•		•	•	•	•	•		•	•	•	•	•	•	•	•	•	•						•	•	•						•	
Malta	•	•		•	•		•	•				•	•	•	•	•	•	•					•		•	•						•	
Netherlands	•		•	•	•		•	•		•		•			•	•	•	•		•	•			•		•	•						
Poland	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•		•	•			•		•	•	•					
Portugal		•				•				•	•			•	•		•								•	•	•	•					•
Romania	•	•	•	•	•		•	•	•	•	•						•			•				•		•	•					•	
Slovakia		•	•	•				•		•		•				•	•							•	•	•	•	•					•
Slovenia			•	•	•			•	•			•	•	•	•	•	•							•	•	•	•	•	•				•
Spain		•	•	•	•	•	•			•		•	•	•	•	•	•	•						•	•	•	•	•	•				•
Sweden		•	•	•	•	•	•	•				•	•	•	•	•	•	•						•	•	•	•	•	•				•
United Kingdom	•	•			•	•	•		•	•	•	•	•	•	•	•	•	•						•		•	•	•					•
Iceland	•			•						•					•										•	•							•
Norway	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•							•	•	•	•					•
Croatia	•	•	•	•		•	•		•			•				•	•	•					•	•		•	•	•					•
Former Yugoslav Republic of Macedonia		•	•	•			•	•							•	•	•			•					•		•						•
Turkey			•						•			•			•	•	•						•		•		•						

ECDC support

Thirty-one (97%) countries responded that they found ECDC's contribution helpful. Twenty-nine (91%) countries reported using the campaign logo. Furthermore, 18 (56%) countries used the "kicking hedgehog" visual and 17 (53%) used the "sitting hedgehog". Only four countries reported using the scarf. The visuals were used in a wide array of materials: posters (63%), web pages (53%), information leaflets (47%), letters (44%), advertisements (28%), brochures (19%) and TV spots (16%). Other ideas included a swimming armband (Belgium), drinks' coasters (England), presentation templates (Germany, Former Yugoslav Republic of Macedonia), an exhibition (Poland), billboards (Malta) and bookmarks distributed in schools (Cyprus). Twenty-one (66%) countries reported having received the media toolkit in time, and the use of materials was widespread among the different elements of the toolkit. The materials most used were the European and national data reports on antibiotic consumption and antibiotic resistance (50% and 38%, respectively), the template slides (34%), the press release (31%), the guidelines (22%), the photos and the template media invitation (19%). The audiovisual A-roll and B-roll (both narrated film and loosely edited film) were only used by three countries. Finally, 12 (38%) countries used the EAAD film.

The score measuring uptake of the first EAAD campaign in participating countries was not associated with either having previously had a national campaign on prudent use of antibiotics ($t=0.996$, $p>0.05$), or correlated with either overall outpatient antibiotic use ($r=0.164$, $p>0.05$) or the percentage of penicillin-non susceptible *S. pneumoniae* ($r=0.058$, $p>0.05$).

Suggestions for improvement

Many suggestions were received on ways to improve the EAAD website. Most countries ($n=21$, 66%) believe that more downloadable materials would be useful and multilingual versions of the website were requested by half of the respondents. A significant number ($n=13$, 40%) would also like to see more information on national campaigns available on the website. Many countries reported that evidence on the benefits of EAAD should be provided in order to secure support and funding of the future campaigns. Twenty-three (72%) countries stated that they would welcome a TV spot to illustrate the key messages of the campaign, e.g. "Cold? Flu? Take care, not antibiotics", developed by ECDC.

Discussion

The first EAAD was organised on 18 November 2008 in all 27 EU Member States, and five non-EU Member States. This event received EU political engagement through support from the EU Commissioner for Health, the Slovenian and French EU Presidencies, and Members of the European Parliament. The launch at EU level took place at a scientific meeting in the European Parliament, Strasbourg, gathering Members of the European Parliament, European Commission and Member State officials, representatives of professional organisations, leading European non-governmental organisations (NGOs) and media. Making use of the catalogue of materials developed for the campaign including key messages, visuals, logos, slogans, surveillance data, press and audiovisual materials, as well as a public website, the countries were able to develop a repertoire of approaches.

