

# **Expansion of the ‘Antibiotic Guardian’ one health behavioural campaign across Europe to tackle antibiotic resistance; pilot phase and analysis of AMR knowledge**

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## **Abstract**

Antimicrobial resistance (AMR) is a major public health threat. The UK Antibiotic Guardian (AG) behavioural change campaign developed to tackle AMR was expanded across Europe through translation into Russian, Dutch and French. Demographics and knowledge of AGs were analysed between 01/11/2016- 31/12/2016. 367 pledges were received with the majority from the public and health care professionals. The pilot has significantly increased the proportion of pledges from Europe (excluding UK) (Chi =108.7,  $p<0.001$ ). AMR knowledge was greater in AGs (including the public) compared to the EU Eurobarometer survey. Further promotion across Europe is required to measure an impact on tackling AMR.

Keywords: Antibiotic resistance, Public health, Campaign evaluation, Antimicrobial stewardship, Antibiotic Guardian, Knowledge

Abstract: 100 words (limit 100)

Manuscript: 1,200 words (limit 1,200)

## Introduction

Antimicrobial resistance (AMR) is recognised as a major public health threat. Improving awareness and understanding of AMR is one of the five strategic objectives of the WHO Global AMR action plan<sup>1</sup>.

In 2014, Public Health England (PHE) developed the behaviour change and engagement campaign, Antibiotic Guardian (AG) to tackle AMR in the UK. This included an online pledge system aimed at healthcare professionals (HCP), healthcare authorities and the public ([www.antibioticguardian.com](http://www.antibioticguardian.com))<sup>2</sup>. Evaluation of the campaign found increased knowledge and behaviour change (self-reported), regarding AMR<sup>3,4,5</sup>.

Due to the impact, the WHO/Europe and the Belgian Antibiotic Policy Coordination Committee (BAPCOC) entered into collaboration with PHE to translate the AG campaign into Russian, Dutch and French and assess the campaign's initial uptake and impact.

## Methods

The English home page of the AG website and pledges were translated into Russian, Dutch and French and launched for World Antibiotic Awareness Week (WAAW) 14-20 November 2016 and European Antibiotic Awareness Day (EAAD); 18 November 2016. Russian was chosen as the largest native language in the WHO European Region and Dutch and French are official languages of Belgium, where BAPCOC wanted to complement its yearly public awareness campaign.

Promotional activities from the WHO included liaising with all 29 European WHO Country Offices (see appendix), including those in Russian-speaking countries, to promote the campaign; a presentation at the European Union EAAD launch event; and an article on the corporate WHO/Europe website during WAAW. Promotional activities from BAPCOC within Belgium included presentations, letters and newsletters via Wit-gele kruis Vlaanderen (home care organisation), ICHO (GP professional training centre), Domus Medica (GP professional organisation) and Farmaka vzw (independent drug information centre).

The demographics of AG were used to describe the pledge group, type and geography by language between 01/11/2016 – 31/12/2016. Total pledges (English and translated) were compared by country prior to translation (WAAW 2015:16-22 November) and after translation (WAAW 2016).

Google analytics data was used to describe the number of visits to the website and an adjusted conversion rate was calculated as the proportion of AG pledges from unique website visits.

From WAAW 2016, AGs were asked five questions regarding AMR knowledge when pledging; 'Antibiotics kill viruses (false)', 'Antibiotics are effective against cold and flu (false)', 'Unnecessary use of antibiotics makes them become ineffective (true)', 'Taking antibiotics often has side-effects such as diarrhoea (true)' and 'You can share antibiotics with others (false)'. The first four questions were taken from the published 2016 Eurobarometer survey on AMR which is commissioned by the European Commission to track public use and knowledge about antibiotics<sup>6</sup>. The average number and proportion of questions answered correctly by AGs were calculated by language and were

compared to the EU group in the published Eurobarometer survey (n=27,969). Significant differences between groups were identified using Chi-squared tests.

## **Results**

Between 24/07/2014 and 31/12/2016, the UK AG website has been visited 221,226 times of which 81% were unique visitors (179,239). These visits converted to 42,457 English pledges and 367 non-English pledges received. The latter were received within the two months from their launch in November 2016 (50 Russian, 307 Dutch and 10 French pledges). The overall adjusted conversion rate was 23.9%. In total, pledges were received from 129 different countries equating to 50% of countries worldwide.

