



Special Eurobarometer 407

ANTIMICROBIAL RESISTANCE

SUMMARY

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This survey has been requested by the European Commission, Directorate-General for Health and Consumers (DG SANCO) and co-ordinated by Directorate-General for Communication (DG COMM "Research and Speechwriting" Unit)

http://ec.europa.eu/public_opinion/index_en.htm

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Antimicrobial resistance

Conducted by TNS Opinion & Social at the request of
the European Commission, Directorate-General for Health and
Consumers (DG SANCO)

Survey co-ordinated by the European Commission,
Directorate-General for Communication
(DG COMM "Research and Speechwriting" Unit)

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INTRODUCTION

Antimicrobial agents are synthetic or natural substances used to destroy or prevent the growth of bacteria, viruses and other micro-organisms (antibiotics are microbial agents which only react against bacteria). Since penicillin was introduced in the 1940s, antimicrobial medicines have been used for the medical treatment of humans and animals and as disinfectants and preservatives. They have played an essential role in treating infectious diseases and reducing the risk of post-surgical complications.

However, there is increasing concern that antimicrobial agents are declining in effectiveness, with the emergence and spread of microbes, which are resistant to the most affordable and effective drugs. While the emergence of resistant microorganisms is a natural biological phenomenon, it is exacerbated by the inappropriate use of antibiotics in human and veterinary medicine and their unnecessary use in non-therapeutic situations, and also by environmental pollution involving antibiotics. The rise of resistant microbes is a threat to global public health. It is responsible for the avoidable deaths of humans and animals, increased healthcare and veterinary costs, and productivity losses.

In response, the European Union has put in place a Community strategy against antimicrobial resistance. This strategy is intended to prevent the spread of microbial infections, ensure the appropriate use of antimicrobials, and undertake research into effective ways to combat resistance.¹ Given the widespread persistence of misconceptions about the nature and effectiveness of antimicrobials, communication, education and training forms an integral part of this strategy. Since 2008, the European Centre for Disease Prevention and Control (ECDC) has coordinated the "European Antibiotic Awareness Day" (EAAD), a European health initiative that provides a platform for and supports national campaigns to raise awareness on prudent use of antibiotics.²

As part of this strategy, the European Commission seeks to monitor levels of public use of and knowledge about antibiotics. The Directorate-General for Health and Consumers commissioned an EU wide survey in late 2009, published in April 2010 as Special Eurobarometer 338³. The current tracker survey uses the same questions as in 2009, and the report addresses the same key objectives:

- to identify the use of antibiotics among the EU public: the frequency with which they take antibiotics, how they obtained them, and for what reason they took them;
- to measure the levels of public knowledge about the nature and effectiveness of antibiotics and the risks associated with their unnecessary use;
- to determine the impact of antibiotic awareness campaigns on the knowledge and actions of Europeans.

¹ Communication from the Commission to the European Parliament and the Council, Action plan against the rising threats from Antimicrobial Resistance, COM (2011) 748, November 15, 2011 (http://ec.europa.eu/dgs/health_consumer/docs/communication_amr_2011_748_en.pdf), p.4.

² European Centre for Disease Prevention and Control, "European Antibiotic Awareness Day", (<http://ecdc.europa.eu/en/eaad/Pages/Home.aspx>).

³ http://ec.europa.eu/health/antimicrobial_resistance/eurobarometers/index_en.htm

The report covers today's 28 EU Member States. Note that as the fieldwork took place before the official date of Croatia's accession to the European Union on 1 July 2013, results are presented for the EU27 Member States and Croatia.

This survey was carried out by TNS Opinion & Social network in the 27 Member States of the European Union and in Croatia between the 24th of May and 9th of June 2013⁴. 27.680 respondents from different social and demographic groups were interviewed face-to-face at home in their mother tongue on behalf of the European Commission, Directorate-General for Health and Consumers (DG SANCO). The methodology used is that of Eurobarometer surveys as carried out by the Directorate-General for Communication ("Research and Speechwriting" Unit)⁵. A technical note on the manner in which interviews were conducted by the Institutes within the TNS Opinion & Social network is appended as an annex to this report. Also included are the interview methods and confidence intervals⁶.

Note: In this report, countries are referred to by their official abbreviation. The abbreviations used in this report correspond to:

ABBREVIATIONS			
BE	Belgium	LV	Latvia
CZ	Czech Republic	LU	Luxembourg
BG	Bulgaria	HU	Hungary
DK	Denmark	MT	Malta
DE	Germany	NL	The Netherlands
EE	Estonia	AT	Austria
EL	Greece	PL	Poland
ES	Spain	PT	Portugal
FR	France	RO	Romania
IE	Ireland	SI	Slovenia
IT	Italy	SK	Slovakia
CY	Republic of Cyprus*	FI	Finland
LT	Lithuania	SE	Sweden
		UK	The United Kingdom
HR	Croatia	EU27	European Union – 27 Member States
		EU15	BE, IT, FR, DE, LU, NL, DK, UK, IE, PT, ES, EL, AT, SE, FI**
		NMS12	BG, CZ, EE, CY, LT, LV, MT, HU, PL, RO, SI, SK***
		EURO	BE, FR, IT, LU, DE, AT, ES, PT, IE, NL, FI, EL, EE, SI, CY, MT, SK
		AREA	

* Cyprus as a whole is one of the 27 European Union Member States. However, the 'acquis communautaire' has been suspended in the part of the country which is not controlled by the government of the Republic of Cyprus. For practical reasons, only the interviews carried out in the part of the country controlled by the government of the Republic of Cyprus are included in the 'CY' category and in the EU27 average.

** EU15 refers to the 15 countries forming the European Union before the enlargements of 2004 and 2007

*** The NMS12 are the 12 'new Member States' which joined the European Union during the 2004 and 2007 enlargements

⁴ Croatia was not a member state of the European Union when fieldwork was carried out; therefore results are presented as EU27 plus Croatia.

⁵ http://ec.europa.eu/public_opinion/index_en.htm.

⁶ The tables of results are included in the annex. It should be noted that the total of the percentages in the tables of this report may exceed 100% when the respondent has the possibility of giving several answers to the question.

* * * * *

*We wish to thank all the people interviewed throughout Europe
who took the time to participate in this survey.*

Without their active participation, this survey would not have been possible.

MAIN FINDINGS

- Just over one third (35%) of respondents say that they have taken antibiotics in oral form at any time in the last 12 months, a decline of 5 percentage points since the last survey in 2009.
 - Differences between countries on this question are quite significant, but less pronounced and regionally differentiated than in 2009.
 - Women are significantly more likely to take antibiotics than men, and those with low levels of education and worse economic circumstances are more likely to take them than their counterparts.
 - The vast majority of Europeans obtain antibiotics from their health care provider, and flu and bronchitis are the most commonly cited reasons for taking these medicines.
 - Those with better levels of objective knowledge about antibiotics are more likely to take them for illnesses and symptoms that antibiotics are able to treat.
- Only over a fifth (22%) of Europeans give the correct answer to four questions about antibiotics, and the European average of correct answers is 2.4 out of 4. These figures are very similar to those recorded in 2009.
 - Most Europeans (84%) are aware that unnecessary use of antibiotics makes them become ineffective, and two thirds (66%) know that frequent use of antibiotics can lead to side-effects.
 - However, nearly half (49%) of Europeans do not know that antibiotics are ineffective against viruses, and over two fifths (41%) do not know that they are ineffective against colds and flu.
 - Despite the fact that antibiotics cannot treat flu, nearly a fifth (18%) of respondents say it was the reason they last took antibiotics.
 - Those with low levels of education are particularly likely to have misconceptions about the nature and efficacy of antibiotics.
- Only a third (33%) of respondents remember receiving information about not taking antibiotics unnecessarily in the last 12 months: in 2009, just over a third (37%) did.
 - The proportion of respondents who received information varies considerably by country: in France, slightly under two thirds (65%) of respondents recall receiving information about the unnecessary use of antibiotics, but in Portugal only just over one in ten (12%) do.

- Almost a fifth (19%) of all respondents say that they received this information from media or communication campaigns, and the most common source was television advertisements, cited by one in ten (10%) of those polled. Over one in ten (11%) respondents received information from professionals; in the majority of cases, from a doctor (9%).
 - Only just over a third (36%) of those respondents who received information about the misuse of antibiotics say that the information changed their views on antibiotics, a proportion which remains unchanged since 2009.
 - Most (74%) of the respondents whose views were changed by information on antibiotics say that, as a result, they will always consult a doctor in situations when they think they need an antibiotic.
 - Among those respondents who received information, just over four fifths (82%) of those with low levels of objective knowledge about antibiotics say that, in future, they will consult a doctor about the use of antibiotics, compared with 69% of those who have good knowledge.
 - Four fifths (80%) of those who received advice on antibiotics from a professional say that they will consult a doctor in future, compared with only just over two thirds (69%) of those who received information via media campaigns.
 - Almost all (94%) respondents would choose to see a medical professional in order to get trustworthy information about antibiotics, and in particular they would opt to see a doctor (88%).
 - Most (79%) respondents agree with the argument that everybody has a role to play to ensure that antibiotics remain effective. However, since 2009 the proportion of respondents who 'totally agree' has declined from just over two fifths (42%) to just over one third (36%).
- Two key conclusions emerge from these findings:
 - Media campaigns are efficient at disseminating information, but they should be targeted more effectively at those who currently lack knowledge.
 - Information can only take us so far: as trusted and influential authorities, doctors and pharmacies have a key role to play in changing views and behaviour.