From the countries' responses to the survey questionnaire it is clear that all country teams invested significant effort and time into the EAAD campaign, based on the human resources

and budget available at national level and the resources provided by ECDC. The fact that all 27 EU Member States, Norway and Iceland, as well as the three EU candidate countries planned and implemented activities for 18 November 2008 was a key indicator that the campaign was broadly well adopted. Clearly, the cost of the campaign varied significantly from country to country, with a large campaign including TV spots costing considerably more than a lower impact campaign with a single press conference and press release. Interestingly, however, some countries were able to activate partnerships to secure support in kind for their public service campaigns, including the development by an advertising agency of TV spots for free in one country.

We believe that a number of critical factors led to the EAAD's wide implementation in its first year:

- Good cooperation and processes for building the campaign:
 - Planning well ahead – in this case, one and a half years – of the events
 - Early establishment of a group of enthusiastic and committed experts representing countries and stakeholder groups in the Technical Advisory Committee;
 - Working closely with a strong network of National AMR Focal Points meeting regularly to share information and best practice;
 - Briefing of national communication contact points prior to the campaign and sharing contact information of the National AMR Focal Points with their communications counterparts.
- Strong political and stakeholder support:
 - Strong political support and commitment at European and national level, secured at an early stage;
 - Initiation of a broad stakeholder contact programme to inform interest groups and invite contributions;
 - Good support from professional organisations
- Development of campaign materials based on a clear and rigorous approach:
 - Drafting key messages based on scientific evidence from published studies to provide a basis for the development of all campaign materials;
 - Building on existing success stories from a few countries;
 - Allowing countries to choose from a catalogue of campaign materials and take ownership of local look and feel of the campaign;
 - Pre-testing of campaign messages and visuals through focus groups.

Some aspects of a social marketing approach, which aims to achieve behavioural change considered to benefit society as a whole through the application of marketing principles and techniques, were difficult to develop at European level, given the great diversity in antibiotic consumption across Europe. In order that the campaign materials could be adapted and made appropriate for use at national level, it was agreed that the objectives of EAAD would be limited to the development of generic campaign materials, based on key messages rigorously backed up by data, that could be adapted for use by experts working at national level and delivered to the target audiences as part of national campaigns. This meant that at European level it was not possible to apply marketing principles and techniques, such as understanding the target market profile, the barriers to the desired behaviour in the target market and developing the marketing mix (product, price, place, promotion) in a way that would be fully consistent with a social marketing approach. Instead, the Technical Advisory Committee developed the

key messages and proposed campaign materials for EAAD, based on successes already achieved by existing national campaigns. For the future, it may be worthwhile to also take into account educational and/or psychological models upon which the campaign may be based.

A number of suggestions were received from the countries to improve the campaign in 2009. Of particular note, countries called for more campaign materials, more multi-lingual content in campaign materials, particularly the website, and earlier dissemination of template materials and toolkits. We also noted that whereas there was wide use of web-based materials, this was low for visual and audiovisual materials, such as high-resolution photographs and audiovisual A-roll and B-roll (only used in three countries) produced for the media toolkit to support selling in stories to TV news. For future campaigns, it will therefore be critical to develop and enrich the campaign website further, as well as develop more detailed guidance for using the visual and audiovisual campaign materials.

The lack of engagement of patient groups was identified as a missed opportunity. Although there are no groups dedicated to the problem of antibiotic resistance, it is a relevant issue for a number of disease-related (e.g. asthma, chronic obstructive pulmonary disease), as well as other health-focused NGOs. Therefore, engaging with patient group representatives at EU and national levels in order to disseminate EAAD messages and campaign materials should be addressed by future campaigns.

While organising public awareness activities in a multicultural and multilingual Europe will always remain a challenge, we believe that EAAD provides an example of how coordinated action may help to rapidly set up a European campaign. ECDC succeeded in creating a European scope and single identity for EAAD and provided support, while simultaneously allowing and enabling countries to adapt the materials to their own needs.

