

# e-Bug implementation in the Czech Republic

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The Czech Republic joined the e-Bug Project in 2006, and participated in the evaluation of the e-Bug pilot version together with the United Kingdom and France in 2007. The final version of the educational material was prepared in the UK centre in 2008. These were distributed to all elementary schools in the Czech Republic at the beginning of 2010. This was accompanied by a publicity campaign. The characteristics of the Czech population and its hygiene habits, the Czech system of education, and the development of antibiotic policies are also briefly described.

Keywords: curriculum, evaluation, hygiene, antibiotic, prevention

## Introduction

The Czech Republic is a Central European country with 10.5 million inhabitants. The population is of homogeneous ethnicity (94.2% Czech people), and hygiene and cultural habits are similar across the country. The education system is largely unified. Basic hygiene habits are taught during early childhood within families as well as in nurseries and schools. Examples include washing hands after using the toilet, protecting the mouth with a hand while sneezing and basic safe food-handling practices, such as washing fruit and vegetables before eating.

There is, however, a gap in the education of hygiene habits, which the e-Bug Project can successfully fill. Knowledge of the possible transmission of respiratory infections by the hands is poor. The use of a traditional cloth handkerchief, kept in the pocket for several days, is still common; although recently, single-use disposable paper tissues are becoming more popular. At school, children are not often taught about safe food handling, food cross-contamination or the threat of antibiotic resistance. Knowledge about sexually transmitted infections is limited.

Access to antibiotics has traditionally been restricted in the Czech Republic and they are only available on medical prescription, including preparations for local use. Some antibiotics (vancomycin, third- and fourth-generation cephalosporins, carbapenems, rifampicin, linezolid etc.) have been designated as restricted agents and they can be prescribed only following endorsement from local antibiotic centre experts. These experts control the prescription of antibiotics in hospitals and also consult on antibiotic treatment in patients with a complicated course of bacterial infection. These activities are pursued with respect to actual trends in bacterial resistance in the expert's local region. Regional antibiotic centres as an important component of the public health system were established in the Czech Republic in the 1970s. They formed a network that monitored resistance in bacterial populations from both hospitals

and communities across the whole country. The heads of the centres participated in Committees for Efficient Therapy that existed in every large hospital. After the revolution in 1989, antibiotic policies and antibiotic centres were abolished in a period of 'euphoria'. This decision originated from an erroneous view that clinicians should not be restricted in prescribing any kind of medicine. Recently, antibiotic centres have gradually been re-established. Unfortunately, antibiotic resistance in both community and nosocomial pathogens has increased in the meantime.

Several campaigns for lowering and targeting antibiotic prescriptions have been aimed at general practitioners and doctors in hospitals. These were organized by clinical microbiologists and infectious diseases specialists. The antibiotic susceptibility of community pathogens (pneumococci, streptococci) has been partially restored, but resistance in nosocomial pathogens (especially Gram-negative bacilli) is still on the rise.

Vaccination against tetanus, diphtheria, whooping cough, poliomyelitis, hepatitis B, *Haemophilus influenzae* b infections, measles, rubella, mumps and tuberculosis are compulsory in the Czech Republic, and the occurrence of these diseases in the Czech population is very low. However, antivaccination campaigns stressing the side effects of vaccination have been organized by several irresponsible lobby groups. This opinion is not widely accepted, but is potentially dangerous. Thus, the e-Bug Project could also be very helpful by improving the understanding of the principles of herd immunity.

## Curriculum structure

The educational system in the Czech Republic recognizes three main grades of school: elementary school; secondary school; and university. Elementary schools teach pupils aged 6 – 15 years (providing 9 years of education in total). This education in elementary school is compulsory for all children, except for those who are seriously handicapped or very intelligent. The latter can begin to attend grammar school after complet

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the fifth year of elementary school. There were 4133 elementary schools in the Czech Republic.<sup>1</sup> Teachers in all elementary schools must follow the General Education Programme for Elementary Schools, but they can adapt this programme when making their own lesson plans. The programme must be fulfilled every school year, but the subject matter, textbooks, contents and sequence of lessons etc. are recommended and not compulsory.