I. USE OF ANTIBIOTICS

The first set of questions deals with respondents' use of antibiotics, asking about the frequency with which they took them, how they obtained them, and the reason for which they took them.

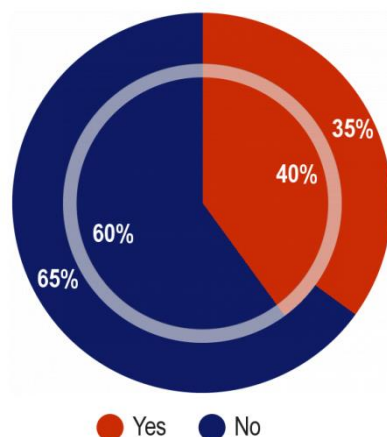
1. ANTIBIOTICS USE DURING THE LAST YEAR

-More than a third of Europeans have taken antibiotics-

Firstly, respondents were asked whether they have taken antibiotics in oral form at any time in the last 12 months.⁷

Over one third (35%) of respondents said that they have taken antibiotics during the last year. This figure shows a significant decline in comparison with the results of the 2009 Eurobarometer survey, when two fifths (40%) said they had taken antibiotics.

QE1a. Have you taken any antibiotics orally such as tablets, powder or syrup in the last 12 months?



Inner pie : 2009 (EB72.5 11-12)

Outer pie : 2013 (EB79.4 05-06)

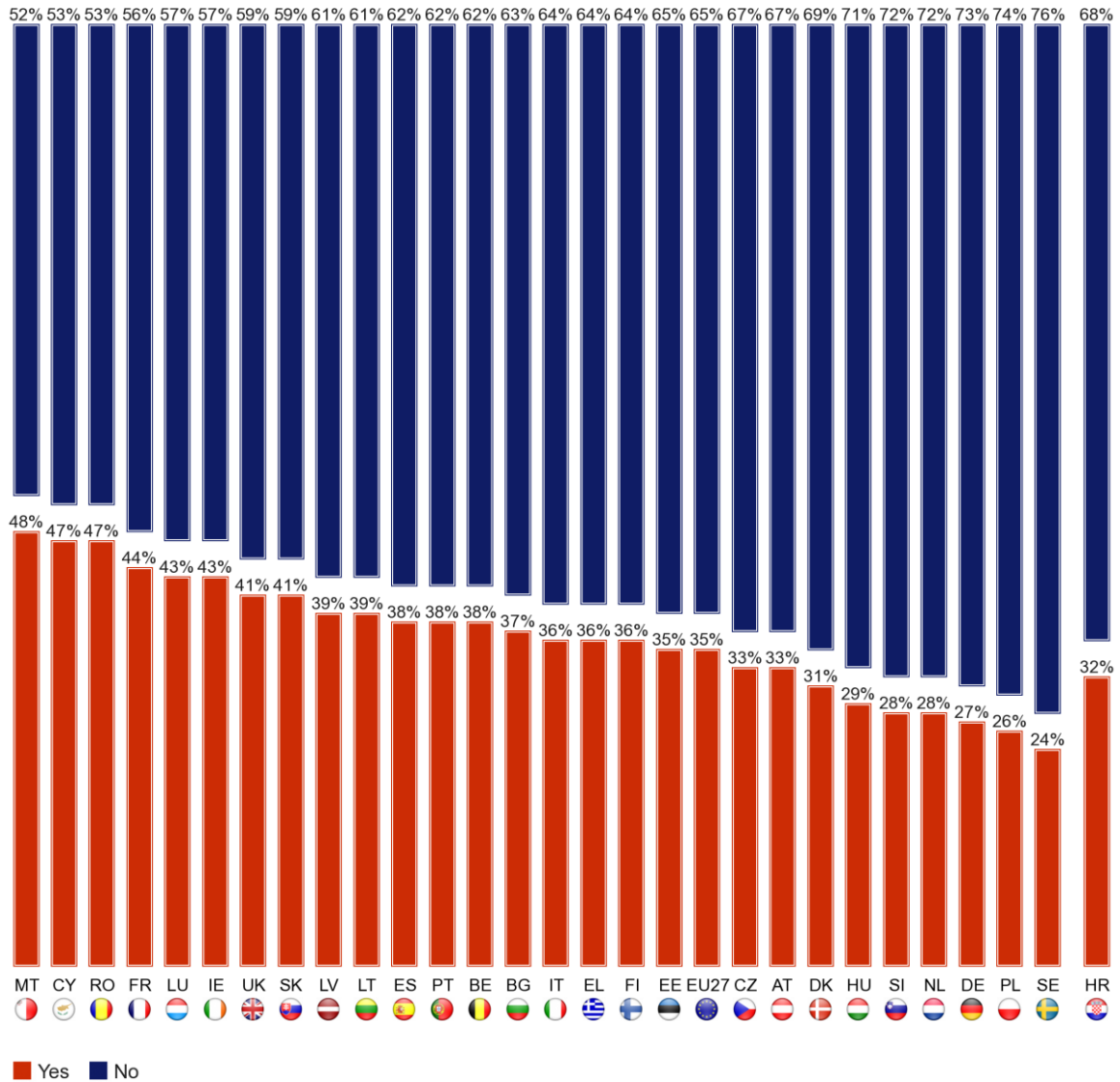
EU27

Base: all respondents (N= 26 680)

⁷ QE1a. Have you taken any antibiotics orally such as tablets, powder or syrup in the last twelve months? ONE ANSWER ONLY. "Yes", "No".

There is a significant difference between Member States, although variation is less marked than in 2009. In all countries, fewer than half of the respondents say that they have taken antibiotics. However, while nearly half of those polled in Malta (48%), Cyprus (47%) and Romania (47%) answer positively, only around a quarter of those polled in Sweden (24%) and Poland (26%) have taken antibiotics in the course of the last year.

QE1a. Have you taken any antibiotics orally such as tablets, powder or syrup in the last 12 months?



Base: all respondents (N= 26 680)

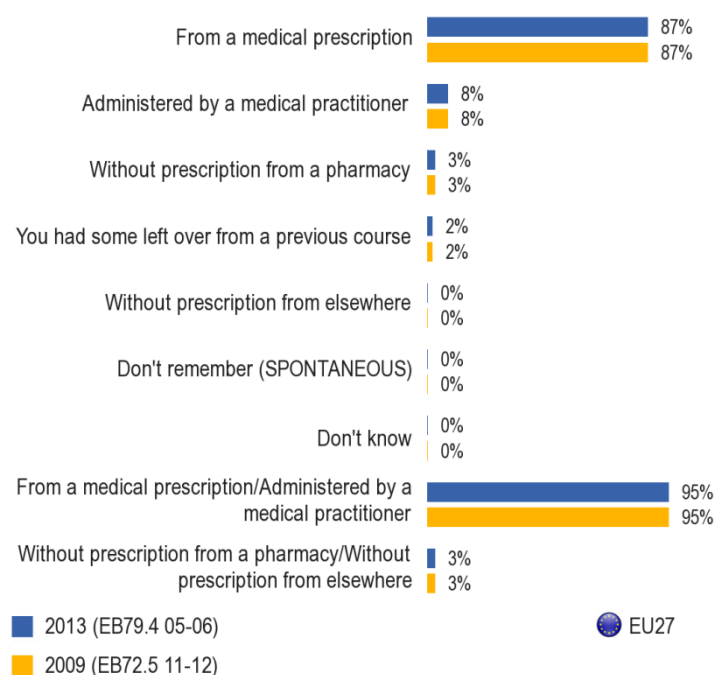
2. WAYS OF OBTAINING ANTIBIOTICS

-The vast majority of Europeans obtain antibiotics from their health care provider-

To establish the most common sources of antibiotics used by European citizens, the survey asked how respondents obtained the last course of antibiotics they used.⁸ It is important to identify how Europeans obtain antibiotics, as the Community strategy on the prudent use of antimicrobials emphasises the need for Member States to ensure that systemic antibacterial agents, such as antibiotics, be limited to prescription-only use.⁹

Almost all (95%) respondents say that they obtained their last course of antibiotics from their health care provider. By far the most common source of antibiotics was a medical prescription (87%), but a further 8% received antibiotics directly from a medical practitioner. Notably, there is a persistent minority who still consume antibiotics without a prescription (3%) or use those left over from a previous course (2%).

QE1b. How did you obtain the last course of antibiotics that you used?



