Two Successive Public Campaigns (2000-2001 and 2001-2002) for a More Rational Use of Antibiotics in Belgium


- Federal Public Services of Social Affairs, Public Health & Environment, Brussels;
- Universiteit Antwerpen, Antwerp;
- Question Santé asbl, Brussels;
- Belgian Institute of Pharmacoepidemiology, Brussels;
- Belgian Institute of Public Health, Brussels;
- Hospital Vega Baja, Orihuela-Alicante, Spain;
- Universidad de Murcia, Murcia, Spain;
- Université catholique de Louvain, Brussels;
- Katholieke Universiteit Leuven, Louvain;

+ deceased Feb 2002
Background

- Belgium (10 mill. inhab.) has a larger AB consumption than most EU countries (data of 1997 according to Cars et al., Lancet 357:1851, 2001);

- this consumption has remained constantly high over the 1996 - 1999 period (data from the Belgian Institute of Pharmacoepidemiology [IPhEB-IFEB])
Why targeting the public?

- Antibiotic sales in the community represent > 85% of all systemic antibiotic sales and is, therefore, an important component in the selection pressure.
- Most of these AB are prescribed to patients with minor respiratory tract infections that are often self-limiting and self-healing and in which AB real usefulness is doubtful:
  - pharyngitis
  - bronchitis
  - flu-like syndrome
  - acute sinusitis
- Doctors believe they must prescribe, and pharmacist they must deliver antibiotics because of the demand of the patient.
Pre-campaign study

- N = 1,000 persons,
- specialized agency,
- representative sample according to sex, age, socio-economic status and geographical distribution.

* Nov 2000-March 2001; presented at the 11th ECCMID, Istanbul, Turkey (poster no. 410)
Pre-campaign study: main results

large misunderstanding or lack of information about the real conditions for usefulness of antibiotics in current infections

belief that antibiotics will allow a faster cure for even minor infections

people's confidence in MDs and pharmacists is high

MD's tend to overestimate the “patient’s pressure” for antibiotics

* Nov 2000-March 2001; presented at the 11th ECCMID, Istanbul, Turkey (poster no. 410)
Defining the aims of the campaign

• provide the public with a better understanding of the natural course of an infection, especially if minor and with a high rate of resiliency (self-healing) such as otitis media or uncomplicated bronchitis

• explain which are the real benefits of antibiotic treatment, i.e. the cure of serious bacterial infections, as opposed to their inappropriate uses such as in minor infections or infections of viral origin

• underline the risks associated with the rapid emergence of resistance to antibiotics

• foster discussion of the patient with his/her doctor and his/her pharmacist on the need to use antibiotics appropriately

➡ Less often … and better
The team that designed and launched the campaign

University
• 2 microbiologists
• 1 pharmacologist
• 1 general practitioner
• 1 anthropologist

Contacts with the Scientific Societies of
• Clinical Microbiology and Infectious Diseases
• Pediatrics
• Pneumology
• Otorhinolaryngology
• General Practice

Media
• 2 specialists in Health-related Public Communication

Ministeries
• 1 representative of the Departments of Health and Social Affairs (federal level)
• 2 representatives of the Departments of Public Health and Preventive Medicine (community level)
Launching the campaign

Letter to the health professionals

Brochures and folders

TV spot

Web sites
What was (and is still) said to the public?
Cette brochure parle d’un problème qui nous concerne tous.

Les infections que nous pouvons guérir aujourd’hui grâce aux antibiotiques pourraient redevenir mortelles dans quelques années. En effet, les antibiotiques perdent leur efficacité parce que nous en consommons trop souvent et les utilisons mal.

Pour éviter ce danger, agissons dès maintenant. Utilisons les antibiotiques moins souvent et mieux. Ensemble, médecins, pharmaciens et patients, nous pouvons y arriver.

