

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

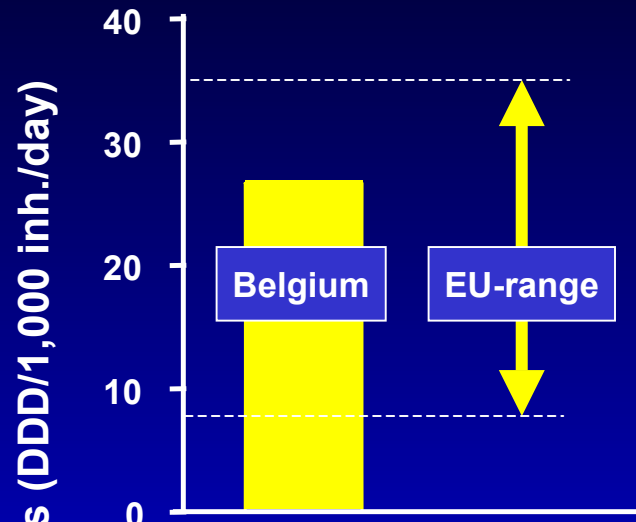
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- Question Santé asbl, Brussels;
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- Belgian Institute of Public Health, Brussels;
- Hospital Vega Baja, Orihuela-Alicante, Spain;
- Universidad de Murcia, Murcia, Spain;
- Université catholique de Louvain, Brussels;
- Katholieke Universiteit Leuven, Louvain;

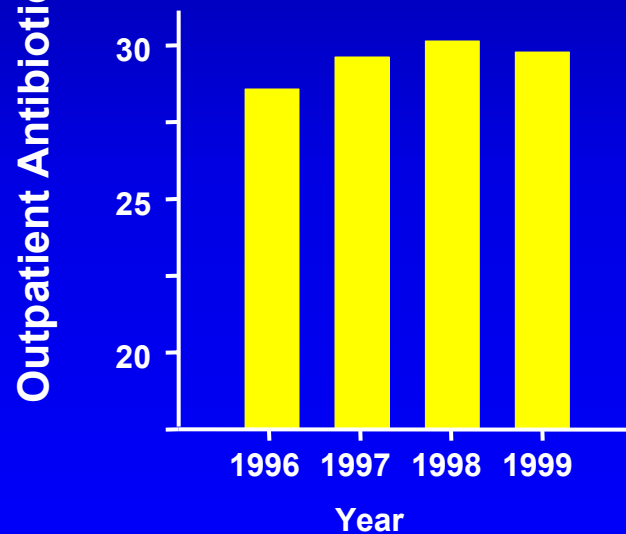
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<sup>†</sup> deceased Feb 2002

# 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)

Belgian Antibiotic Campaigns (2000-2001 and 2001-2002)

## 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

# 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**

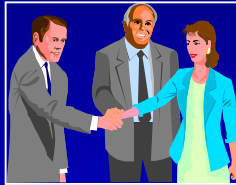
# The team that designed and launched the campaign

## University

- 2 microbiologists
- 1 pharmacologist
- 1 general practitioner
- 1 anthropologist

## Media

- 2 specialists in Health-related Public Communication



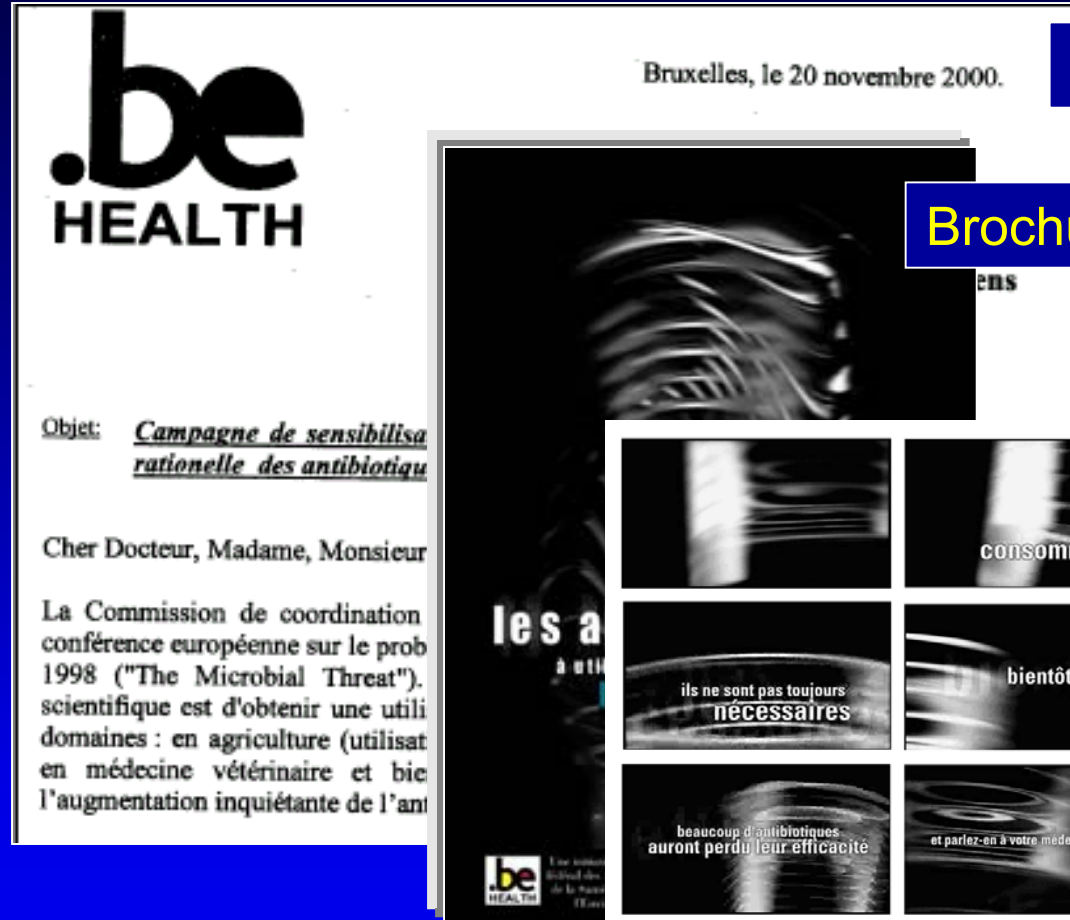
## Contacts with the Scientific Societies of

- Clinical Microbiology and Infectious Diseases
- Pediatrics
- Pneumology
- Otorhinolaryngology
- General Practice

## 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 ?

antibio - Mozilla Firefox  
File Edit View Go Bookmarks Tools Help  
http://www.antibiotiques.org/

[Nederlands](#) | [Deutsch](#) | [English](#) (for professionals)

**.be HEALTH**  
Une initiative du Service public fédéral  
"Santé Publique, Sécurité de la Chaîne alimentaire et Environnement"  
avec le soutien des Communautés française et germanophone

**les antibiotiques:**  
à utiliser  
**moins souvent**  
et **mieux**

Dernière actualisation : mars 2004

[accès brochure](#)

**Questions Réponses**

**dépliant**

**pour en savoir plus**

**spot TV**

Avec le soutien des sociétés scientifiques suivantes:  
Société Belge de Pédiatrie  
Société Scientifique de Médecine Générale

Transferring data from www.antibiotiques.org...