Base: respondents who have taken antibiotics (N= 9 438)

⁸ QE1b How did you obtain the last course of antibiotics that you used? ONE ANSWER ONLY. "From a medical prescription", "Administered by a medical practitioner", "You had some left over from a previous course", "Without prescription from a pharmacy", "Without prescription from elsewhere", "Don't remember (SPONTANEOUS)", "Don't know".

The results for the answers "From a medical prescription" and "Administered by a medical practitioner" are regrouped into the answer "From a medical prescription/Administered by a medical practitioner"; the results for the answers "Without prescription from a pharmacy" and "Without prescription from elsewhere" are regrouped into the answer "Without prescription from a pharmacy/ Without prescription from elsewhere"; the results for the answers "Don't remember (SPONTANEOUS)" and "Don't know" are regrouped into the answer "Don't remember (SPONTANEOUS)/Don't know".

⁹ Council Recommendation of 15 November 2001 on the prudent use of antimicrobial agents in human medicine, (2002/77/EC), <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:034:0013:0016:EN:PDF>.

3. REASONS FOR TAKING ANTIBIOTICS

-Flu and bronchitis are the most common reasons for taking antibiotics-

Respondents who said they had taken antibiotics in the last year were asked for what reasons they had taken them. The interviewer presented respondents with a card on which a variety of illnesses and symptoms were printed, some of which antibiotics treat effectively (e.g. pneumonia) and some of which antibiotics are ineffective at treating (e.g. cold, flu).¹⁰ This question allows us to determine the extent to which Europeans use antibiotics appropriately.

The most common responses among the listed options are flu (18%, down from 20% in 2009) and bronchitis (18%, up from 17% in 2009). Compared with 2009, fewer respondents say they take antibiotics to treat a sore throat (11%, compared with 15% in 2009). Other differences over time are of negligible magnitude.

The most common answer is non-specific, with slightly over a fifth (21%) of those polled saying that they took antibiotics for reasons other than the list of options given to them.

One in ten (10%) of those taking antibiotics do so to treat both illnesses and symptoms, while more than a quarter (26%) of respondents take them to treat symptoms alone¹¹. These proportions are very similar to those observed in 2009.

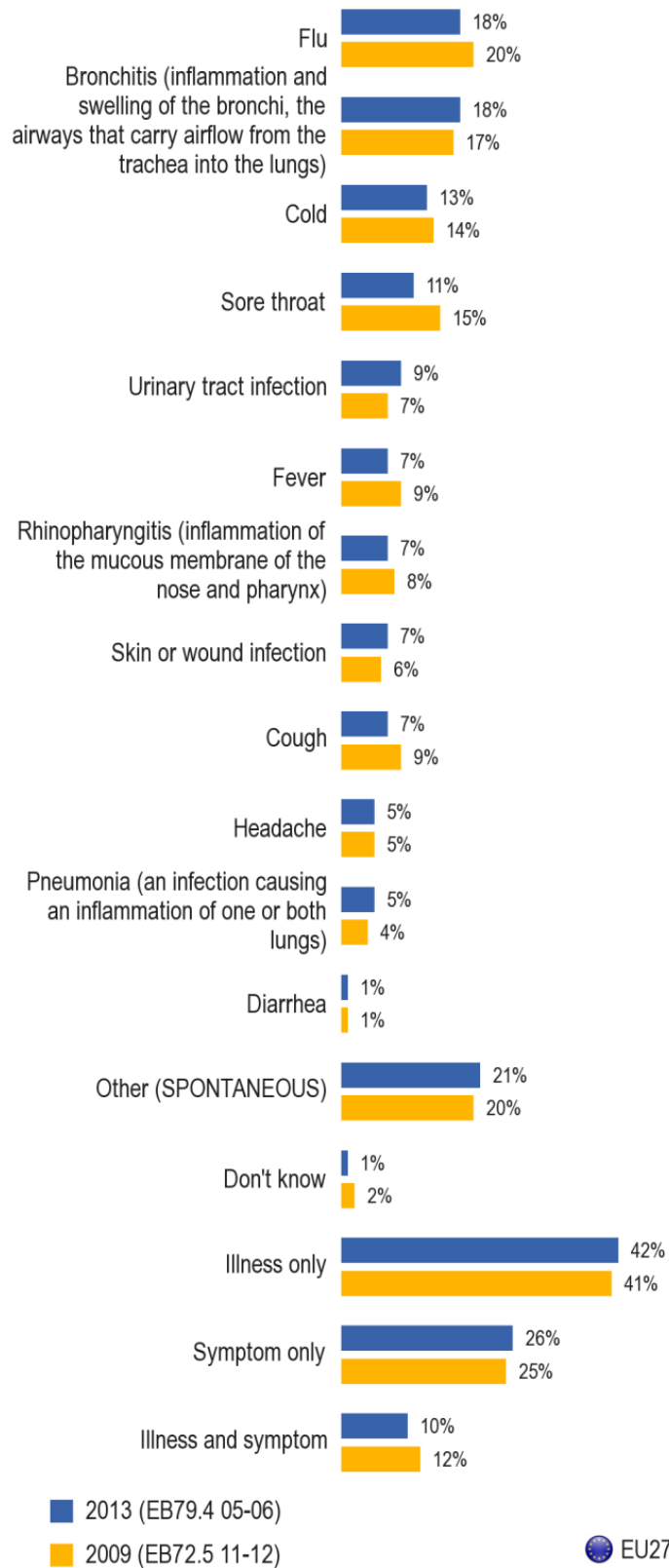
¹⁰ QE1c What was the reason for last taking antibiotics that you used? MULTIPLE ANSWERS POSSIBLE. "Pneumonia (an infection causing an inflammation of one or both lungs)", "Bronchitis (inflammation and swelling of the bronchi, the airways that carry airflow from the trachea into the lungs)", "Rhinopharyngitis (inflammation of the mucous membrane of the nose and pharynx)", "Flu", "Cold", "Sore throat", "Cough", "Fever", "Headache", "Diarrhea", "Urinary tract infection", "Skin or wound infection", "Other (SPONTANEOUS)", "Don't know".

¹¹ The results for the answers "Pneumonia (an infection causing an inflammation of one or both lungs)", "Bronchitis (inflammation and swelling of the bronchi, the airways that carry airflow from the trachea into the lungs)", "Rhinopharyngitis (inflammation of the mucous membrane of the nose and pharynx)", "Flu" and "Cold" are regrouped into the answer "Illness only".

The results for the answers "Sore throat", "Cough", "Fever", "Headache", "Diarrhea", "Urinary tract infection" and "Skin or wound infection" are regrouped into the answer "Symptom only".

Any combination of answers containing at least one answer used in the regrouping "Illness only" and at least one answer used in the regrouping "Symptom only" is regrouped into the answer "Illness and symptom".

QE1c. What was the reason for last taking antibiotics that you used?



Base: respondents who have taken antibiotics (N= 9 438)
 (MULTIPLE ANSWERS POSSIBLE)

II. KNOWLEDGE ABOUT ANTIBIOTICS

The second set of questions concern objective knowledge of antibiotics. Respondents were asked if each of four statements about antibiotics was 'true' or 'false'. The statements are as follows:

- Antibiotics kill viruses. (FALSE)
- Antibiotics are effective against colds and flu. (FALSE)
- Unnecessary use of antibiotics makes them become ineffective. (TRUE)
- Taking antibiotics often has side-effects, such as diarrhea. (TRUE)

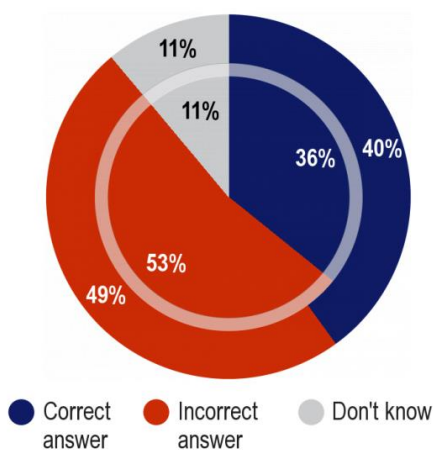
1. DO ANTIBIOTICS KILL VIRUSES?

-Only four out of ten Europeans are aware that antibiotics are ineffective against viruses-

Respondents were asked if it is true or false that antibiotics kill viruses.¹² Four out of ten (40%) of those polled correctly replied that antibiotics do not kill viruses. This is an improvement on 2009, when 36% of respondents held this opinion. The proportion of European citizens who believe antibiotics kill viruses (49%) slightly decreased since 2009. More than one in ten (11%) Europeans could not answer the question, a proportion unchanged since 2009.

QE2a.1. For each of the following statements, please tell me whether you think it is true or false.