Vous trouverez dans cette brochure les réponses aux questions suivantes :

1. Qu’est-ce qu’une infection ?

2. Les infections guérissent-elles spontanément ?

3. Les antibiotiques permettent-ils de guérir plus vite ?

4. Comment les bactéries deviennent-elles résistantes aux antibiotiques ?

5. Les antibiotiques sont précieux. Que pouvons-nous faire pour sauvegarder leur efficacité ?

6. Les enfants ont-ils plus besoin des antibiotiques que les adultes ?

7. Que retenir ?
7. Wat moeten we onthouden?

1. We gebruiken te vaak antibiotica: ze worden daarom minder doeltreffend.
2. Infecties die we vandaag nog kunnen genezen met antibiotica dreigen over enkele jaren opnieuw dodelijk te zijn.
3. De meeste infectieziekten genezen spontaan.
4. Antibiotica werken alleen tegen bacteriën, niet tegen virussen.
5. De oplossing ligt niet in de mogelijke ontdekking van nieuwe antibiotica.
6. We moeten antibiotica minder vaak en beter gebruiken.
7. Enkel een arts kan oordelen over de ernst van een infectie en het gebruik van antibiotica. Gebruik daarom nooit antibiotica zelf.

Samen, arts, apotheker en patiënt, kunnen we ermee stoppen antibiotica te gebruiken als het niet nodig is. Praat er over met uw geneesheer en apotheker.

RED DE ANTIBIOTICA
ZE KUNNEN UW LEVEN REDDEN

Met de steun van de volgende wetenschappelijke verenigingen:
Belgische Vereniging voor Kindergeneeskunde
Wetenschappelijke Vereniging van Vlaamse Huisartsen
Belgische Vereniging voor Pneumologie
Koninglijke Belgische Vereniging voor Oto-Rhino-Laryngologie,
Gefaal- en Halschirurgie
Belgische Vereniging voor Infectiologie en Klinische Microbiologie
### Public campaign: what has been done the 1st year

<table>
<thead>
<tr>
<th>number</th>
<th>target</th>
<th>channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Booklets 600,000</td>
<td>patients</td>
<td>MD’s / Pharmac.</td>
</tr>
<tr>
<td>Folders 400,000</td>
<td>patients</td>
<td>Soc. Organizat. ¹</td>
</tr>
<tr>
<td>Posters 40,000</td>
<td>patients</td>
<td>MD’s. / Pharmc.</td>
</tr>
<tr>
<td>TV-spots French 445</td>
<td>general</td>
<td>prime time</td>
</tr>
<tr>
<td>Flemish 36</td>
<td>general</td>
<td>prime time</td>
</tr>
<tr>
<td>Radio-spots French 1008</td>
<td>public</td>
<td>30 sec broadcasts</td>
</tr>
<tr>
<td>Flem. 40</td>
<td>public</td>
<td>30 sec broadcasts</td>
</tr>
<tr>
<td>Direct Press &amp; Media communications</td>
<td>general public</td>
<td>newspapers</td>
</tr>
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<td></td>
<td>MD’s/Pharm.</td>
<td>medical press</td>
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<tr>
<td>Web sites general ⁴</td>
<td>general public</td>
<td>University server</td>
</tr>
<tr>
<td>scientific ⁵</td>
<td>MD’s</td>
<td>Ministry server</td>
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</tbody>
</table>

¹ Social Security and Reimbursement Organizations (Mutuelles), etc…
² free access; ³ paying access;
⁴ [www.antibiotiques.org](http://www.antibiotiques.org) -- [www.red-antibiotica.org](http://www.red-antibiotica.org); [www.antibiotika-gezielt.org](http://www.antibiotika-gezielt.org)
⁵ [www.health.fgov.be](http://www.health.fgov.be)

Similar activities were made during the second campaign
Public campaign: long term presence through Web sites

No campaign was organized in 2003-2004!
Post-campaign evaluations:

Objective assessment of the impact of the campaigns on

- the awareness of the public (1st campaign only);
- the appreciation of this effort by the GPs (both campaigns);
- AB prescription at the community level (both campaigns).
Awareness of the public after the 1st campaign (1 of 3)

Method:
• face-to-face interviews (n=1,015; representative of pop. > 14 y.)
• 1-2.5 months after end of the campaign

Main and most salient results concerning direct impact:

I remember the campaign: 46 %

I remember the main message was:
• We use them too much: 38 %
• Take them only if needed: 25 %
• The more you take them the least fit you are: 22 %
• Bugs become resistant: 12 %

TV: 79 %
Papers: 17 %
Radio: 14 %
Main and most salient results concerning AB expectations:
(in comparison with a similar pre-campaign survey)

Do you expect / ask for an antibiotic in case of:

- **Bronchitis**: 74% pre-campaign, 63% post-campaign (S)
- **Flu**: 49% pre-campaign, 30% post-campaign (S)
- **Sore-throat**: 32% pre-campaign, 18% post-campaign (S)
- **Fever**: 28% pre-campaign, 25% post-campaign (ns)

S = p < 0.05
Main and most salient results concerning individual AB use:
(in comparison with a similar pre-campaign survey)

Do you agree to use less AB in agreement with your GP?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>64%</td>
<td>75%</td>
</tr>
</tbody>
</table>

Why?