Start | Eudora | C:\textes... | Microsoft... | **antibio ...** | Jasc Pain... | 12:25

# What was (and is still) said to the public ?

Réalisation:  
Service communautaire de promotion de la santé géré par l'a.s.b.l. Question Santé



**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.

**table des m**

**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 ?**

# What was (and is still) said to the public ?

## 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 zonder advies van een arts.

*Samen, arts, apotheker en patiënt, kunnen we erin  
vaak en beter te gebruiken.*

*Praat er over met uw geneesheer en apotheker.*

**RED DE ANTIBIOTICA  
ZE KUNNEN UW LEVEN REDDEN**

TV SPOT



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,

Gelaat- en Halschirurgie

Belgische Vereniging voor Infectiologie en Klinische Microbiologie

## Public campaign : what has been done the 1st year

	number	target	channel
Booklets	600,000	patients	MD's / Pharmac. Soc. Organizat. <sup>1</sup> MD's. / Pharmc.
Folders	400,000		
Posters	40,000		
TV-spots	French 445 <sup>2</sup> Flemish 36 <sup>3</sup>	general public	prime time 30 sec broadcasts
Radio-spots	French 1008 <sup>2</sup> Flem. 40 <sup>3</sup>		
Direct Press & Media communications			
Web sites	general <sup>4</sup> scientific <sup>5</sup>	general public MD's	University server Ministry server

<sup>1</sup> Social Security and Reimbursement Organizations (Mutuelles), etc...

<sup>2</sup> free access; <sup>3</sup> paying access;

<sup>4</sup> [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)

<sup>5</sup> [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

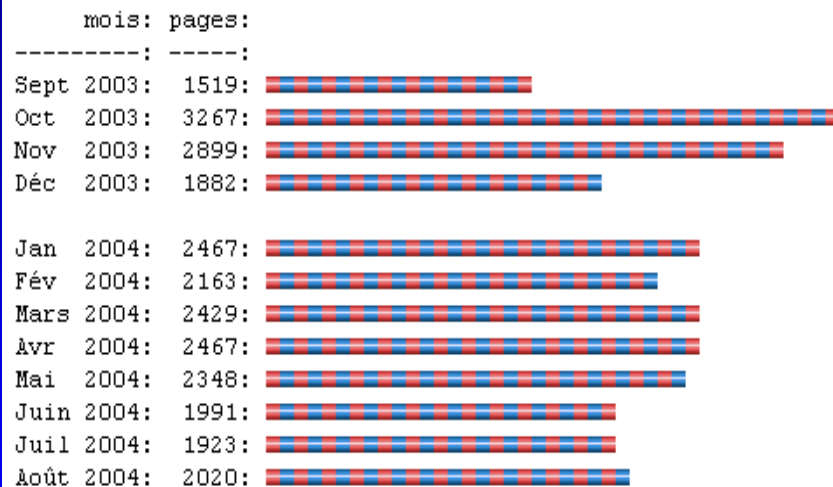
www.antibiotiques.org  
(French)

www.red-antibiotica.org  
(Dutch)

Choisissez votre page Web :

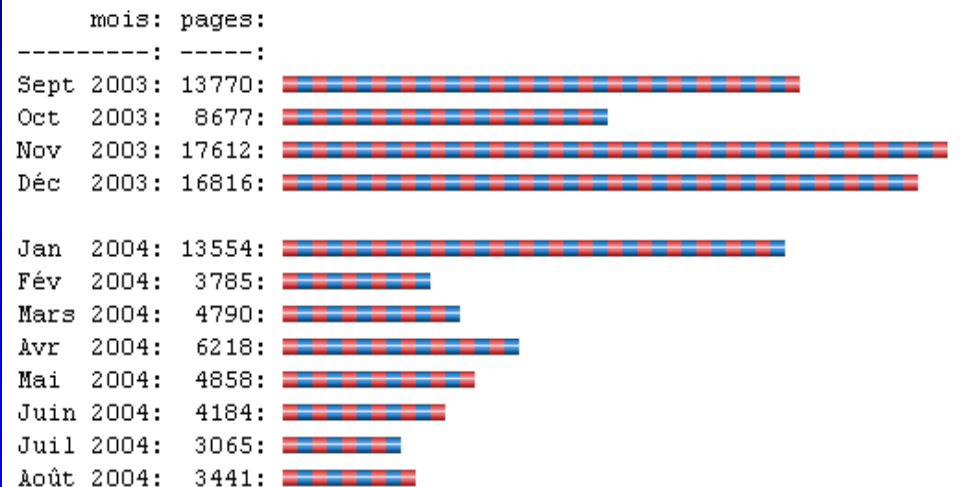
Choisissez votre page Web :

Chaque unité (■) représente 80 requêtes de pages ou une fraction.



Mois le plus actif : Oct 2003 (3 267 requêtes de pages).

Chaque unité (■) représente 400 requêtes de pages ou une fraction.



Mois le plus actif : Nov 2003 (17 612 requêtes de pages).

**No campaign was organized in 2003-2004 !**

## Post-campaign evaluations:

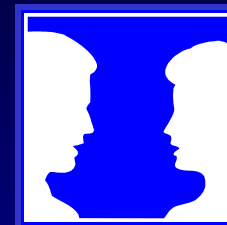
Objective assessment of the impact of the campaigns on

- 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).