Antibiotics kill viruses



Inner pie : 2009 (EB72.5 11-12)

Outer pie : 2013 (EB79.4 05-06)

EU27

Correct answer = False

Base: all respondents (N= 26 680)

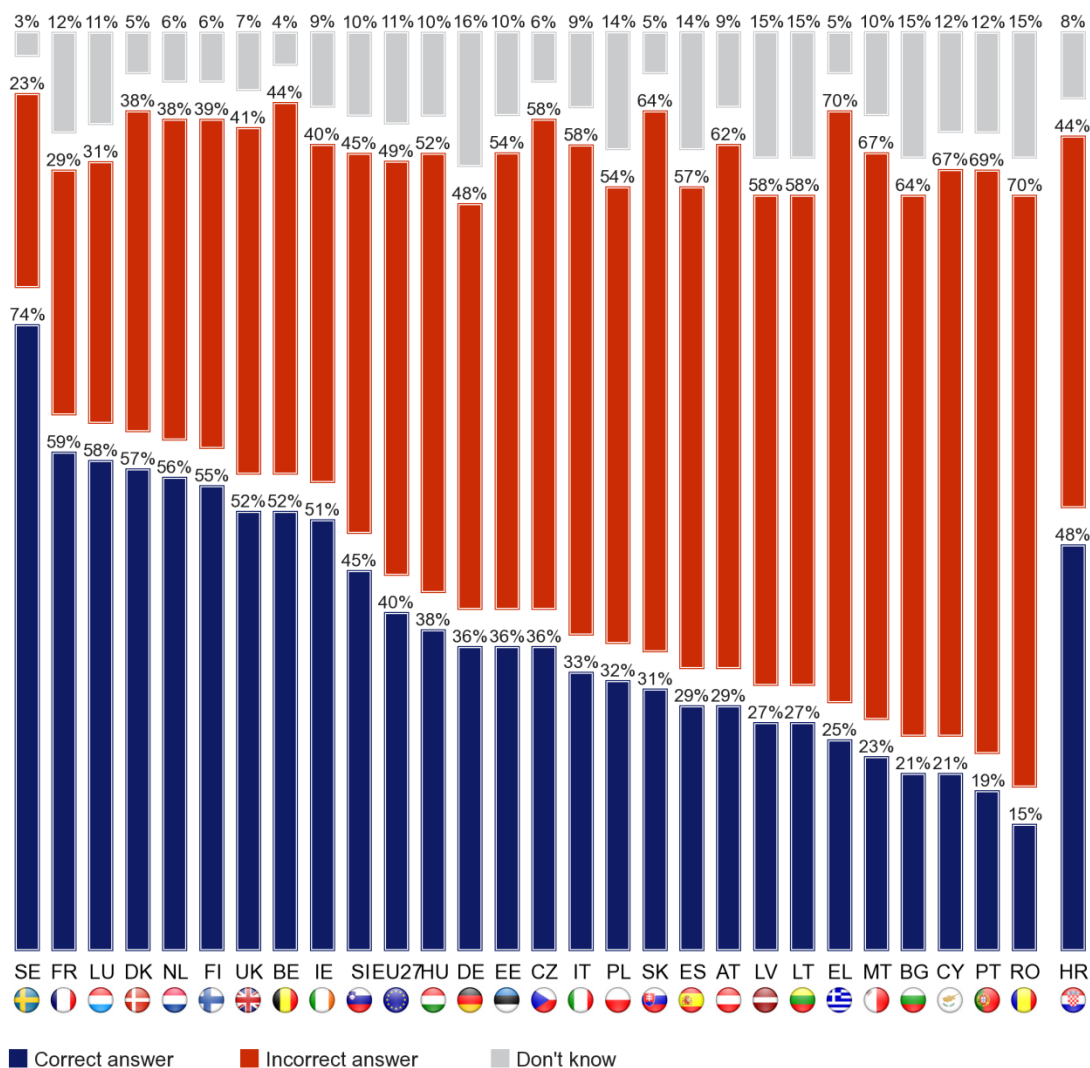
¹² QE2a.1 For each of the following statements, please tell me whether you think it is true or false. Antibiotics kill viruses. ONE ANSWER ONLY. "True", "False", "Don't know".

There are significant differences on this question at the country level. In nine countries, a majority of respondents correctly answered that antibiotics do not kill viruses. All of these countries are in Northern or Western Europe. In Sweden, three quarters (74%) of respondents gave the correct reply. In the other eight countries, where a majority of respondents give a correct answer, the proportion ranges between 51% and 59%. More than one in ten respondents in 11 countries answered spontaneously that they do not know the answer, the highest proportion being in Germany (16%).

More than one in ten respondents in 11 countries answered spontaneously that they do not know the answer, the highest proportion being in Germany (16%).

QE2a.1. For each of the following statements, please tell me whether you think it is true or false.

Antibiotics kill viruses



Correct answer = False
 Base: all respondents (N= 26 680)

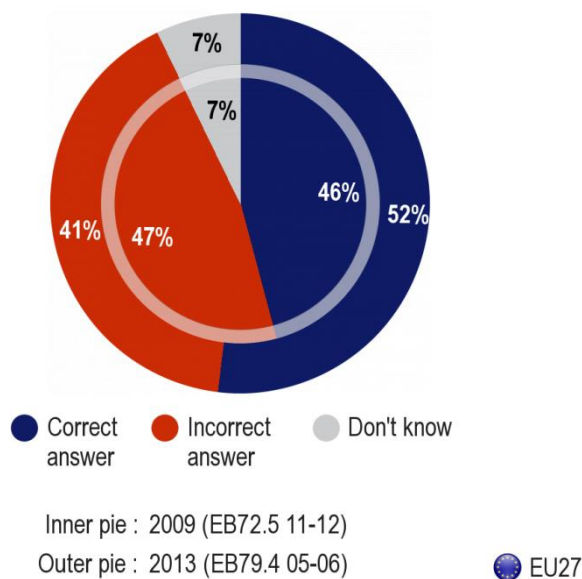
2. ARE ANTIBIOTICS EFFECTIVE AGAINST COLD AND FLU?

-A slim majority of Europeans are aware that antibiotics are ineffective against cold and flu-

Respondents were asked if it was true or false that antibiotics are effective against cold and flu.¹³ Just over half (52%) of respondents gave the correct answer that antibiotics are not effective in these cases, an increase of 6 percentage points since 2009. Again, the proportion of respondents who could not give an answer remains stable, at 7%.

QE2a.2. For each of the following statements, please tell me whether you think it is true or false.

Antibiotics are effective against cold and flu



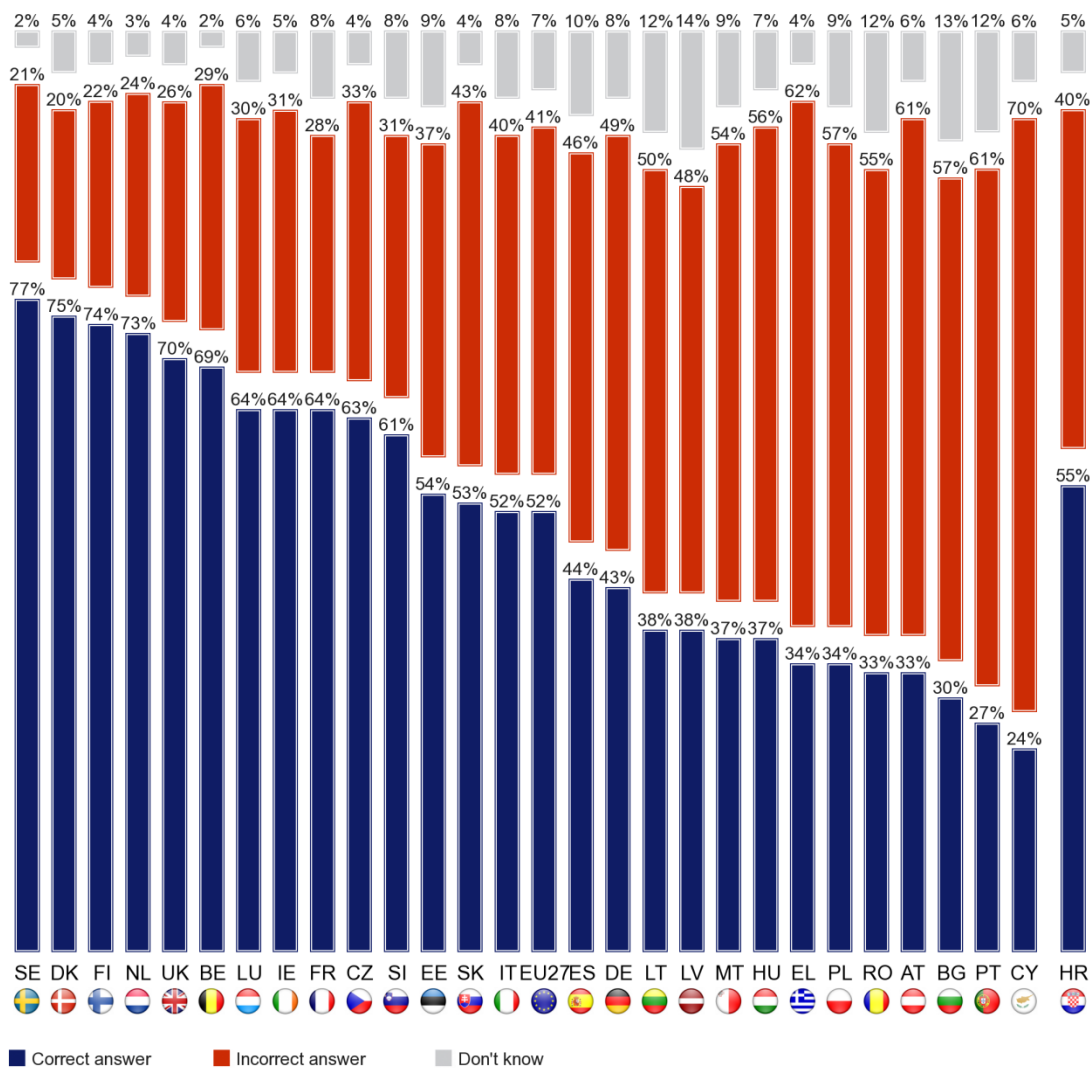
Correct answer = False
Base: all respondents (N= 26 680)

¹³ QE2a.2 For each of the following statements, please tell me whether you think it is true or false. Antibiotics are effective against cold and flu. ONE ANSWER ONLY. "True", "False", "Don't know".

