

ANTIBIOTIC RESISTANCE IN EUROPE: THE CHALLENGES AHEAD

ECDC Antimicrobial Resistance and Healthcare-Associated Infections Programme^{1,2}

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On 18 November 2009, the second European Antibiotic Awareness Day will be celebrated throughout Europe. This European public health initiative coordinated by the European Centre for Disease Prevention and Control (ECDC) aims to communicate about the importance of prudent use of antibiotics in order to turn the tide on antibiotic resistance. Last year's campaign focused on antibiotic awareness of the general public. Thirty-two European countries participated producing information materials and implementing activities ranging from press conferences to national media campaigns [1]. The main focus of this year's European Antibiotic Awareness Day campaign is to work with primary care prescribers to promote appropriate use of antibiotics, with particular attention to respiratory tract infections such as common colds and flu. Campaign materials, including factsheets and leaflets, have been prepared together with professional organisations representing primary care prescribers and a multi-lingual website has been developed (<http://antibiotic.ecdc.europa.eu>).

Prudent use of antibiotics is not the only strategy for fighting antibiotic resistance. Good infection control practices, including hand hygiene as well as the screening and isolation of infected patients are necessary to prevent the spread of resistant bacteria. Several European countries have or have had national or regional campaigns on hand hygiene [2], but improving hand hygiene practices remains a challenge in many countries. A European Union (EU) Council Recommendation on patient safety, including the prevention and control of healthcare-associated infections has been adopted by EU Health Ministers on 9 June 2009 and lists a series of actions in this area [3]. ECDC will provide support by developing guidance documents for prevention of control of these infections.

Developing and marketing of new antibiotics with novel mechanisms of action represents a further essential strategy against antibiotic resistance as resistance inevitably builds over time. A recent report from ECDC and the European Medicines Agency (EMA) identified a gap between increasing prevalence of multidrug-resistant bacteria in the EU and the current state of the development pipeline for new antibiotics [4]. This topic is one of the priorities of the current Swedish Presidency of the EU and was discussed at the conference "Innovative Incentives for Effective Antibacterials" [5].

Primary care accounts for 80 to 90% of all antibiotic prescriptions in humans, which is why public awareness campaigns on the prudent use of antibiotics generally focus on primary care. In the

United States (US), the Centers for Disease Control and Prevention (CDC) are coordinating the campaign "Get Smart: Know When Antibiotics Work" [6], which is also focusing on the general public and healthcare providers. At a recent summit on 3 November 2009, the US and the EU agreed to establish a transatlantic task force on urgent antimicrobial resistance issues [7]. ECDC and the CDC are already cooperating closely on their public awareness campaigns on the prudent use of antibiotics. While the CDC are already preparing a campaign to address hospital prescribers, European Antibiotic Awareness Day will in 2010 also focus on prudent use of antibiotics in hospitals. ECDC is also working closely with the World Health Organization Regional office Europe to promote participation in the campaign of European countries that are not members of the EU.

This issue of *Eurosurveillance* highlights two topics that relate to antibiotic resistance and infection control in hospitals. The first one is *Clostridium difficile*. Hensgens *et al.* [8] report on a shift in the PCR ribotypes identified in the Netherlands with PCR ribotype O27 almost disappearing whereas Arvand *et al.* [9] report that this PCR ribotype is still prevalent within Hesse, one federal state of Germany. As of now, the only available pan-European data for this micro-organism are from the European *C. difficile* infection survey (ECDIS) that was performed in November 2008 [10]. This survey highlighted the need for increased capacity building for the detection, typing and surveillance of *C. difficile* infections in Europe and ECDC will provide support to these activities.

The second topic is the emergence of totally or almost totally resistant bacteria in Europe. Last year, Souli *et al.* published a review on this topic in *Eurosurveillance* [11]. In this issue, a survey among European intensive care physicians shows that about one half had seen at least one patient infected by such bacteria and about one fifth had seen three patients or more in the preceding six months [12]. Studies are now needed to assess the extent of the spread of totally or almost totally resistant bacteria in Europe and to determine the risk factors for colonization and infection. In the meantime, ECDC will prepare interim guidance documents for prevention and control of these bacteria.

Antibiotic resistance is also an issue in zoonotic infections, foods, food animals, pets and agriculture and a joint opinion on antimicrobial resistance in zoonoses from several EU agencies has recently been finalised [13].

Antibiotic resistance is a moving target. While Europe is obviously making progress towards increased awareness about prudent use of antibiotics and the prevention and control of antibiotic-resistant bacteria and healthcare-associated infections, all the issues highlighted in this editorial deserve our full attention. These are the challenges ahead.

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