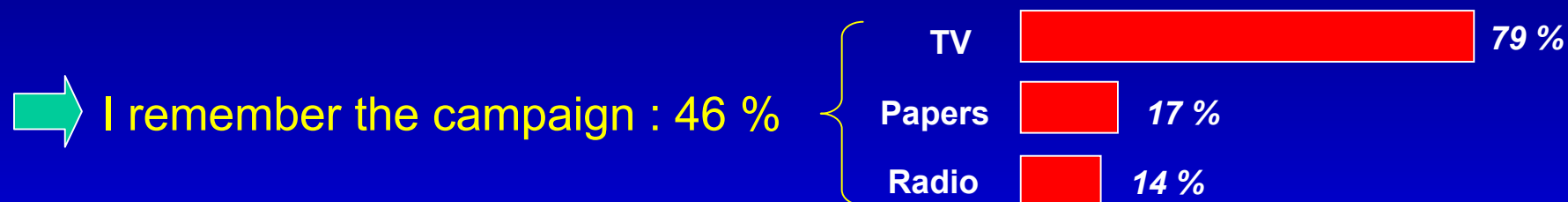
# Awareness of the public after the 1st campaign (1 of 3)

Method :

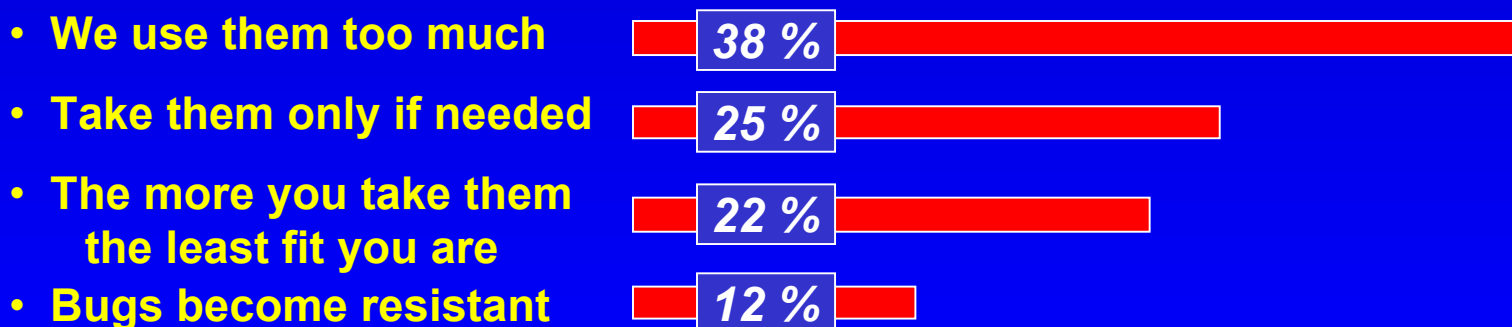
- face-to-face interviews (n=1,015; representative of pop. > 14 y.)
- 1-2.5 months after end of the campaign



Main and most salient results concerning direct impact :



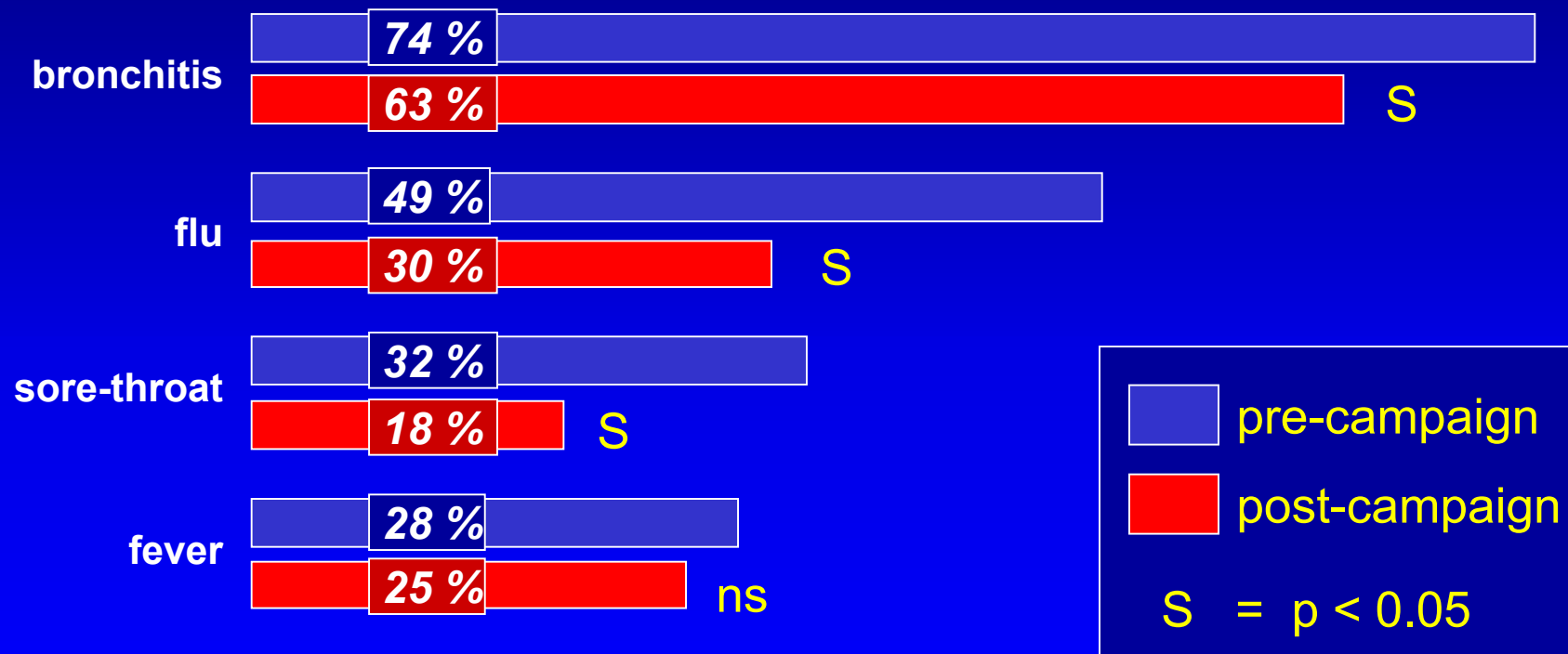
→ I remember the main message was



# Awareness of the public after the 1st campaign (2 of 3)

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 :