- To limit overuse
  - Before: 20%
  - After: 26%

- To preserve their efficacy
  - Before: 13%
  - After: 25%

S = p < 0.05
Appreciation by the General Practitioners (1 of 6)

Method:
• telephone interviews (n=400; geographically representative)
• 3 months after end of each campaign

Impact: 100 % GPs remember the 1st campaign …
… and have noticed it through:

- Media (65 %)
- Booklets (43 %)
- Letter sent (38 %)
- Posters (22 %)
- Medical press (8 %)
- Patients (6 %)

But only 73 % did notice the 2d campaign …
Appreciation by the General Practitioners (2 of 6)

What do they think about the two campaigns?

<table>
<thead>
<tr>
<th>Category</th>
<th>1st Campaign</th>
<th>2nd Campaign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Useful for a better practice</td>
<td>73%</td>
<td>73%</td>
</tr>
<tr>
<td>Useful for patients</td>
<td>64%</td>
<td>77%</td>
</tr>
<tr>
<td>Doctors feel involved</td>
<td>51%</td>
<td>71%</td>
</tr>
<tr>
<td>Only intended at cutting Social Security costs</td>
<td>32%</td>
<td>29%</td>
</tr>
</tbody>
</table>

* Interviewed GP’s were asked to freely express their opinions (open answer questions)

Key:
- Red: 1st campaign
- Orange: 2nd campaign
Appreciation by the General Practitioners (3 of 6)

What do they remember from the two campaigns *

- We urgently should use less AB:
  - 1st campaign: 39%
  - 2nd campaign: 81%

- Doctors should prescribe less AB:
  - 1st campaign: 36%
  - 2nd campaign: 34%

- Bugs become resistant:
  - 1st campaign: 12%
  - 2nd campaign: 8%

* interviewed GP’s were asked to freely express their opinions (open answer questions)
Appreciation by the General Practitioners (4 of 6)

Which campaign materials did they use with their patients? * ...

- **Leaflets**
  - 1st campaign: 44%
  - 2nd campaign: 57%

- **Posters**
  - 1st campaign: 35%
  - 2nd campaign: 36%

- **Suggested to watch the TV spots**
  - 1st campaign: 14%
  - 2nd campaign: 18%

- **Nothing**
  - 1st campaign: 44%
  - 2nd campaign: 28%

* interviewed GP's were asked to freely express their opinions (open answer questions)
Appreciation by the General Practitioners (5 of 6)

Did they change anything in their practice? ...

I have changed ...

- 33% (1st campaign)
- 38% (2nd campaign)

And if they changed, how did they change? ...

I effectively have prescribed less AB

- 32% (1st campaign)
- 63% (2nd campaign)
Appreciation by the General Practitioners (6 of 6)

Would you buy this car again?

Should the campaign be repeated next year? ...

Yes

70%

75%

key

1st campaign

2d campaign
Why did GP's and the public appreciate the campaign?

- It was **moderate in tone**, not "marketing-minded", and intended at educating rather than making people afraid…
- It explained the **reality of the problem** in words that were correct and which a reasonably educated person can understand so as to appreciate the **validity of the message**
- It **stimulated the discussion**, and was not a "take my word" approach (no "hammering" with slogans).
- It **did not target any specific class** of antibiotic
- It **did not link** AB over-consumption to financial elements
Changes of AB sales in the community

1st method (descriptive approach):
- record of AB sales (DDD; class ATC J01) in retail pharmacies* from Dec. 1999 through Mar. 2000 (baseline)
- comparison with the same periods in 2000-2001 (1st campaign) and 2001-2002 (2d campaign)

Results:

Before 1st campaign
- 11.7 %
After 2d campaign
- 9.6 %

* data from a population of 8,950,476 to 9,107,039 insured persons; exhaustivity: 76.7 to 77.5 %
Changes of AB sales in the community

2d method: AutoRegressive Integrated Moving Average model (ARIMA)

This approach links consumption data to the seasonal variations in Acute Respiratory Infections tries to detect the influence of the campaign beyond these seasonal changes