Reports have suggested an effect of public awareness activity on antibiotic use [6-9, 25], as well as an impact on antibiotic resistance [8,16]. However, these reports only used longitudinal surveillance data and lacked external controls. It is too early to determine if EAAD was successful in supporting behavioural change and a meaningful reduction in unnecessary antibiotic use, in particular for colds and flu, in the participating countries, and whether the campaign had an effect on antibiotic resistance. Evaluation of the EAAD campaign will require integration of longitudinal antibiotic consumption and resistance surveillance data, integrated with demographic and clinical data. Countries should be encouraged to plan prospective evaluation studies of the effect of their public awareness campaign. Several countries have already set up such evaluation studies, including the use of baseline data, which should allow assessment of the campaign's impact in these countries. Countries that did not participate in the EAAD or another campaign could be used as external controls.

Experience shows that public awareness campaigns must be repeated to achieve sustainability of behavioural change and coincide with quality assurance projects aimed at healthcare professionals. The post-EAAD survey indicated wide support from the countries for a 2009 campaign. Most countries agreed to focus on primary care prescribers and supported ECDC's intention to develop further materials and a TV spot for the campaign, and

to provide materials and website pages translated into all EU languages.

Responding to requests for campaign materials to be available earlier, ECDC will break down communications toolkits into materials that can be delivered earlier in the year and those which are dependent on data sources not available until shortly before 18 November. Because most countries demand a TV spot developed by ECDC, and because evidence from Belgium and France underscores the importance of TV advertising, ECDC will develop a European TV spot. ECDC will also further develop the campaign website and provide multi-lingual content in all EU languages. In 2009, ECDC will develop a set of campaign materials targeting primary care prescribers, including general practitioners, to complement the 2008 campaign materials targeting the general public. ECDC will continue to promote rational use of antibiotics, in particular through key messages about appropriate use of antibiotics, such as this first EAAD's message not to use antibiotics for colds and flu.

Appendix. European Antibiotic Awareness Day (EAAD) 2008 Evaluation Questionnaire (available in pdf): http://www.eurosurveillance.org/public/public_pdf/EAAD_2008_questionnaire.pdf

European Antibiotic Awareness Day Technical Advisory Committee:

H. Goossens (chairman, Belgium), J. Campos (Spain), O. Cars (Sweden), H. Giamarellou (Greece), W. Hryniewicz (Poland), C. McNulty (United Kingdom), B. Schlemmer (France), T. Verheij (Netherlands), A. de Warren (France), V. Houdry/B. Toussaint/M. Kokki (DG SANCO, European Commission), J. Bunikis/A. Lönnroth (DG RESEARCH, European Commission), K. de Jongheere/H. Kruse/V. Hafner (WHO/EURO), R. Norrby (ESCMID), L. Tiddens-Engwirda (CPME).

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References

1. European Antimicrobial Resistance Surveillance System (EARSS). EARSS Annual Report 2007. Bilthoven, the Netherlands: National Institute for Public Health and the Environment, 2008. Available online: http://www.rivm.nl/earss/Images/EARSS%202007_FINAL_tcm61-55933.pdf
2. European Surveillance of Antimicrobial Consumption (ESAC). ESAC Yearbook 2006. Antwerp: University of Antwerp, 2008. Available online: <http://www.esac.ua.ac.be/download.aspx?c=ESAC2&n=50036&ct=50033&e=50185>
3. Goossens H, Ferech M, Vander Stichele R, Elseviers M, and the ESAC Project Group. Outpatient antibiotic use in Europe and association with resistance: a cross-national database study. *Lancet*. 2005;365(9459):579-87.
4. MacKenzie FM, Bruce J, Struelens MJ, Goossens H, Mollison J, Gould IM; ARPAC Steering Group. Antimicrobial drug use and infection control practices associated with the prevalence of methicillin-resistant *Staphylococcus aureus* in European hospitals. *Clin Microbiol Infect*. 2007;13(3):269-76.
5. Council of the European Union. Council Recommendation of 15 November 2001 on the prudent use of antimicrobial agents in human medicine (2002/77/EC). Official Journal of the European Communities L34. 2002;45:13-6. Available online: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:034:0013:0016:EN:PDF>