The country-level distribution shows some similarities to that for the previous question, although it is more symmetrical. In 14 Member States, the proportion of respondents giving the correct answer to this question represents the majority. As with the previous question, levels of awareness are highest in northern European states.

QE2a.2. For each of the following statements, please tell me whether you think it is true or false.

Antibiotics are effective against cold and flu



Correct answer = False
 Base: all respondents (N= 26 680)

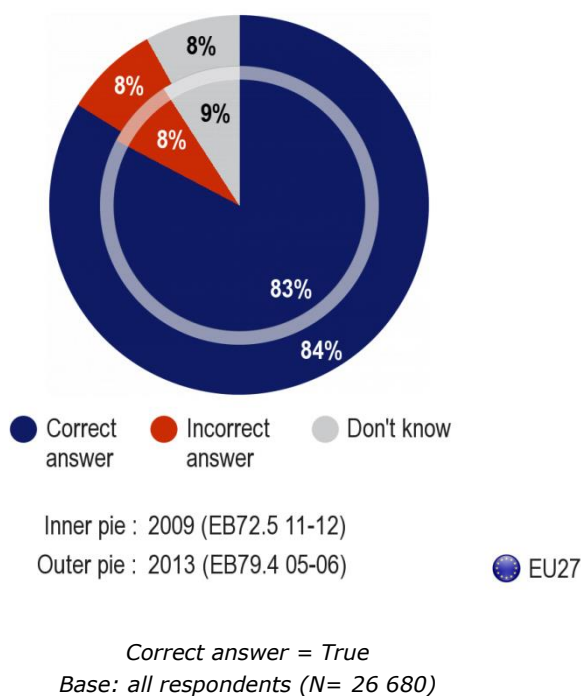
3. DOES UNNECESSARY USE OF ANTIBIOTICS MAKE THEM BECOME INEFFECTIVE?

-Most Europeans are aware that unnecessary use of antibiotics makes them become ineffective-

Respondents were asked whether it was true or false that the unnecessary use of antibiotics makes them become ineffective.¹⁴ A large majority (84%) of those polled gave the correct answer that the overuse of antibiotics reduces their effectiveness. Just under one in ten gave the wrong answer (8%). The distribution of answers is almost exactly the same as in 2009.

QE2a.3. For each of the following statements, please tell me whether you think it is true or false.

Unnecessary use of antibiotics make them become ineffective

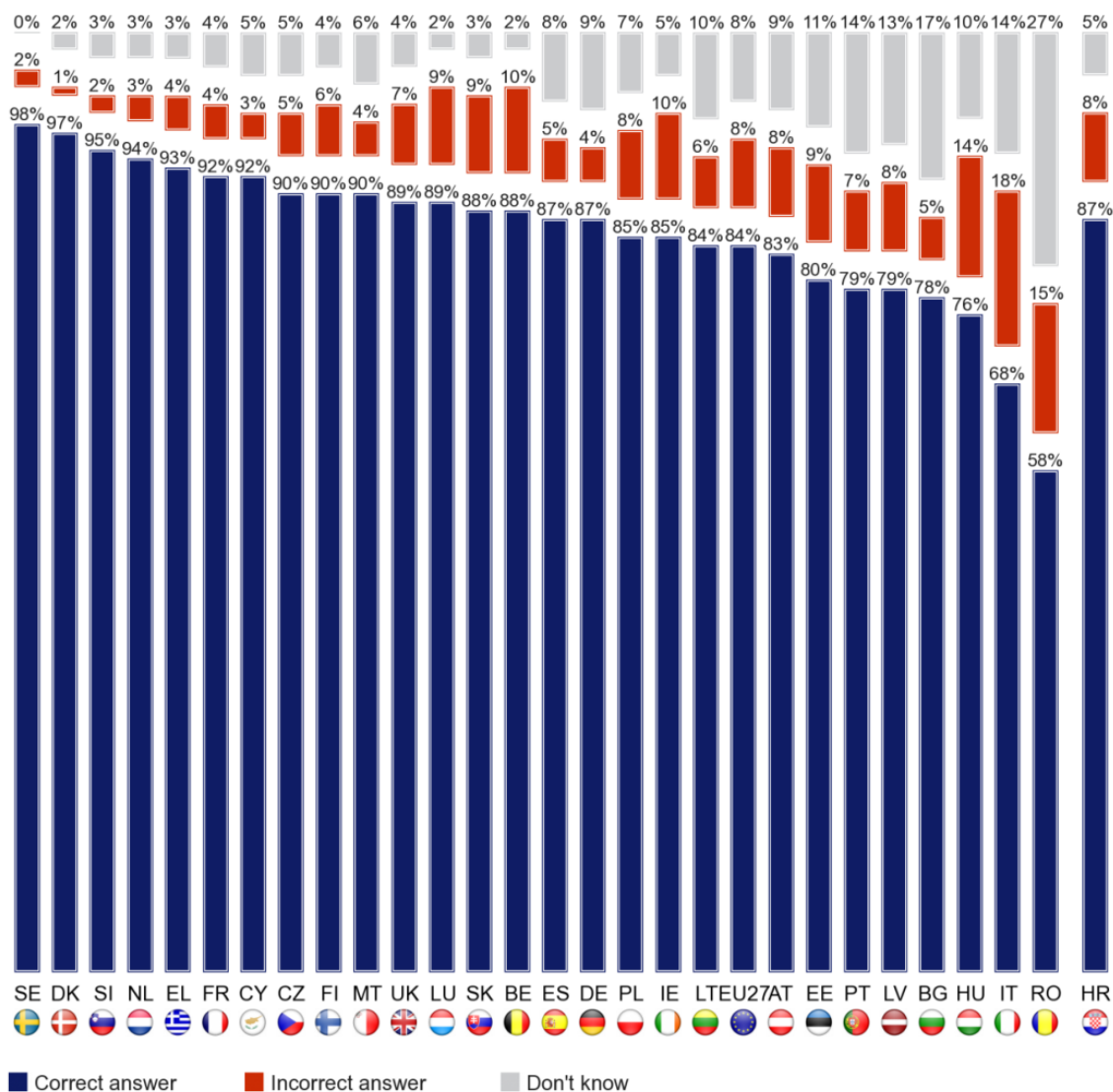


¹⁴ QE2a.3 For each of the following statements, please tell me whether you think it is true or false. Unnecessary use of antibiotics make them become ineffective. ONE ANSWER ONLY. "True", "False", "Don't know".

In all but two countries, over three quarters of respondents agree that unnecessary use of antibiotics makes them become ineffective. The exceptions are Italy, where more than two thirds (68%) agree, and Romania, where less than three fifths (58%) do. In the latter country, over a quarter (27%) of respondents cannot give an answer to this question, compared with 8% on average. The proportion of respondents unable to answer is also much higher than average in Bulgaria (17%).

QE2a.3. For each of the following statements, please tell me whether you think it is true or false.

Unnecessary use of antibiotics make them become ineffective



Correct answer = True
 Base: all respondents (N= 26 680)

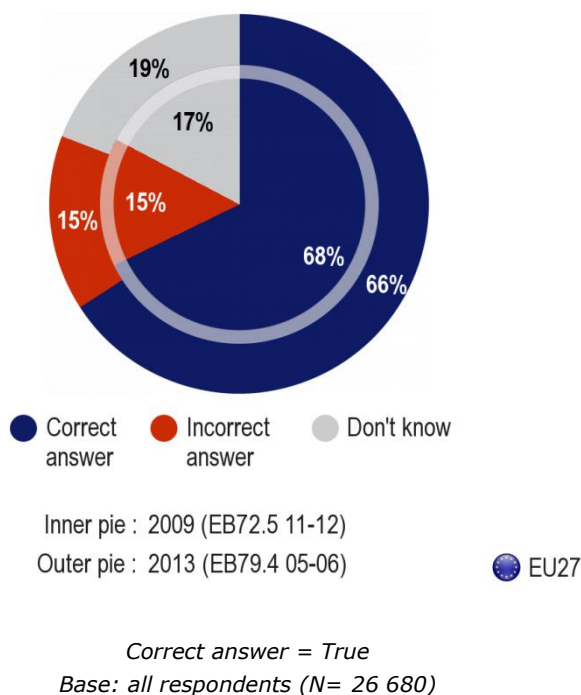
4. DOES TAKING ANTIBIOTICS OFTEN RESULT IN SIDE-EFFECTS SUCH AS DIARRHEA?