From November 2016 when the translated pages were available to 31/12/2016, there were 492 unique visitors to the Russian webpage, 1124 to the Dutch webpage and 152 to the French page, equating to adjusted conversion rates of 10.2%, 27.3% and 6.7%, respectively. Russian speaking countries made up 75.2% of unique visitors to the Russian page. For the Dutch and French webpages, the majority of unique visitors were from Belgium; 91.6% and 86.2%, respectively.

## **Audience**

From the 367 AG pledges received via the translated pages, the majority were from the public (44.7%, n=164) and HCPs (44.1%, n=162) compared to students/educators (11.2%, n=41).

The pages in Dutch received the highest proportion of pledges from the public (46.2%, n=144) whereas HCPs was the highest pledge group for French (70% n=7) and Russian pages (50%, n=25) (see supplementary information).

## **Source**

University was the most common source of hearing about the campaign for those that pledged via the translated pages (n=114, 31.5%), followed by professional organisations (n=86, 23.8%) and colleagues (n=84, 23.2%).

AGs pledging on the Dutch pages mainly heard about the campaign through a university (37.7%) and professional organisations (26.5%). For French and Russian pages, the majority of AGs heard about the campaign through colleagues (both 40%).

## **Knowledge**

Out of 17,965 questions answered in the knowledge survey, 94.2% were answered correctly (n=16,918). The proportion correct was lowest for the Russian pages 78.5% (n=208) compared to Dutch (93.9%, n=1,179) and English pages (94.4%, n=15,531).

A higher proportion of AGs answered all four Eurobarometer survey questions correctly compared to the published results of the EU group (80.9% vs 24%, Chi= 4900, p<0.001) (Figure 1). AGs got an average of 3.7 questions correct out of 4 compared to 2.5 in the published Eurobarometer survey. AG's who were members of the public (n= 885) were also more likely to answer all four questions correctly compared to the published results of the EU group (70.2% vs 24%, Chi= 964.5, p <0.001).

## **WAAW**

During WAAW 2016 the majority of pledges received were from the UK (n= 4,959, 94.4%). There was a significant increase in the proportion of pledges received from the rest of Europe from 1% in WAAW 2015 (n=64/6,508) to 3.9% in WAAW 2016 (n=203/5,253) (Chi =108.7, p<0.001) when the translated pages were available.

## **Discussion**

The UK AG campaign has been expanded across Europe through translation into three languages and promotion of the website and resources. Further translation into Turkish is planned for 2017.

Initial results after two months show a significant increase in the proportion of pledges from European countries (excluding UK). However, further evaluation will be required.

AMR knowledge varied by language, highlighting areas for further education. Knowledge of AMR was greater in AGs (including the public group) compared to participants in the published Eurobarometer survey. This is encouraging and could be an indicator of the knowledge acquired through the campaign due to the specific educational materials made available, e.g. videos and quizzes. However, it may also reflect a bias in the campaign towards those already engaged in AMR. We did not measure knowledge prior to becoming an AG and acknowledge there may be differences between AGs and Eurobarometer participants. Due to the French pages launching after WAAW and a small number of pledges, these were excluded from the knowledge analysis.

There was varied engagement in uptake, pledge group and source of hearing about the campaign across the three languages. Little is known on the impact of promotional activities within countries to understand these differences.

Greater promotion of the AG campaign is required across Europe to increase the number of pledges and enable clear assessment of impact on tackling AMR. Future promotional plans by BAPCOC include a yearly awareness campaign, the Belgian veterinary sector encouraging members to become an AG and in collaboration with the National Institute of Health and Disability Insurance, asking all health insurance companies to invite members to become an AG. Future AG plans by the WHO include continued promotion through the annual WAAW and support to Member States with translation into more languages.

## **Conflict of Interest**

D.A. is affiliated with the National Institute for Health Research Health Protection Research Unit (NIHR HPRU) in Healthcare Associated Infection and Antimicrobial Resistance at Imperial College London in partnership with Public Health England (PHE). The other authors have none to declare.

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## **Key Points**

- The UK behaviour change and engagement campaign Antibiotic Guardian (AG) developed to tackle AMR has been expanded across Europe through translation and promotion into Russian, Dutch and French.
- The pilot of the campaign in Europe has significantly increased the proportion of AG pledges received from European Countries (excluding UK).
- AMR knowledge was significantly greater in AGs, including the public group, compared to those that participated in the published 2016 Eurobarometer AMR survey.



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## Figure legend

Figure 1 Percentage of correct answers to the AMR knowledge questions by language with comparison to Eurobarometer.