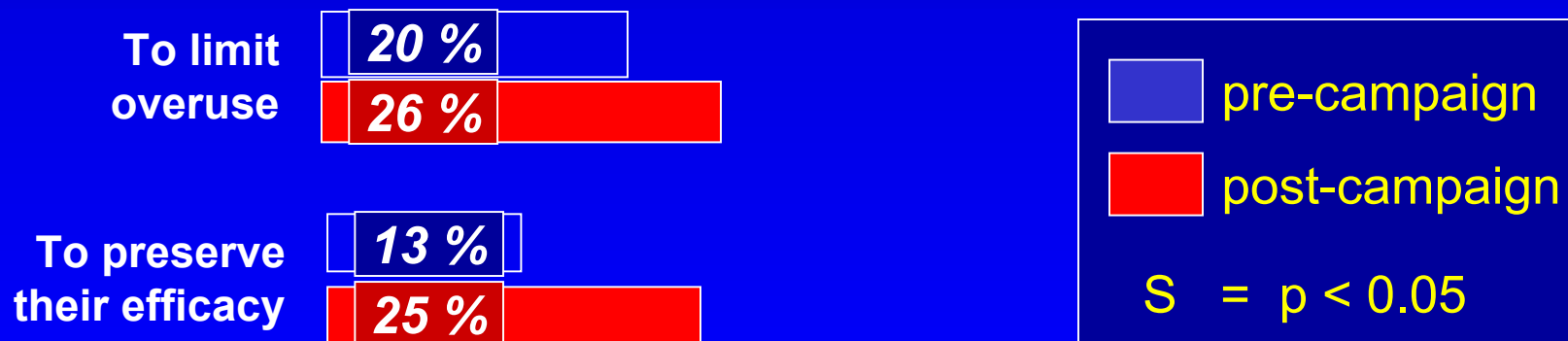
# Awareness of the public after the 1st campaign (3 of 3)

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 ?



Why ?



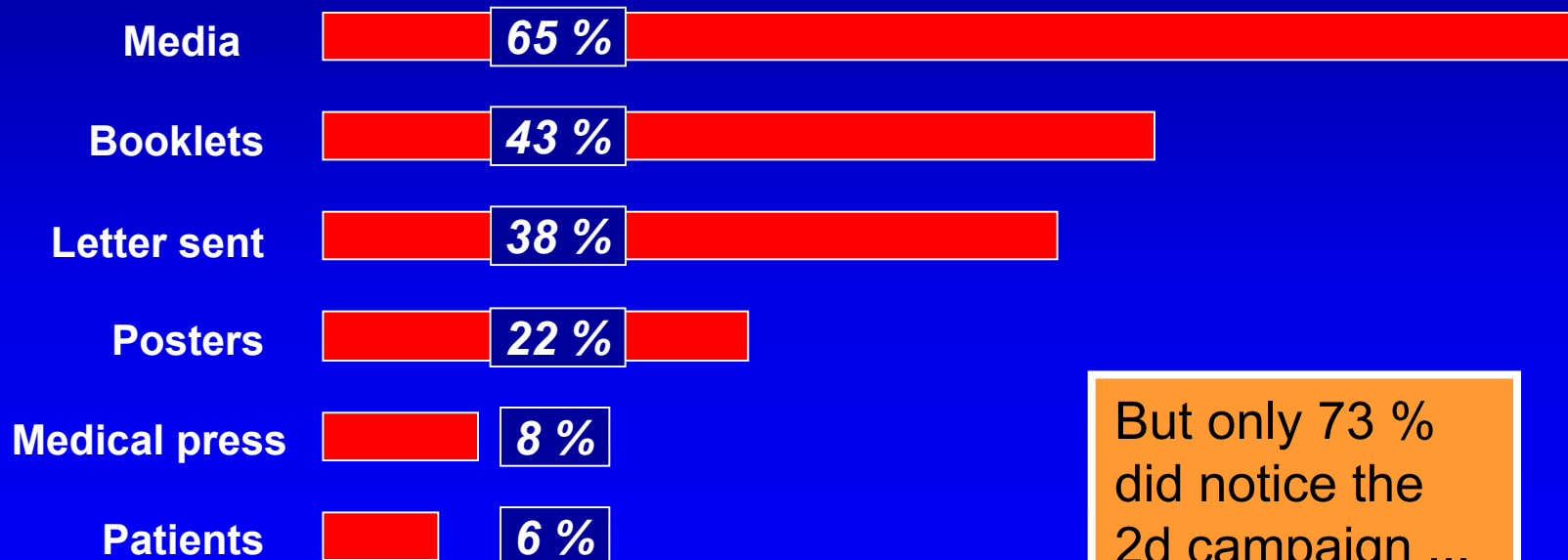
# Appreciation by the General Practitioners (1 of 6)

Method :

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



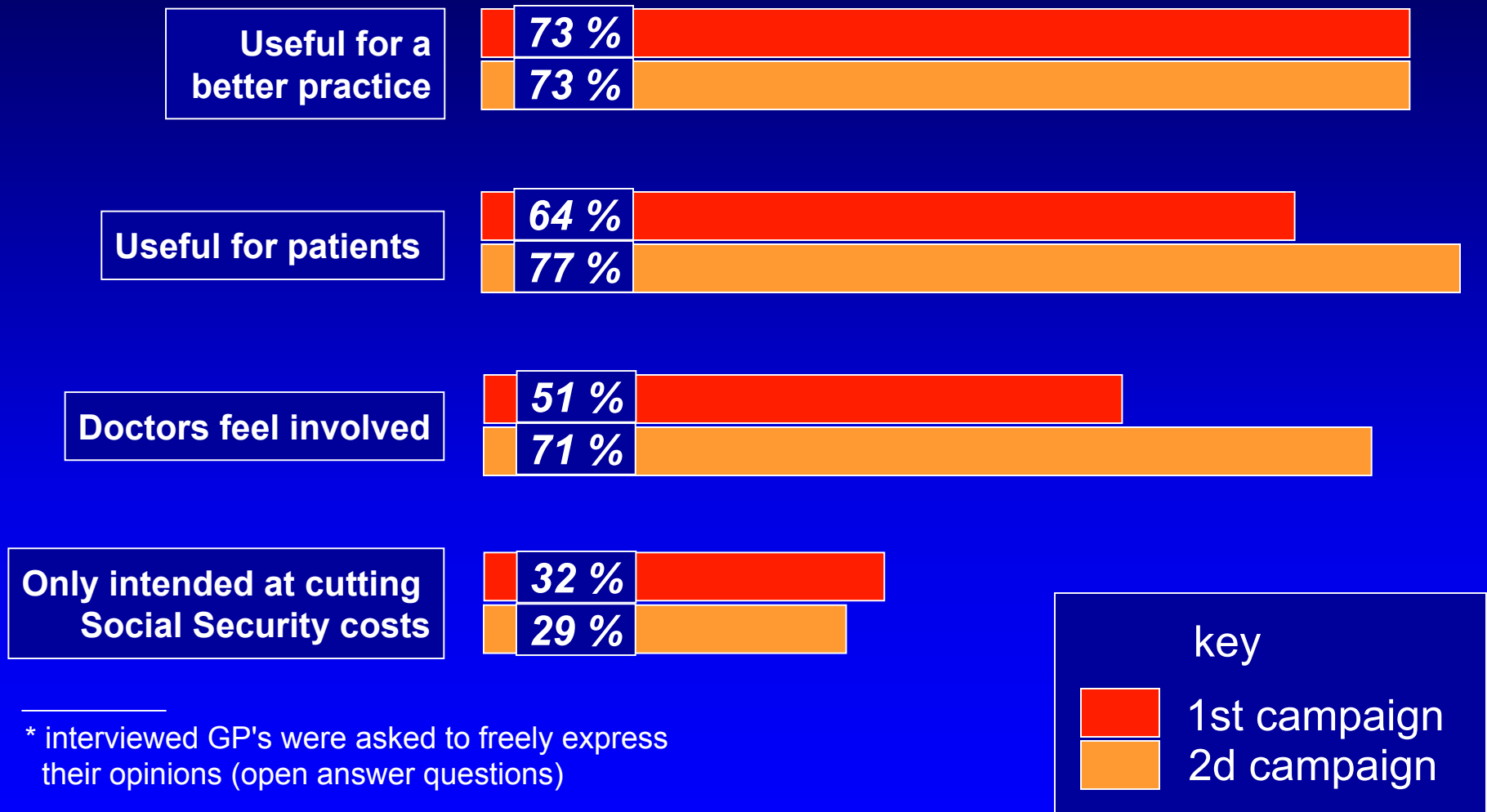
Impact : 100 % GPs remember the 1st campaign ...  
... and have noticed it through:



But only 73 %  
did notice the  
2d campaign ...

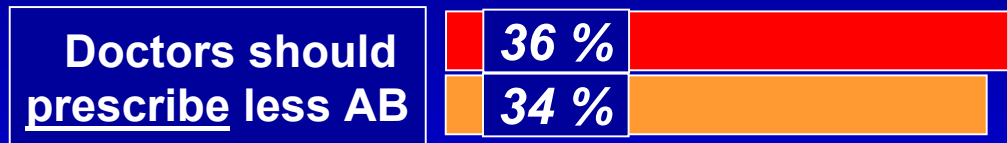
# Appreciation by the General Practitioners (2 of 6)

What do they think about the two campaigns \* ...



# Appreciation by the General Practitioners (3 of 6)

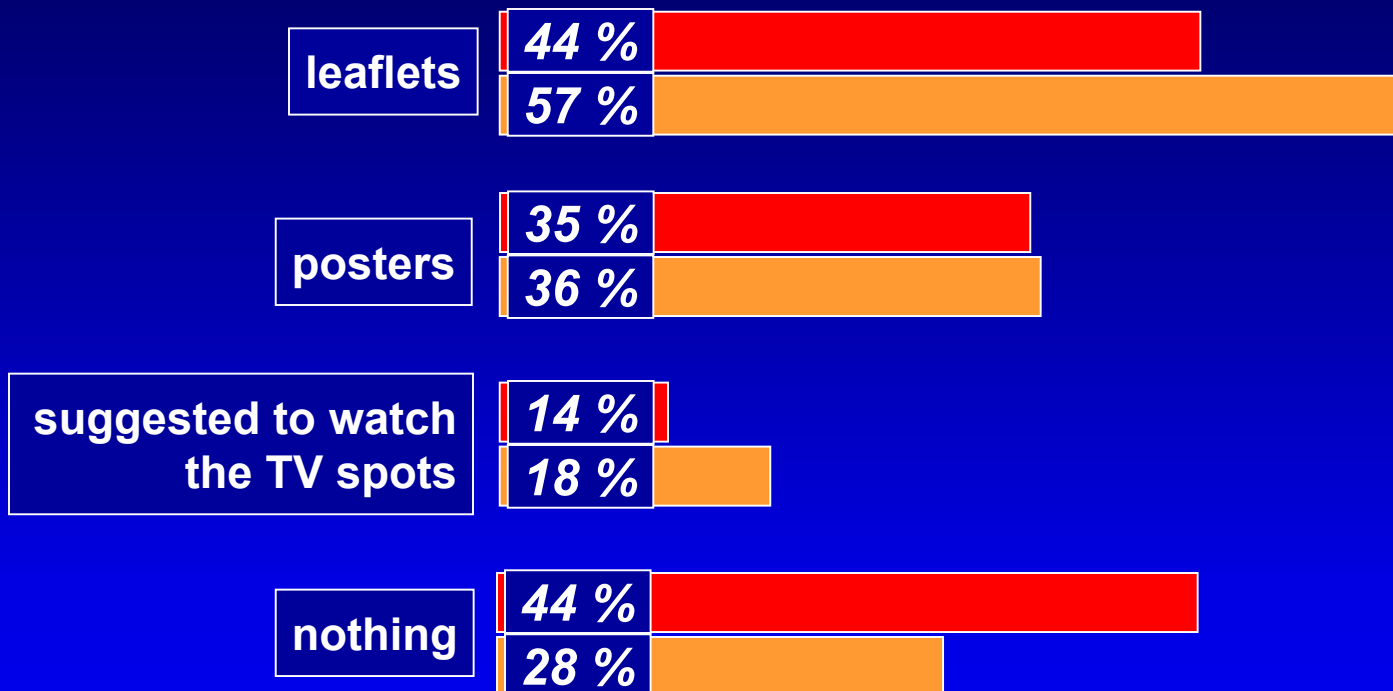
What do they remember from the two campaigns \* ...



\* 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 ? \* ...



\* 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 ? ...



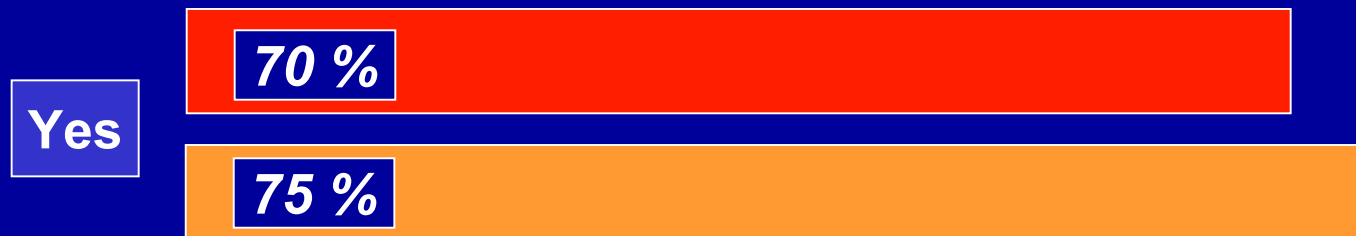
And if they changed, how did they change ? ...