-Two thirds of Europeans know that frequent use of antibiotics can lead to side-effects-

Respondents were asked whether it is true or false that taking antibiotics often has side-effects such as diarrhea.¹⁵ Two thirds (66%) of respondents give the correct answer that antibiotics can produce side-effects. There is more uncertainty over this issue than the preceding ones: less than a fifth (19%) of respondents are unable to give an answer to this question. A slightly smaller proportion (15%) gives an incorrect answer. As in the previous case, little change has occurred since 2009.

QE2a.4. For each of the following statements, please tell me whether you think it is true or false.

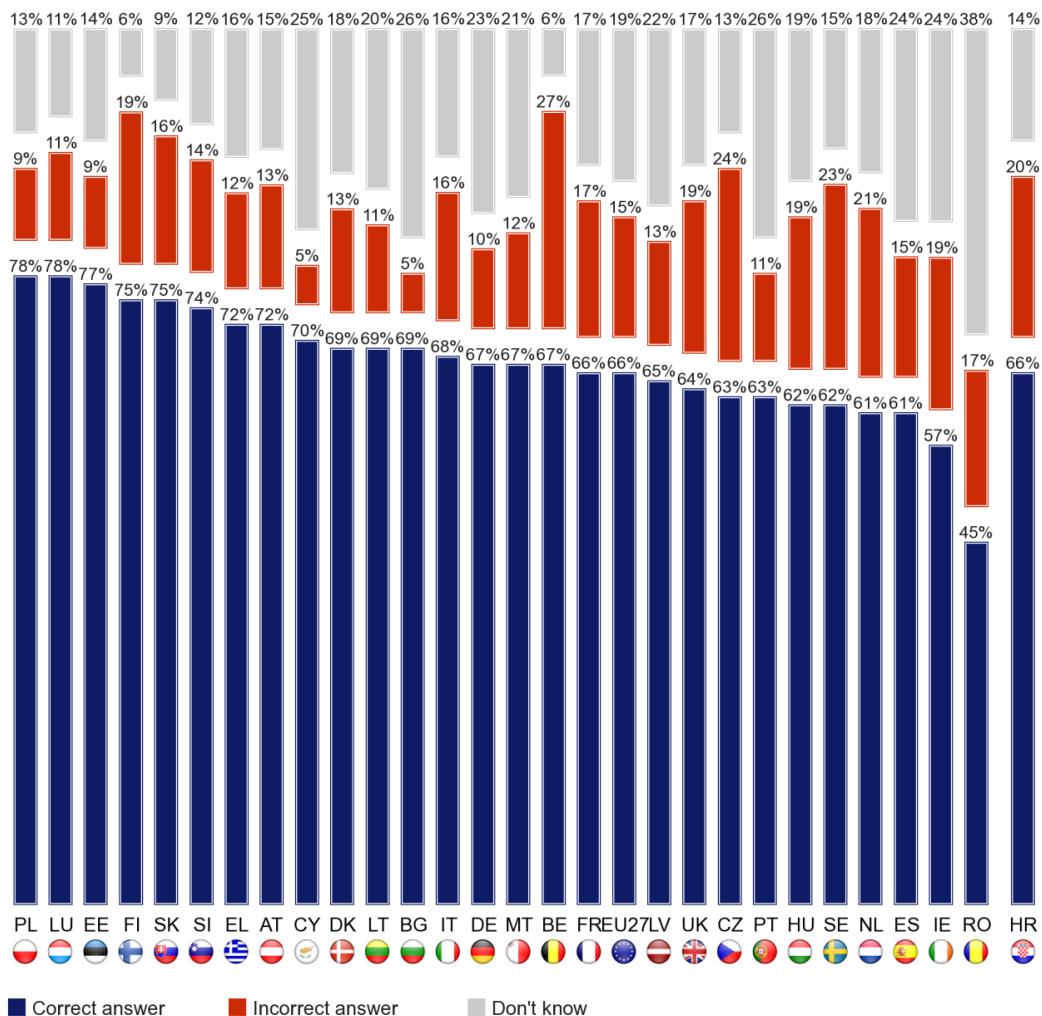
Taking antibiotics often has side-effects such as diarrhea



¹⁵ QE2a.4 For each of the following statements, please tell me whether you think it is true or false. Taking antibiotics often has side-effects such as diarrhea. ONE ANSWER ONLY. "True", "False", "Don't know".

In all but one Member State, more than half of respondents are correct. Poland and Luxembourg (both 78%) have the highest proportion of correct answers, closely followed by Estonia (77%), Finland and Slovakia (both 75%). As in the previous question, Romania stands out for low levels of knowledge, with fewer than half of those polled (45%) giving the correct answer.

QE2a.4. For each of the following statements, please tell me whether you think it is true or false.
Taking antibiotics often has side-effects such as diarrhea



Correct answer = True
Base: all respondents (N= 26 680)

III. ANTIBIOTIC AWARENESS CAMPAIGNS

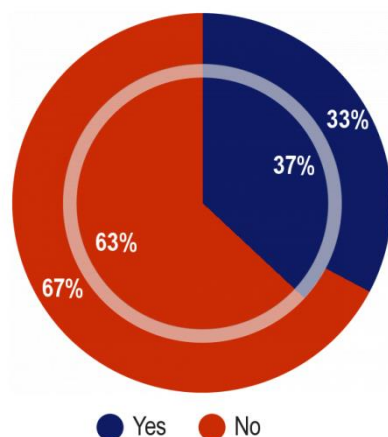
The third set of questions concerns the impact of antibiotic awareness campaigns. The answers to these questions enable us to analyse the reach of the campaigns, the most effective means of communication, and the extent to which these campaigns have had an impact.

1. TAKING INFORMATION ON BOARD

-Antibiotic awareness campaigns only reach a third of Europeans-

Respondents were asked if they remembered receiving any information about the unnecessary use of antibiotics in the last 12 months.¹⁶ Only a third (33%) of respondents say that they received such information. This is slightly lower than the figure recorded in 2009, when just over a third (37%) of those polled answered positively.

QE3a. In the last 12 months, do you remember getting any information about not taking any antibiotics unnecessarily, for example, messages about not taking antibiotics in case of cold or flu?



Inner pie : 2009 (EB72.5 11-12)

Outer pie : 2013 (EB79.4 05-06)

