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## *Towards judicious use of antibiotics by doctors and patients*

**Objectives** It is generally acknowledged that the rising resistance to antibiotics is due mainly to the overuse of antibiotics by doctors and patients. Research in the United States and in European countries indicates that one of the major factors promoting the overuse of antibiotics is a lack of information on the part of both providers and patients. The project aims to determine the prerequisites for appropriate use of antibiotics. The investigation will focus in particular on the complex interaction among physician, patient and sources of information, since a major way to tackle resistance is by improving communication.

**Conclusions** Awareness and knowledge of antibiotic resistance and antibiotics show regional variations, being in general higher among German-speaking, followed by French-speaking and at lowest level by Italian-speaking Swiss residents. Analysis of Swiss newspaper coverage on antibiotic resistance in the past 3 years revealed that only Swiss German language newspapers widely referred to antibiotic resistance; however, the information contents were incorrect. Therefore, print media were not relevant in increasing peoples' awareness (and correct knowledge) of the problem of antibiotic resistance.

Furthermore, analysis of package inserts of antibiotics (PPI) usually prescribed in Switzerland for upper respiratory infections revealed that the information content of most PPI is unsatisfactory. Most inserts do not even mention the problem of antibiotic resistance nor do they inform people how important is to complete the antibiotic treatment or tell them what to do in case of allergic reactions or other side-effects. Moreover, with the exception of a very few and not widely distributed leaflets, nothing could be found for practitioners or for patients on the problem of antibiotic resistance.

In conclusion, any campaign for a judicious use of antibiotics should aim at increasing both knowledge and awareness of antibiotic resistance, since much practical advice on proper use makes more sense to people when they know about the problem of resistance (merely increasing people's knowledge of the proper ways to use antibiotics is not sufficient). Given the regional differences in proper and judicious use of antibiotics as well as learning capabilities about antibiotic resistance, target groups for promoting information campaigns have to be defined (i.e. Italian and French-speaking parts of the population, men (in particular under 30)).

The results suggest that more should be done by the pharmaceutical industry, practitioners and the media not only to increase knowledge of the proper use of antibiotics but also to raise awareness of antibiotic resistance.

### *Main results and findings*

#### **Survey about the knowledge, intention and behaviour of the Swiss population (in two waves)**

A representative survey on the knowledge, intention and behaviour of the Swiss population with regard to antibiotic resistance was conducted in April 2003. Among the 1,500 total respondents, 757 were German speaking, 234 were French speaking and 500 (overestimation) were Italian speaking. The results of the survey can be summarised as follows:

- About 1 in 6 persons admitted to having interrupted an antibiotic treatment (mainly for respiratory diseases or illness related to influenza) before the term indicated by their physician. Excluding those doing so because of side-effects (about 1/3):
  - 10.7% terminated treatment prematurely for reasons other than side-effects;
  - stopping antibiotic treatment prematurely (about half of the responders did so because they were feeling better) is a behaviour that is not associated with any immediate consequences in many cases.
- About 4% of the Swiss population indicated having at least once in their lives taken antibiotics without a prescription.
- About 1 in 10 persons admitted to keeping at home leftover antibiotics from previous treatments.
- If improper use is defined as premature treatment stop, and taking antibiotics without prescriptions is considered, then 13.7% of Swiss people are using antibiotics improperly.

- If the propensity to misuse is defined as storing antibiotics at home for later use or throwing leftover antibiotics into the trash, 38.4% of the Swiss resident population must be considered to show this propensity. Generally, those showing this attitude are less likely to have heard of antibiotic resistance.
- Antibiotic misuse seems to be weakly related to a number of attitudinal and behavioural precedents and is somewhat more frequent in patients that passively let their doctors make treatment decisions.
- Judicious use appears to go along with chronic disease, daily medication and reliance on alternative medicine.
- Less judicious use is correlated with attitudes signalling distance to medical personnel and institutions (i.e. avoiding seeing the doctor for as long as possible, expecting nothing but technical expertise from physicians, seeing physicians' prescriptions as influenced by both the pharmaceutical industry and patients' demands, not trusting health insurance companies as far as quality treatments and doctors are concerned).
- Sorting by gender revealed that women are generally more conscientious than men in the use of antibiotics.
- Sorting by age revealed that younger people show the highest levels of misuse and propensity to misuse and know less about antibiotic resistance.
- Sorting by sociodemographic factors revealed that well-educated people, people with professional or high-level business occupations, and people with friends/relatives in the medical profession show below-average incidence of premature termination but above-average self-medication and storage of antibiotics at home.
- By looking at regional variations, it was observed that:
  - misuse and propensity to misuse is lower in the German-speaking part of Switzerland and higher in the French and Italian-speaking parts;
  - more judicious use of antibiotics is observed among the German-speaking population;
  - use and misuse of antibiotics are higher in the Italian-speaking part of the country and especially in the French-speaking part. Residents in these two regions also show a higher appreciation for antibiotics as a discovery of medical research;
  - when looking at doctors' behaviours, German-speaking doctors talk more to patients about side-effects and the danger of resistance, while French and Italian-speaking doctors give more practical advice (dosage and duration).