# Appreciation by the General Practitioners (6 of 6)

Would you buy this car again ?

Should the campaign be repeated next year ? ...



## 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**

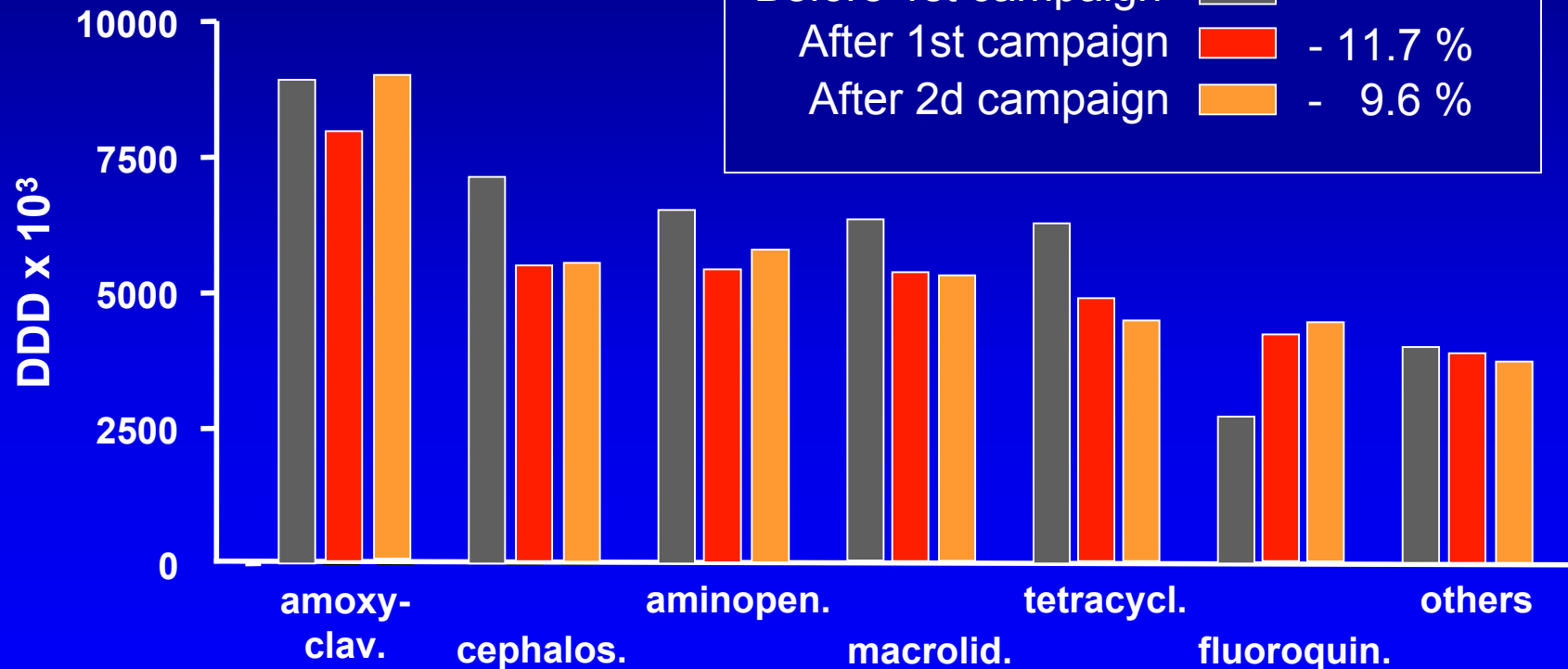


# Changes of AB sales in the community

## 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 :



\* data from a population of 8,950,476 to 9,107,039 insured persons; exhaustivity: 76.7 to 77.5 %

Belgian Antibiotic Campaigns (2000-2001 and 2001-2002)

# Changes of AB sales in the community

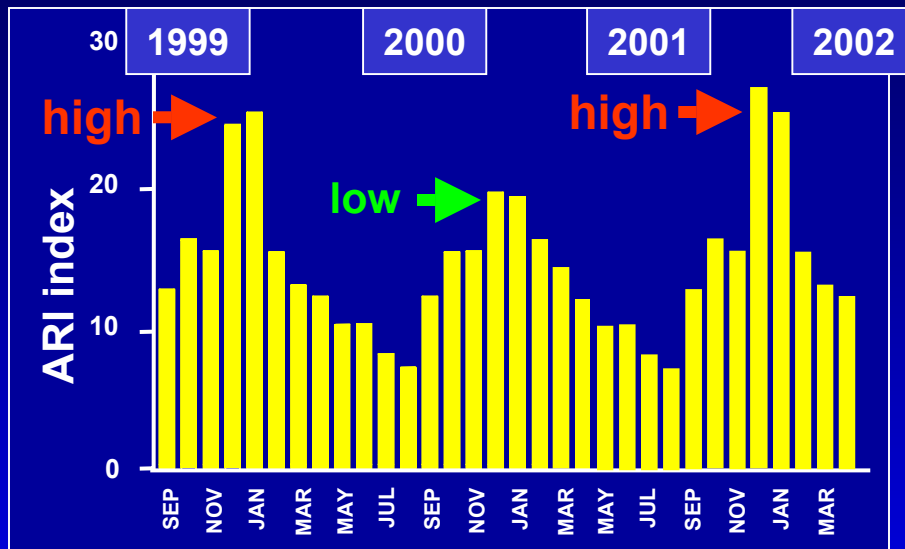
2d method : AutoRegressive Integrated Moving Average model (ARIMA)

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.