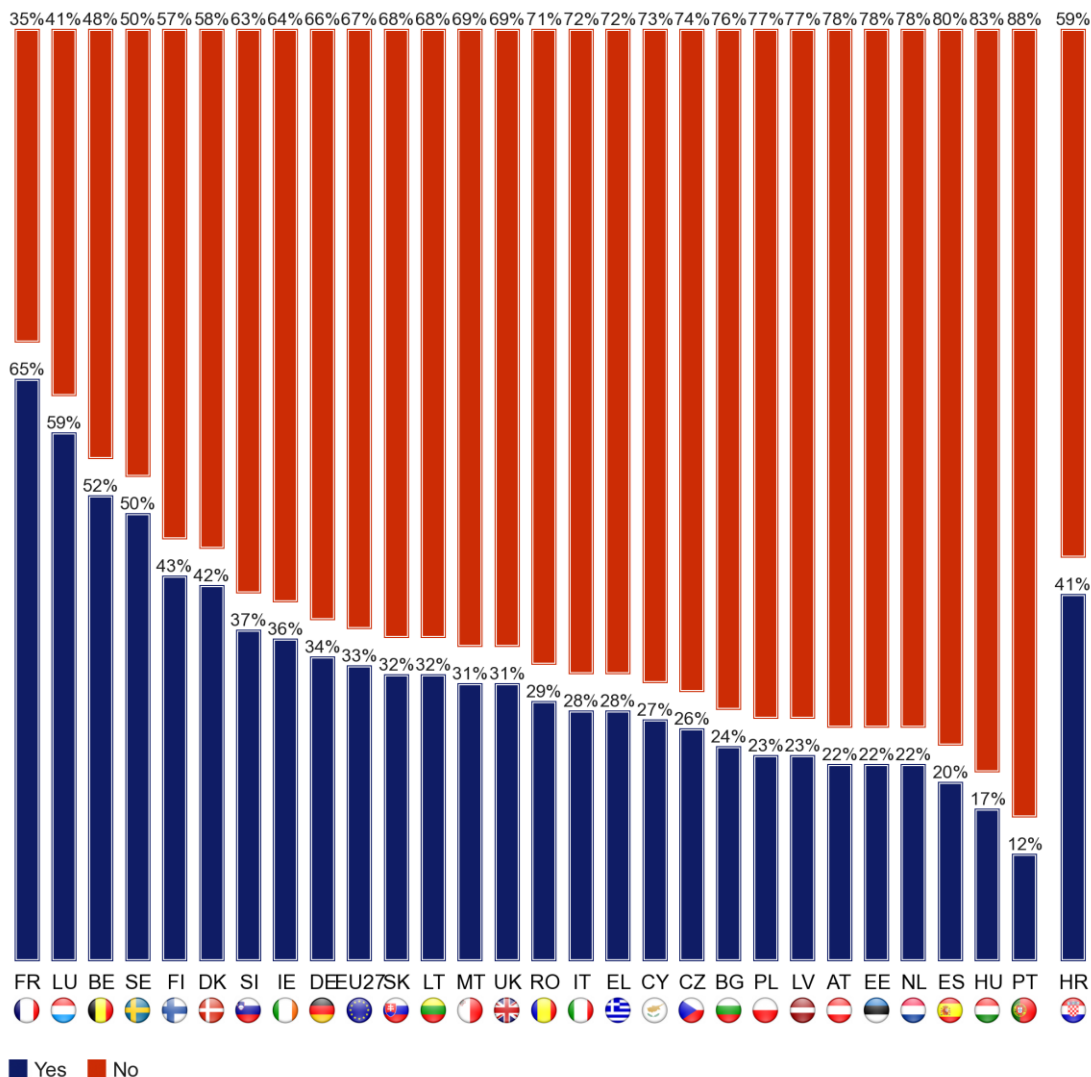
 EU27

Base: all respondents (N= 26 680)

¹⁶ QE3a In the last 12 months, do you remember getting any information about not taking any antibiotics unnecessarily, for example, messages about not taking antibiotics in case of cold or flu? ONE ANSWER ONLY. "Yes", "No".

There are significant country-level differences on this question. In France, around two thirds (65%) of respondents recall receiving information about the unnecessary use of antibiotics, as do a majority of those polled in Luxembourg (59%) and Belgium (52%). In a majority of EU27 Member States – 18 in total – the proportion of those who received this information is lower than average. In Portugal, it is particularly low, at only just over one in ten (12%) of those polled. Low figures are also recorded in Hungary (17%) and Spain (20%).

QE3a. In the last 12 months, do you remember getting any information about not taking any antibiotics unnecessarily, for example, messages about not taking antibiotics in case of cold or flu?



Base: all respondents (N= 26 680)

2. MEANS OF CONVEYING INFORMATION

-A majority of informed Europeans receive information about antibiotics from media campaigns-

Those respondents who said they received information in the last 12 months about not taking antibiotics unnecessarily were asked to identify the source of this information.¹⁷ To better understand the overall reach of various methods of conveying information, the following proportions are percentages of the entire sample, rather than the subset of only those who received information.

Almost a fifth (19%) of all respondents say they received information from media or communication campaigns, a decrease of one percentage point since 2009. The most common media source was television advertisements, cited by one in ten (10%) of respondents. A further 6% of respondents say they found out via newspapers or the television news.

More than one in ten (11%) of all respondents say they received information about antibiotics from a professional: a slight decrease from the figure of 14% recorded in 2009. In the majority of cases (9%, -2 percentage points), the professional in question was a doctor.

Only 1% of respondents say they got information from family or friends (-1).

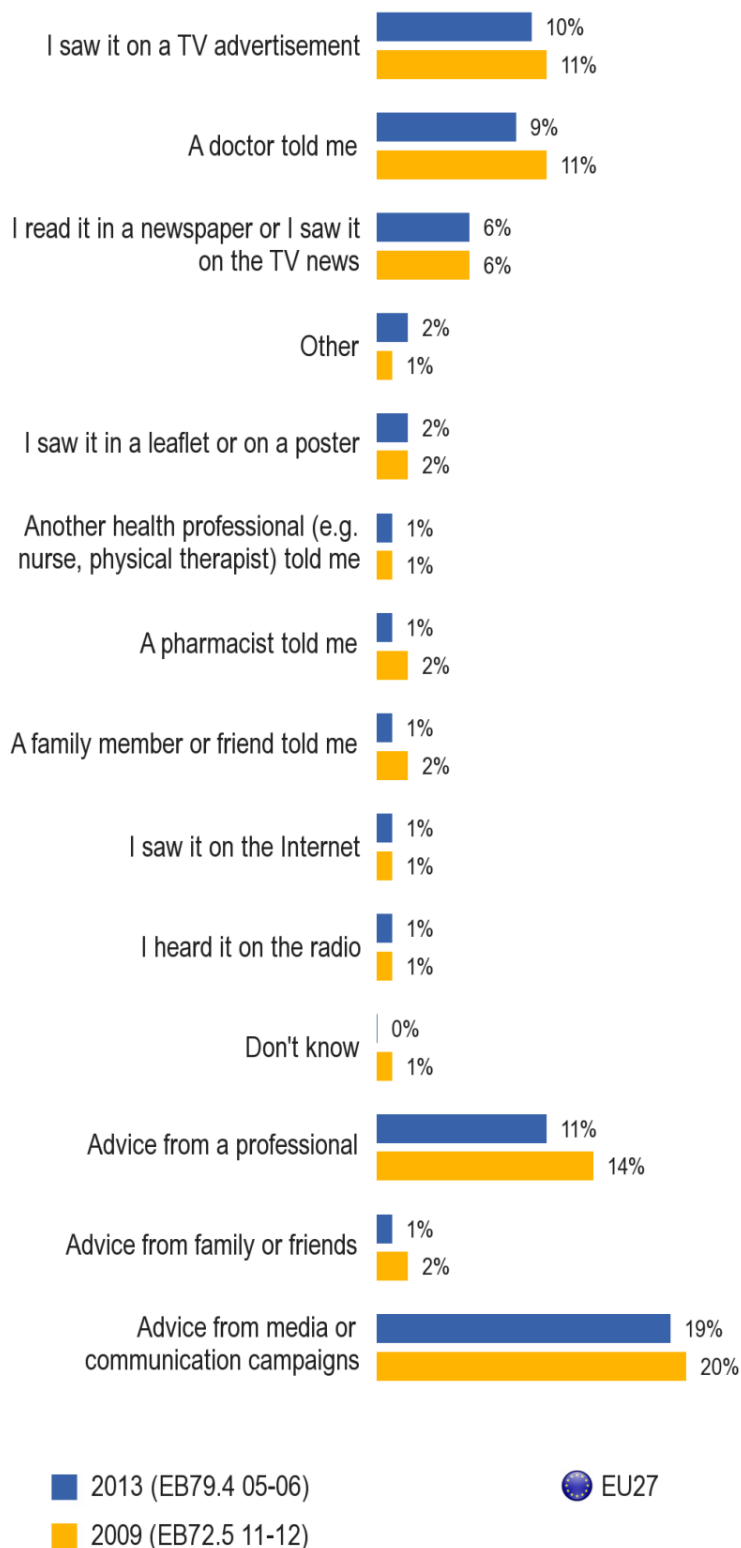
¹⁷ QE3b Where did you first get this information about not taking any antibiotics unnecessarily? ONE ANSWER ONLY. "A doctor told me", "A pharmacist told me", "Another health professional (e.g. nurse, physical therapist) told me", "A family member or friend told me", "I saw it on a TV advertisement", "I saw it in a leaflet or on a poster", "I read it in a newspaper or I saw it on the TV news", "I heard it on the radio", "I saw it on the Internet", "Other", "Don't know".

The results for the answers "A doctor told me", "A pharmacist told me" and "Another health professional (e.g. nurse, physical therapist) told me" are regrouped into the answer "Advice from a professional".

The results for the answer "A family member or friend told me" are regrouped into the answer "Advice from family or friends".

The results for the answers "I saw it on a TV advertisement", "I saw it in a leaflet or on a poster", "I read it in a newspaper or I saw it on the TV news", "I heard it on the radio" and "I saw it on the Internet" are regrouped into the answer "Advice from media or communication campaigns".

QE3b. Where did you first get this information about not taking any antibiotics unnecessarily?



Base: all respondents (N= 26 680)

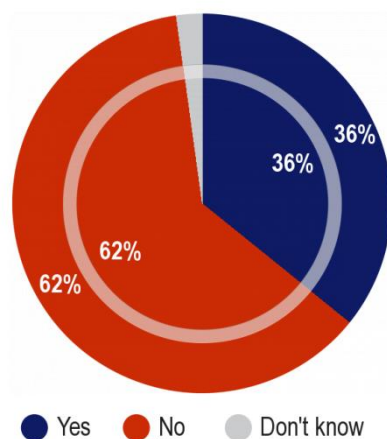
3. IMPACT OF THE ANTIBIOTIC AWARENESS CAMPAIGNS ON PERCEPTION AND BEHAVIOUR

-More than a third of Europeans change their views after receiving information-

Those respondents who said they received information about antibiotics were asked whether they had changed their mind about antibiotics as a result of that information.¹⁸ Only just over a third (36%) of those polled say that their views were changed by the information they received. This proportion remains unchanged since 2009.

