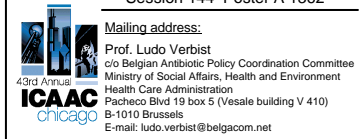# Two Years of National Public Campaigns to Promote Appropriate Use of Antibiotics In the Community In Belgium

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ABSTRACT

Background: Antib. consumption in the commun. is high in Balgium (4th in Europe in 93-97 [Lancet 357:1851, 2001]) and patients' demand is an important determinant (Patient.Educ.Couns. 48:161-9, 2002).

Methods: 2 successive, 3-mo. (Dec.-Feb.) campaigns were launched in 2000-2001 and 2001-2002 with 3 key messages ("*Use Antibiotics Less Frequently But Better*"; "*Save antibiotics, they may save your life*"; "*Talk to your Doctor, Talk to your Pharmacist*") using TV, radio, brochures, and folders. Impact was evaluated on the public (pre-and post-campaign face to face interviews in 2000 and 2001; n=1014.); GP's (post-campaign phone interviews in 2001 and 2002; n=400); antib. sales (retail pharm.; 2001 and 2002; times series analysis controlling for the influence of the season. variation of influenza-like illnesses [ILI]); (iv) cost effectiveness.

Results: The campaigns had a high visibility (public, 79 %; GP's, 100 and 73%). Both the public (75 %) and the GP's (63 %) accepted to be more restrictive for antibiotic use. Expectation for antibiotics decreased for acute bronchitis, flu, sore-throat, common cold and diarrhea (p < 0.05). Antibiotic sales decreased (17 % and 9 %; p < 0.05) but only transiently (1 month). The two campaigns cost about 770,000 euros, but saved about 5 X more for Social Security.

Conclusions: These repeated, nation-wide, public-targeted interventions resulted in changes of patient expectations but only modestly reduced prescribing. Threat messages and educational efforts towards the public appear to have a limited and short-lived impact on prescribing and may need to be complemented by other actions.

INTRODUCTION

Antibiotics have dramatically reduced illness and death from infectious diseases. Bacteria, however, have shown a remarkable capacity to quickly become resistant to antibiotics.

We are now facing a situation where virtually all bacterial pathogens are becoming resistant to commonly used drugs, leading to clinical failures. Moreover, virulence and resistance begin now to emerge as linked phenotypes.

Resistance of typical human pathogens is correlated with the level of antibiotic use in the community. The latter varies widely among European countries, which suggests that antibiotic prescribing and consumption is only remotely related, in some countries, to what could be considered as appropriate use.

Inappropriate demand and doctors' over-estimation of patients' demand for antibiotics may be a driving factor in antibiotic overconsumption. Educational efforts appear, therefore, of central importance.

To alleviate the pressure placed on the physicians by the public and to promote patient-physician communication, two successive, nation-wide, multimedia campaigns oriented towards the public have therefore been organised in Belgium during the winters of 2000-2001 and 2001-2002.

Methods

Intended goals

- providing the public with a better understanding of the natural course of infections if minor and self-limiting such as common cold, acute bronchitis, or sore throat;
- explaining when antibiotics are needed, i.e. in case of serious bacterial infections;
- underlining the consequences of emergence of resistance to antibiotics;
- fostering discussion between patients and doctors and pharmacists on the need of appropriate antibiotic. No specific reduction of antibiotic sales was set.

Pre-campaign survey and organisation of the campaigns

- Focus groups to analyse the topic "Infection and Use of Antibiotics". (tape-recorded sessions) to draft a questionnaire;
- large scale national survey (by a professional organisation)with "face to face" structured interviews (1015 adults) with both open (free answer) and closed (yes-no) questions to
  - pinpointing expectations and misconceptions about antibiotics and infections,
  - fine-tuning campaign messages,
  - providing a base line for a post-campaign survey.

Messages of the campaigns and means ocummunication

Campaigns messages were centred on three core slogans
- "*Use Antibiotics Less Frequently But Better*",
- "*Save antibiotics, they may save your life*", and
- "*Talk to your Doctor, Talk to your Pharmacist*".
Communication was through TV and radio spots, folders, posters and WEB sites

Assessment of the impact campaigns

- Public: post-campaign survey 4 months after the end of the first campaign (1014 respondents) with identical selection criteria, sampling techniques and questions
- General practitioners: Telephone interviews (400 GP's representative of all regions of the country) carried out 3 to 4 months after each of the two campaigns
- Antibiotic sales: Monthly sales data of all antibiotics in the ATC (Anatomical Therapeutic Chemical) J01 (systemic) group collected from retail pharmacies and validated against the accountancy data of the National Institute of Sickness and Invalidity Insurance.
- Seasonal incidence of acute respiratory tract infections: Monthly indices of acute respiratory tract infections (ARI) and influenza-like illnesses (ILI) provided by the Scientific Institute of Public Health, Brussels.
- Impact on antibiotic sales: ARIMA transfer function model using the ILI time series. Data were analysed with SCA release VI.3 (Scientific Computer Associates, Chicago, Ill.).
- Cost-benefit analysis: Campaign costs vs savings to Social Security (estimated from the reduction in antibiotic in consumption).