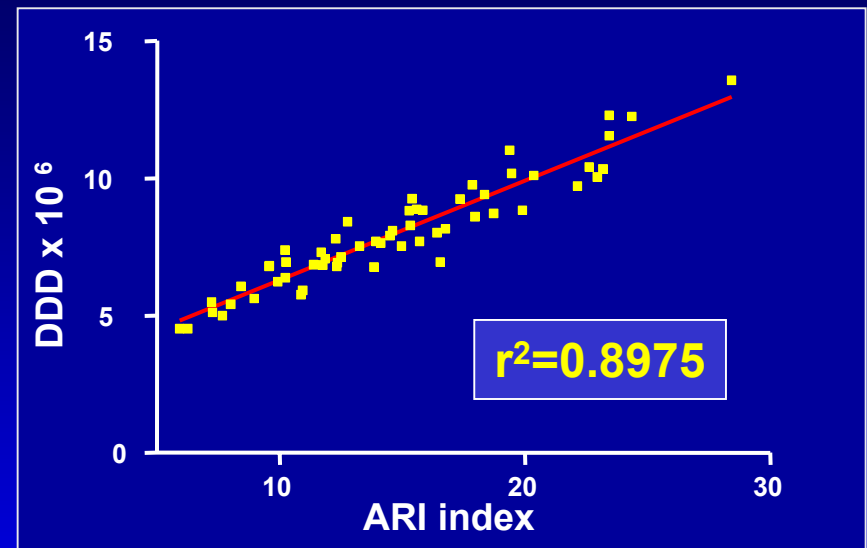
# Correlation between index of Acute Respiratory Illnesses and AB sales in the community

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



Changes in ARI during the campaign periods will modulate AB consumption

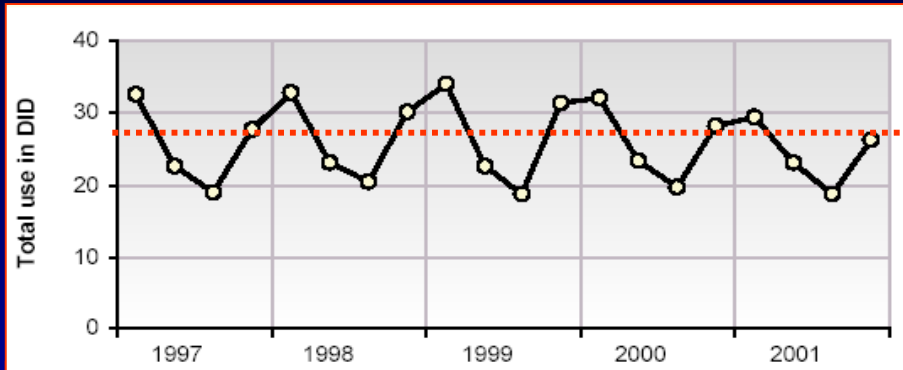
Correlation between monthly DDD and ARI index (1996- nov. 2000)



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

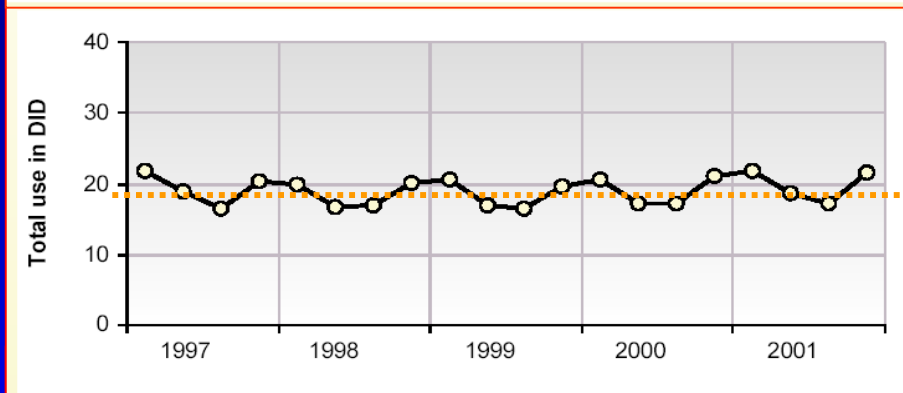
There was a direct relationship between ARI and AB consumption ...

# Are "abnormal antibiotic abnormal consumptions" in Belgium not more linked to inappropriate use in **Influenza-like Illnesses (ILI)** ?



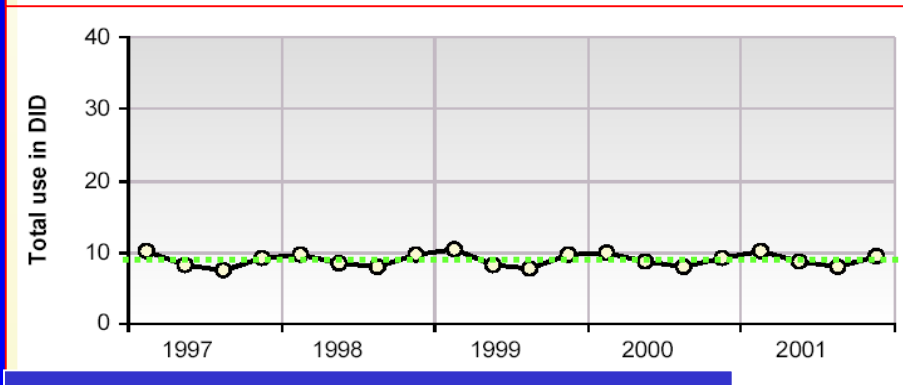
Belgium: temperate climate and large annual AB consumption