6. Coenen S, Costers M, Goossens H. Comment on: Can mass media campaigns change antimicrobial prescribing? A regional evaluation study. *J Antimicrob Chemother.* 2007;60(1):179-80.
7. Goossens H, Guillemot D, Ferech M, Schlemmer B, Costers M, van Breda M et al. National campaigns to improve antibiotic use. *Eur J Clin Pharmacol.* 2006;62(5):373-9.
8. Goossens H, Coenen S, Costers M, De Corte S, De Sutter A, Gordts B et al. Achievements of the Belgian Antibiotic Policy Coordination Committee (BAPCOC). *Euro Surveill.* 2008;13(46):pii=19036. Available online: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19036>
9. Sabuncu E, David J, Bernède-Bauduin C, Pépin S, Leroy M, Boëlle PY et al. Significant reduction of antibiotic use in the community after a nationwide campaign in France, 2002-2007. *PLoS Med.* 2009;6(6):e1000084.
10. Huttner B, Harbarth S. "Antibiotics are not automatic anymore"--the French national campaign to cut antibiotic overuse. *PLoS Med.* 2009;6(6):e1000080.
11. Finch R, Sharland M. 18 November and beyond: observations on the EU Antibiotic Awareness Day. *J Antimicrob Chemother.* 2009;63(4):633-5.
12. Kotler P, Lee N. *Social Marketing: Influencing Behaviors for Good.* 3rd ed. Thousand Oaks (CA), US: Sage; 2008.
13. Edgar T, Boyd SD, Palamé MJ. Sustainability for behaviour change in the fight against antibiotic resistance: a social marketing framework. *J Antimicrob Chemother.* 2009;63(2):230-7.
14. Atelier européen des 6 et 7 novembre 2008 de lutte contre les résistances aux antibiotiques [European workshop of 6 and 7 November 2008 on fight against resistance to antibiotics]. 17 November 2008. [In French and English]. Available from: http://www.sante-sports.gouv.fr/dossiers/sante/antibiotiques/atelier-europeen-6-7-novembre-2008-lutte-contre-resistances-aux-antibiotiques.html?var_recherche=atelier%20antibiotique
15. Monnet DL, Kristinsson KG. Turning the tide of antimicrobial resistance: Europe shows the way. *Euro Surveill.* 2008;13(46):pii=19039. Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19039>
16. Anonymous. Recent trends in antimicrobial resistance among *Streptococcus pneumoniae* and *Staphylococcus aureus* isolates: the French experience. *Euro Surveill.* 2008;13(46):pii=19035. Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19035>
17. Čižman M. Experiences in prevention and control of antibiotic resistance in Slovenia. *Euro Surveill.* 2008;13(46):pii=19038. Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19038>
18. Jindrák V, Marek J, Vaniš V, Urbaskova P, Vlček J, Janíga L, Marešová V. Improvements in antibiotic prescribing by community paediatricians in the Czech Republic. *Euro Surveill.* 2008;13(46):pii=19040. Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19040>
19. Mölsted S, Cars O, Struwe J, Strama - a Swedish working model for containment of antibiotic resistance. *Euro Surveill.* 2008;13(46):pii=19041. Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19041>
20. Prins JM, Degener JE, de Neeling AJ, Gysens IC, the SWAB board. Experiences with the Dutch Working Party on Antibiotic Policy (SWAB). *Euro Surveill.* 2008;13(46):pii=19037. Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19037>
21. Kristinsson KG, Monnet DL. Increasing multidrug resistance and limited treatment options: situation and initiatives in Europe. *Euro Surveill.* 2008;13(47):pii=19043. Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19043>
22. Werner G, Coque TM, Hammerum AM, Hope R, Hryniewicz W, Johnson A et al. Emergence and spread of vancomycin resistance among enterococci in Europe. *Euro Surveill.* 2008;13(47):pii=19046. Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19046>
23. Coque TM, Baquero F, Canton R. Increasing prevalence of ESBL-producing Enterobacteriaceae in Europe. *Euro Surveill.* 2008;13(47):pii=19044. Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19044>
24. Souli M, Galani I, Giamarellou H. Emergence of extensively drug-resistant and pandrug-resistant Gram-negative bacilli in Europe. *Euro Surveill.* 2008;13(47):pii=19045. Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19045>
25. Lambert MF, Masters GA, Brent SL. Can mass media campaigns change antimicrobial prescribing? A regional evaluation study. *J Antimicrob Chemother.* 2007;59(3):537-43..

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