Materials used and targets

Material	number	target	channel
Booklets	600,000	patients	GP's, pharmacists Social organisations
Folders	400,000		
Posters	40,000		
TV spots	481	general public	prime time 30 sec broadcasts press conference articles in newspapers free access and downloads
Radio spots	1048		
Direct communication to media			
Public web sites [a]			
Letter to practitioners [b]	6,000	MD's and pharmacists	direct mailing professional journal free access and downloads
Position paper [c]			
Professional web site [d]			

* Belgium is approx. 10 million inhabitants
[a] www.antibiotiques.org (French); www.red-antibiotica.org (Dutch); www.antibiotika-gezielt.org (German); a link to downloadable material in English is available from each of these sites.
[b] sent to all GP's, paediatricians, Pneumology and Ear-nose-throat specialists, and retail pharmacists
[c] published in an official professional periodical distributed freely to all registered MD's and Pharmacists, and stressing the medical significance of bacterial resistance to antibiotics;[21]
[d] www.health.fgov.be/antibiotics/

Impact on the public

Main observations resulting from the surveys of the public carried out before (pre-campaign) and after (post-campaign) the first campaign (2000-2001). All values are in percents

	pre-campaign n = 1015	post-campaign n=1014	
General perception of the campaign			
overall recollection (*I do remember the campaign*)		79 [a]	
main message remembered [b]			
"*We use antibiotics too much*"		38	
"*We need to take them only when needed*"		25	
"*Too much antibiotics weakens your defences*"		22	
"*Bacteria become resistant*"		12	
"*One should use antibiotics less frequently*"		11	
"*Doctors should prescribe less antibiotics*"		6	
"*One should use antibiotics very carefully*"		6	
Expectation of a script for antibiotics [c]			
in case of - acute bronchitis	74	63	*
- flu	49	30	*
- sore-throat	32	18	*
- common cold	16	11	*
- diarrhoea	15	8	*
- fever	28	25	
Changes in opinion [c]			
"*The effect of antibiotics is declining*"	54	65	*
"*Most common infections heal without antibiotic*"	38	45	*
"*Scientists will constantly develop new antibiotics*"	70	65	
Acceptance of a change in behaviour [c]			
"*I agree to use less antibiotics in concert with my GP*"	64	75	*
"* I would spontaneously request an antibiotic in case of an infection …*			
… for myself " Yes	16	14	
No	73	82	*
… for my child " Yes	14	12	
No	53	59	*
Fostering the dialogue of patients with health professionals about antibiotics			
"*I talked to my doctor*"		14 [d]	
"*I talked to my pharmacist*"		6 [e]	

[a] source of information (see note b): television, 79 %; newspapers and magazines, 17 %; radio, 14 %; GP, 6 %; family or friends, 3 %; pharmacist, 2 %;
[b] several answers possible, but only the main ones were noted
[c] answer had to be "*yes*", "*no*", or "*I do not know*" (only the "yes" answers are noted here, unless specified otherwise)
[d] 61 % on patient's initiative
[e] 64 % on patient's initiative
* p < 0.05 between the pre- and post-campaign (Chi-square, two tailed)

Impact on the GP's

Main observations resulting from the surveys carried out with the general practitioners (n=400) after each of the two campaigns (all values are in percents)

|	1st campaign	2d campaign	
Overall recollection ("*I do remember the campaign*")	100 [a]	73	*
main message remembered [b]			
"*antibiotics should be used less*"	39	81	*
"*doctors need to prescribe less antibiotics*"	36	34	
"*patients should ask antibiotics less frequently*"	11	15	
"*bacteria become resistant*"	12	8	
Overall appreciation [c]			
"*the campaign is useful*"	73	73	
"*the campaign material is clear*"	70	77	
"*the material is attractive enough*"	64	77	*
"*the campaign is useful for a better practice*"	73	73	
"*the campaign is useful for patients*"	64	77	*
"*there was enough involvement of the GP's*"	51	71	*
"*this is only intended at social security savings*"	32	29	
Use of the information provided by the campaign [d]			
"*the campaign material was presented to patients*"	66 [e]	72 [e]	
"*I have changed my prescriptions habits*"	33	38	
"*I have decreased my prescription of antibiotics*"	32	63	*
Desire to see the campaign repeated the next year [g]	70	75	