The e-Bug programme fits into three topics of the Elementary Curriculum: 'Man and his World' (for 6 – 11 year olds), 'Man and Nature' and 'Man and Health' (for 11 – 15 year olds). These three topics can be taught in several subjects, such as Natural Science, Chemistry, Biology, Physical Training or Hygienic Training.

approached during the second and third year of the project

## Czech participation in the e-Bug Project

The Czech Republic joined the e-Bug Project as an Associate Partner in 2006. The institutional partner for the project in the Czech Republic was the Third Faculty of Medicine, Charles University, Prague. The faculty has played a part in higher education, hygiene and disease prevention for several decades.

The Czech Republic took part in the evaluation of the e-Bug pilot version together with England and France. For the evaluation, two cities were chosen that were geographically distant, and demonstrated differences in their history and socioeconomic background: Prague (1.24 million inhabitants) is in the centre of the country and has been the capital since mediaeval times; and Ostrava (0.34 million inhabitants) is an industrial city at the north-east border of the Czech Republic. Seven elementary schools in each city agreed to participate in the evaluation. The e-Bug manuals were translated from English to Czech and packs for these schools were printed in 2007. Teaching in line with e-Bug, including the three-step evaluation, was implemented in the spring of 2008. Detailed information on this stage of the project is provided in another article in this Supplement.<sup>2</sup>

The majority of Czech teachers who took part in the pilot evaluation praised both the aims of e-Bug and the packs' arrangement. However, some were not able to use two suggested experiments (making yogurt from milk and printing hands on Petri dishes) for health and safety reasons, as these required growing bacterial cultures in classroom. They were afraid of working with living microbes and the possibility of complaints from parents or health officers. Similar concerns were raised in France. These experiments were therefore replaced by safer versions. The e-Bug packs had to be changed in respect of these and other similar comments from participating countries. Modified packs were finalized in autumn 2008 and retranslated into Czech in 2009.

## Stakeholders, endorsements and realization of the project

According to the project requirements, 10 junior school packs and 10 senior school packs were to be printed per 100000 inhabitants in every country, and the printing and dissemination was to be provided by a national sponsor. However, finding a suitable sponsor for printing 1000 pairs of packs was a major issue. Many industrial and pharmaceutical companies were

(2007 – 09), but with little success. However, part of the required amount was secured from Merck, Sharp and Dohme in the spring 2009, which enabled 60 pairs of packs to be printed. This support allowed us to pursue further initiatives. Firstly, endorsements for e-Bug were obtained from the Czech Ministry of Education and Ministry of Health. Officers of both ministries approved the idea of e-Bug and the design of both packs. The Minister of Health and Deputy Minister of Education sent a letter of congratulations for e-Bug's achievements in the Czech Republic.

In autumn 2009, the remaining amount of sponsorship was secured from two sources: the Czech Ministry of Education; and Johnson and Johnson Company. At the same time, a printing company in Olomouc, a town far from Prague, offered to disseminate the e-Bug packs to schools free of charge, which further reduced the cost. We were then able to print and disseminate the e-Bug manuals to all elementary schools in the Czech Republic in January/February 2010. This was a major achievement, exceeding the project requirements and our expectations.

The Czech version of the web site was translated and went live at the end of 2009. The lesson on handprinting on Petri dishes that was not recommended for standard lectures was placed on the web site. Enterprising teachers could therefore make use of this experiment.

## Publicity for e-Bug

The e-Bug Project had to be promoted in every participating country. In order to raise awareness of the

project, we ran an exhibition stand and published a poster at a conference called 'Kalokagathia' aimed at elementary school teachers in 2007, to inform the attendees about the project. There was also an oral presentation on e-Bug at a conference for healthcare providers and officers in 2008. In 2009, a report was published in a Czech scientific journal.<sup>3</sup> Also, an interview on e-Bug conducted at the beginning of the 2008– 09 school year was published in the most popular Czech teachers' journal.<sup>4</sup>

Every elementary school in the country obtained one e-Bug pack for teaching junior students and one pack for teaching senior students in the beginning of 2010. A letter explaining the e-Bug Project and encouraging the use of the e-Bug packs and web site was enclosed with every pack. The explanatory letter and every pack included our contact address. A pair of packs with an explanatory letter was also sent to Regional School Offices.

## Future of e-Bug in the Czech Republic

In March 2010, we attended the conference 'Kalokagathia' with an exhibition stand and demonstrated the most interesting classroom activities included in the e-Bug educational lessons. There is also a new collaboration with the National Institute of Public Health and the Board of the National Antibiotic Programme.

The Czech team is keen to continue supporting e-Bug and the e-Bug overall aims of improving hand and respiratory hygiene habits, and raising awareness of antibiotic resistance.

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