• pre-campaign data (1996 - Nov 2000) to calculate the relationship between Acute Respiratory Infections (ARI) incidence and antibiotic consumption

• 4-months (December to March) data or December and later on data looking for a global 4-months effect or a monthly-delayed effect after the launching of the campaigns

• analysis by two independent groups of experts (one Belgian, one Spanish) using both the ARIMA method but performing either a "one model for all analyses" or a "one fits to final analysis" approach.
Correlation between index of Acute Respiratory Illnesses and AB sales in the community

Variation of ARI index during the Sep 1999 - Apr 2002 period

Correlation between monthly DDD and ARI index (1996- nov. 2000)

Changes in ARI during the campaign periods will modulate AB consumption

Each variation of 1 ARI unit causes an increase of 342,035 DDD [280,083-405,807]

There was a direct relationship between ARI and AB consumption …
Are "abnormal antibiotic abnormal consumptions" in Belgium not more linked to inappropriate use in **Influenza-like Illnesses (ILI)**?

- **Belgium**: temperate climate and large annual AB consumption
  - ➔ large seasonal variations

- **Finland**: much colder climate but "medium" annual AB consumption
  - ➔ modest seasonal variations

- **The Netherlands**: temperate climate but VERY low annual AB consumption
  - ➔ almost no seasonal variation

**DID**: defined daily doses per 1,000 inhabitants and per day

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**ECCMID 2003**: Results of the ESAC Retrospective Data Collection
Indeed ...

Bauraind et al., 2003, submitted
Changes of AB sales in the community taking into account the variation in ILI index

2000-2001 campaign
- 7.03 %
- 6.53 %

2001-2002 campaign
- 0.79 %
- 3.41 %

Significant effect:
in December: - 15.0 %

Significant effect:
in February: - 14.7 %

Global AB consumption change attributed to intervention: - 5.01 %  p = 0.012

"one fits to final analysis"

"one model for all analyses"
Changes of AB sales in the community

- The 1st campaign caused an immediate and highly significant decrease of AB sales, which could not be explained by the lower incidence of ARI in 2000-2001. This effect was, however, transient (1 month).
- The second campaign had lesser effect, which was observed with a longer delay (2 months) after the launching of the campaign.
- Globally, the two campaigns caused a 5.0% decrease of antibiotic sales in the country during the 4 months of observation (December-March), which is highly significant taking into consideration the variations in Acute Respiratory Diseases indices during this period.
Pharmacoeconomics ...

- The two campaigns caused a net decrease in community sales of 3,788,915 DDD over what the increase in ARI during the study period should have yielded.

- Based on mean 2001-2002 prices, this would translate in a total saving for the both campaigns of 7,918.200 euros out of which:
  - Euros 6,062,239 would have been paid by the National Social Security System (INAMI / RIZIV)
  - Euros 1,855,960 would have been paid by patients *

- The ratio "savings / costs" of the campaign is about ~10 / 1 nationally, and ~ 8 / 1 for the National Social Security.

- On a population basis, each Belgian citizen has saved about ~ 0.2 euros of personal expenses …

* average personal intervention in AB costs is approx. 25 % for community sales
Conclusions

- The two campaigns
  - improved the awareness of the public, made it alert to the problem of bacterial resistance, and reduced requests for antibiotics
  - was judged generally positive by GPs and influenced their behavior towards a reduction in AB prescription
  - reduced significantly AB sales

- Repetition of campaigns appears useful to improve public awareness and GP's involvement

- However, the second campaign was globally less effective to reduce antibiotic consumption, suggesting better targeting to specific populations is needed

- Interestingly enough, GPs’ awareness of AB resistance in their daily practice remains low
Acknowledgments

- Mr F. Vandenbroucke and Mrs M. Aelvoet (Federal Ministers of Social Affairs, Public Health and Environment) and their cabinet members
- Mr C. Decoster, Chief Medical Officer, Federal Ministry of Health
- The Belgian Antibiotic Policy Coordination Committee (BAPCOC)
- The French-speaking Community of Belgium*
- The Flemish-speaking Community of Belgium*
- Scientific Institute of Public Health “Louis Pasteur”
- Société Belge d’Infectiologie et de Microbiologie Clinique / Belgische Vereniging voor Infectiologie en Klinische Microbiologie

* responsible for preventive care policy at the community level

All campaign materials, this set of slides, and additional information is available for download at http://www.antibiotiques.org/english or http://www.red-antibiotica.org/english