* p < 0.05 between the two campaigns (Chi-square, two tailed)
[a] awareness coming primarily from media (65 %), booklets made available to GP's (43 %), letter sent by the Ministers (38 %), posters on display (22 %), medical journals (8 %), patients (6 %).
[b] open question with possibility of several answers (the interviewer noted all answers and ranked them on pre-established categories; only the first 4 categories are shown [other categories had only a limited number of replies]).
[c] same as for b, but only the first 7 categories are shown (other categories had only a limited number of replies)
[d] as for b, but only the first 3 categories are shown (other categories had only a limited number of replies)
[e] the answer had to be "yes" or "no" (only the proportion of "yes" answers is shown); material used: brochures, 44 % and 57 %; posters, 35 % and 36 %; reasons for not using the materials (globally for the two campaigns): "*useless material*", 27 %; "*material not received*", 13 %; "*material creating unnecessary anxiousness in patients*", 12 %; "*just one of the too many materials GP's continuously receive*", 12 %; "*no time to spend on this matter*", 7 %.

Variations of AB sales according to ILI
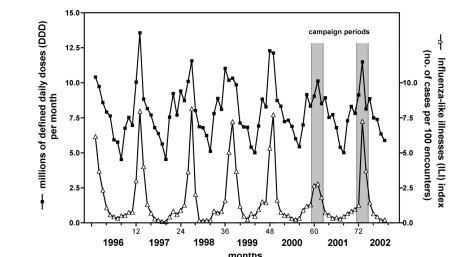
Seasonal variations of the monthly antibiotic sales in the community and of the monthly indices of Influenza-like-illnesses in Belgium from January 1996 through July 2002. The two campaigns took place at a moment of large antibiotic sales, but the index of influenza-like illnesses was considerably lower during the first campaign as compared to the second one.

Changes in AB sales due to the campaigns

2000-2001 campaign
2001-2002 campaign
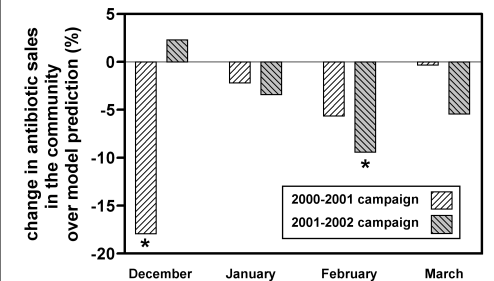
Monthly changes in antibiotic sales during each campaign (December through February) and the following month (March) controlling for influenza-like illnesses. The asterisks indicate the significant changes at p < 0.05.

Statistical analysis

	lag period to effect (months) [a]	sales variation due to the intervention (DDD)	statistical validation [b]		
				S.E.	t-stat.	p value
first campaign	0	-1,354,518		449,646	-3.01	0.0026
second campaign	2	-1,195,290		592,072	-2.02	0.0434

[a] time to obtain a significant change of sales from the start of each campaign; this lag period is zero with respect to changes in ILI index
[b] other estimated influences:
  ◆ sales variation due to ILI variation: 447.5 DDD/month (standard error: 38.9)
  ◆ residual seasonal autoregressive terms: lag period, 12 months; estimated coefficient: 0.83 (standard error: 0.06)
  ◆ constant: 7,459,075 DDD/month (standard error: 431,387)

Conclusions and Questions

- The campaigns had a high visibility for both the public and the GP's (73-100 %), were judged positively, and shifted opinion in favour of using antibiotics more sparingly
- Expectation for antibiotics significantly decreased for acute bronchitis, flu, sore-throat, common cold and diarrhoea.
- Antibiotic sales were significantly but transiently reduced during each campaign
- This is a first example of a sustained nation-wide, public-targeted intervention aimed at decreasing the demand of antibiotics which is also subjected to objective evaluation.

The following question need; however, to be answered:
- Will such campaigns have more prolonged effects if repeated and how should they be combined with other actions (at the level of the professionals, regulatory authorities and social security…) ?
- Do they reduce resistance rates for important pathogens, and, thereby, improve patient care ?