→ large seasonal variations



Finland: much colder climate but "medium" annual AB consumption

→ modest seasonal variations



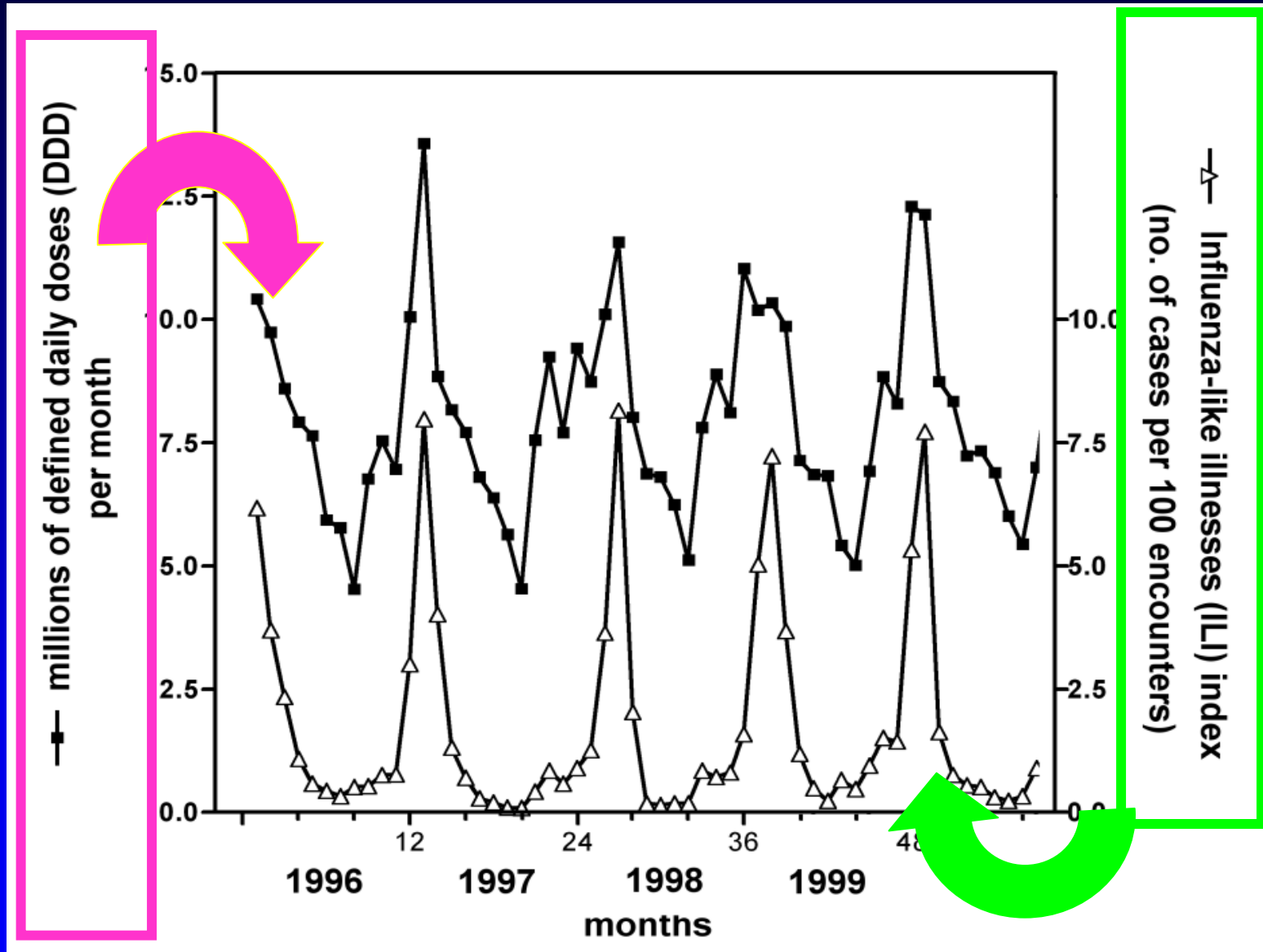
The Netherlands: temperate climate but VERY low annual AB consumption

→ almost no seasonal variation

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

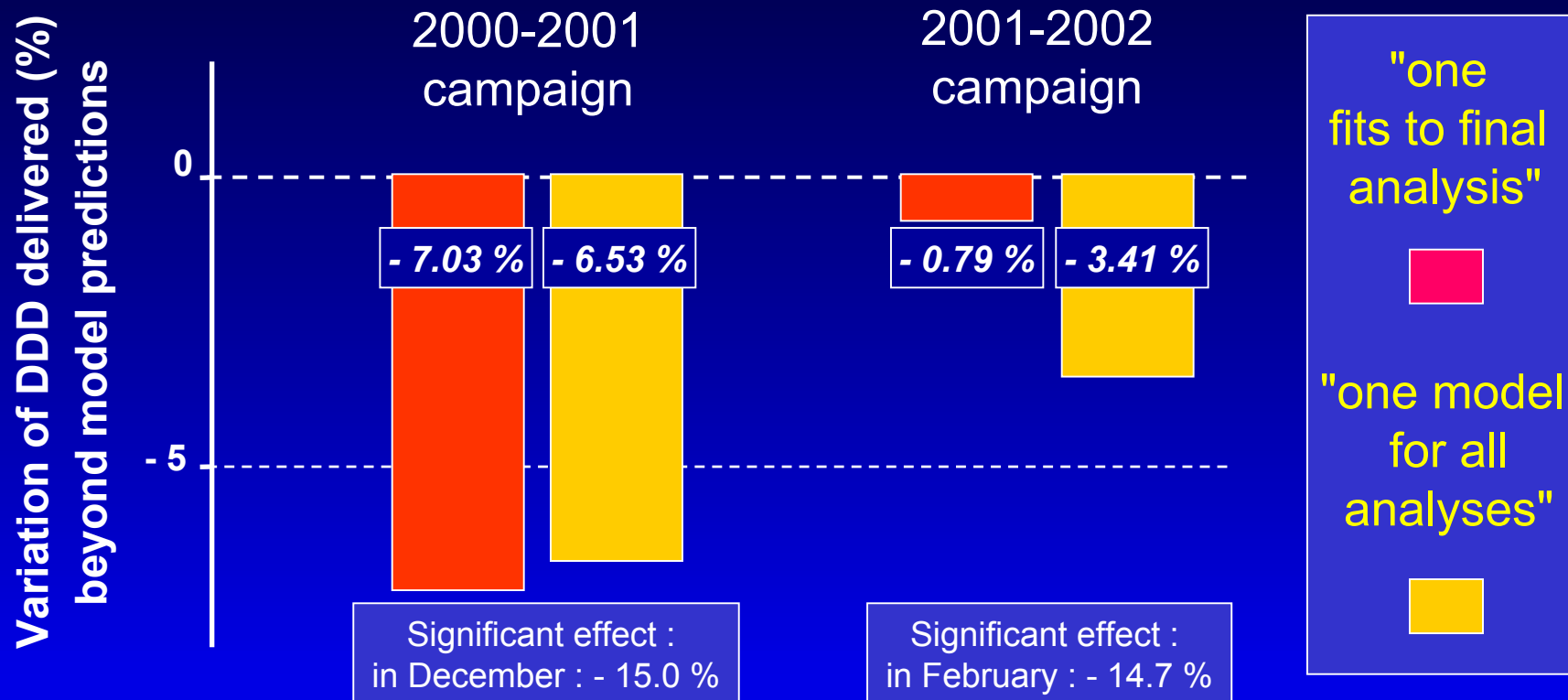
Belgian Antibiotic Campaigns (2000-2001 and 2001-2002)

# Indeed ...



Bauraind et al., 2003, submitted

## Changes of AB sales in the community taking into account the variation in ILI index



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

## Changes of AB sales in the community

- the 1st campaign caused an immediate and highly significant decrease of AB sales, which could not 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 ...

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

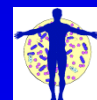


# Conclusions

- 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>