In general, awareness and knowledge of antibiotic resistance and antibiotics in general is highest among the German-speaking population of Switzerland, followed by the French-speaking and, at the lowest level, by the Italian-speaking Swiss residents.

**Content analysis of Swiss German newspaper coverage of antibiotic resistance** In this part of the study, the main information sources from which the Swiss population gains knowledge about antibiotic resistance were analysed. In particular, content analysis of Swiss newspaper coverage on antibiotic resistance in the past 3 years was examined.

- In the Canton of Ticino, newspapers rarely referred to antibiotic resistance.
- For German-language newspaper and magazines, almost half of the analysed articles mentioned the problem of antibiotic resistance. However, the problem of antibiotic resistance was mostly attributed to the use of antibiotics in animal nutrition, and human behaviour was identified as a cause of increasing antibiotic resistance only a few times (mostly blaming doctors' prescriptions rather than patients' improper use of antibiotics). Out of 96 statements explaining the causes of antibiotic resistance, less than one-quarter provided information on measures that people can take to reduce the spread of antibiotic resistance, i.e. take antibiotics only for bacterial infections and take the full course of a prescription.

**Comparative content analysis of Swiss and Italian Patient Package Inserts** A comparative content analysis of 67 Swiss Patient Package Inserts (PPIs) for antibiotics usually prescribed in Switzerland for upper respiratory infections and of 46 Italian PPIs was performed. The basic criteria taken into account were: readability, mention and explanation of the resistance phenomenon, explicitness of directives concerning doses/therapy duration/use of residual drugs from past therapies, accessibility, relevance, completeness, applicability. The main findings are:

- Swiss PPIs represent a case of expert-to-lay communication.
  - Italian PPIs merely fulfil institutional norms concerning product information delivery to a restricted scientific target (expert-to-expert communication).
  - The problem of antibiotic resistance is rarely mentioned: 16 times out of 67 Swiss PPIs (including 20 synonyms for “resistance”), resp. 16 times out of 46 Italian PPIs (with 18 synonyms).
  - Information about the difference between bacterial and viral infections is far from adequate.
  - In none of the PPIs was the resistance occurrence explained as such, nor is therapy behaviour ever connected to this phenomenon. Furthermore, no information for the users could be found concerning most elementary problems, such as how important is to complete the antibiotic treatment or what the patient should do in case of allergic reactions or other side-effects.
- To conclude, only rare patient package inserts were good examples of how complex information can be delivered in a clear and unambiguous way.

**Conversational analysis of 89 doctor-patient consultations** A conversational analysis of 89 doctor-patient consultations in Ticino was performed. The following general themes were considered in particular: i) amount of information provided to patients, ii) efficacy of various sources of information, iii) problems or questions raised by patients. The investigation took place during the period from January to March 2003, which is the time of year when antibiotics are most frequently prescribed. Among the medical doctors collaborating, 3 were general practitioners, 3 were paediatricians and 3 were internal medicine doctors. The diseases concerned ranged from sinusitis, otitis, angina, bronchitis, to sore throat. Patients suffering from chronic diseases, diabetes or pneumonia were excluded. The consultations were audio-taped, with patients’ consent, when the doctor thought it probable that antibiotics would come up as a topic in the conversation. After data analysis, a focus group with the doctors was held. Following a presentation of the data, there was a discussion about the doctor’s understanding of his/her role in communicating prescription information and the efficacy of various methods used to disseminate information to patients.

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