When assessing the impact of the campaigns on the views of Europeans, we should not necessarily expect a majority of these respondents to have their views changed. Most of the respondents who declare they have received information about antibiotics already have some objective knowledge of these medicines (49%). Just over a fifth (22%) give correct answers to all four questions in section 2, and over half (57%) answer two or three questions correctly. Only one in ten (9%) of those who have received information about antibiotics give at most one correct answer.

QE3c. Did the information that you received change your views on antibiotics?



Inner pie : 2009 (EB72.5 11-12)

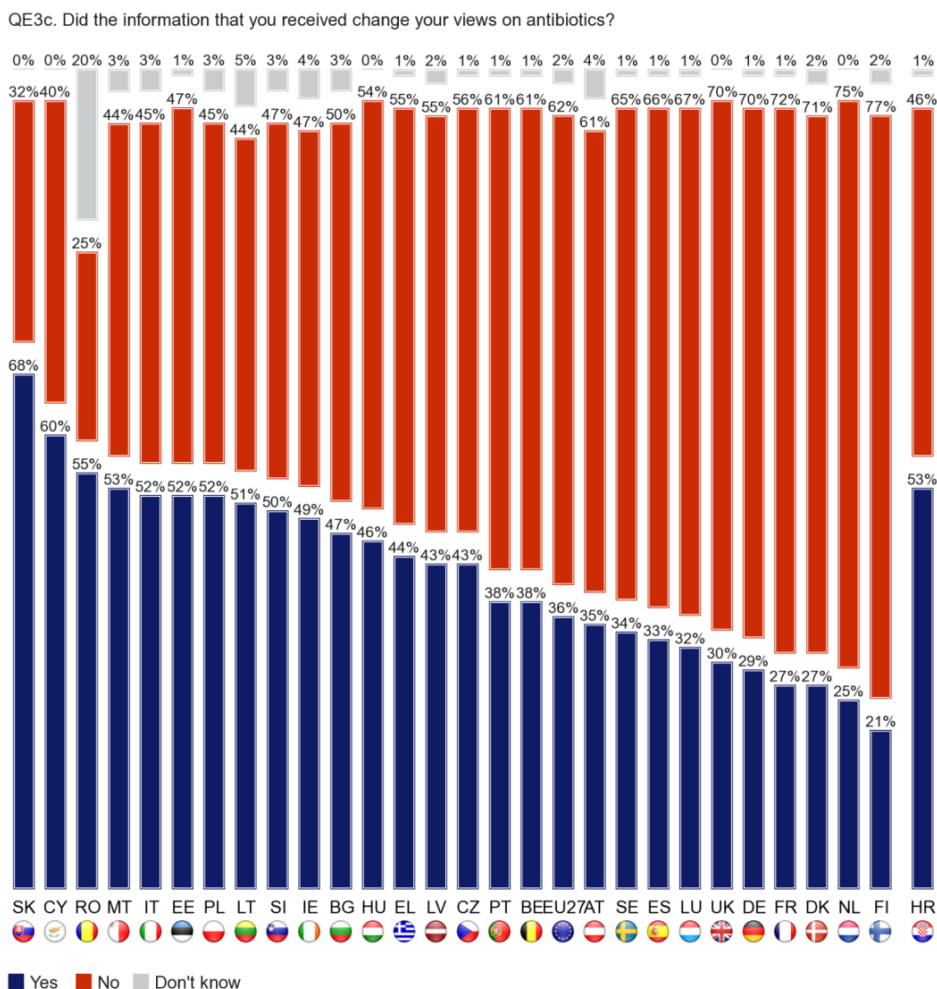
Outer pie : 2013 (EB79.4 05-06)

EU27

Base: respondents who received information about not taking antibiotics unnecessarily (N= 8 803)

¹⁸ QE3c Did the information that you received change your views on antibiotics? ONE ANSWER ONLY. "Yes", "No", "Don't know".

Again, there are significant country-level differences on this question. In eight Member States and in Croatia, more than half of respondents say that the information they received changed their views and, in Slovakia, over two thirds (68%) do. However, in most countries, the proportion of those who changed their views is lower than 50%. In Finland, only around a fifth (21%) of respondents give this answer and, in the Netherlands, only a quarter (25%) do.



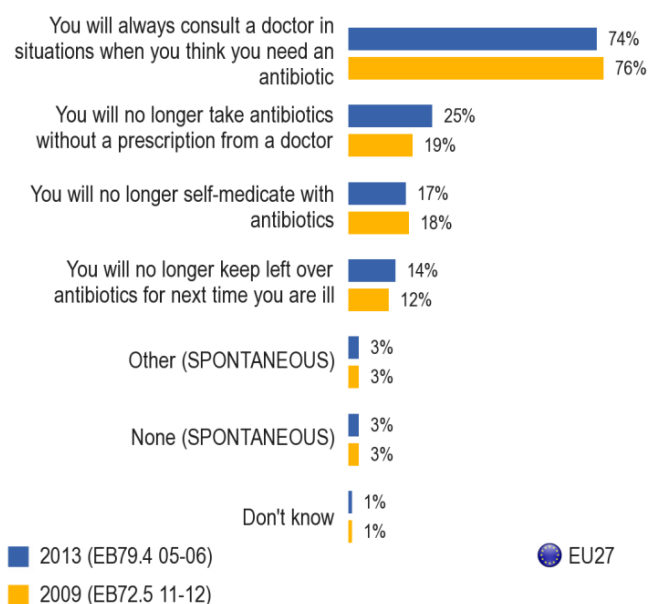
Base: respondents who received information about not taking antibiotics unnecessarily (N= 8 803)

Having established whose views were changed by the information received, we now turn to the question of *how* those views were changed. It should be noted that this involves drawing on a small subset of the overall survey sample. As a result, it is more difficult to draw conclusions about further subsets at the level of countries or socio-demographic categories, as they may be based on sample sizes which are too small to generate statistically significant results.

Those respondents who said they had changed their views on antibiotics as a result of the information they had received were asked to indicate how their behaviour would change as a result. The interviewer read out several options, from which respondents could choose as many as were relevant.¹⁹

Around three quarters (74%) of respondents whose views were changed by information on antibiotics say that as a result they will always consult a doctor about the need to take antibiotics. A quarter (25%) of respondents say they will no longer take antibiotics without a prescription from a doctor. This is a higher proportion compared to 2009, when less than two in 10 respondents (19%) reported they would be influenced in this way, showing therefore a positive impact of the information received. Just under a fifth (17%) say they will no longer self-medicate, while slightly fewer (14%) say they will no longer use left-over antibiotics. Very few respondents (3%) gave alternative answers.

QE3d. In what way did this information change your views on antibiotics?



*Base: respondents whose views on antibiotics changed following information received about not taking antibiotics unnecessarily (N= 3 163)
(MULTIPLE ANSWERS POSSIBLE)*

¹⁹ QE3d In what way did this information change your views on antibiotics? MULTIPLE ANSWERS POSSIBLE. "You will always consult a doctor in situations when you think you need an antibiotic", "You will no longer self-medicate with antibiotics", "You will no longer take antibiotics without a prescription from a doctor", "You will no longer keep left over antibiotics for next time you are ill", "Other (SPONTANEOUS)", "None (SPONTANEOUS)", "Don't know".

4. THE MOST TRUSTWORTHY SOURCES OF INFORMATION

-The vast majority of respondents see doctors as a trustworthy source of information on antibiotics-

Respondents were asked to give their opinion on which sources of information about antibiotics are the most trustworthy. The interviewer showed the respondent a card with a number of options, from which the respondent could select a maximum of three.²⁰

As in 2009, almost all (94%) respondents see medical professionals or health care facilities as the most trustworthy sources of information. Just under nine in ten (88%) respondents identify doctors as important sources of information, while just under half (47%) say that pharmacies are. Few respondents opt for non-health-related sources such as family and friends or newspapers and magazines: in total, only 7% see these as important. Lastly, 16% of those polled see health-related internet sites as good sources of information.

²⁰ QE4 Which of the following sources of information would you use in order to get trustworthy information on antibiotics? MAXIMUM 3 ANSWERS. "A doctor", "A nurse", "A pharmacy", "A hospital", "Another health care facility", "Family or friends", "The Internet site from the National Government\the Ministry of Health", "The Internet site from the (NATIONAL PUBLIC HEALTH INSTITUTE – USE APPROPRIATE NAMING IN EACH COUNTRY)", "The Internet site on Public Health from the European Union", "Another health related Internet site", "A Health Medical Encyclopedia", "A national, independent public health body or organisation", "A newspaper or magazine", "A health related magazine", "Other (SPONTANEOUS)", "I am not looking for information on antibiotics (SPONTANEOUS)", "Don't know".

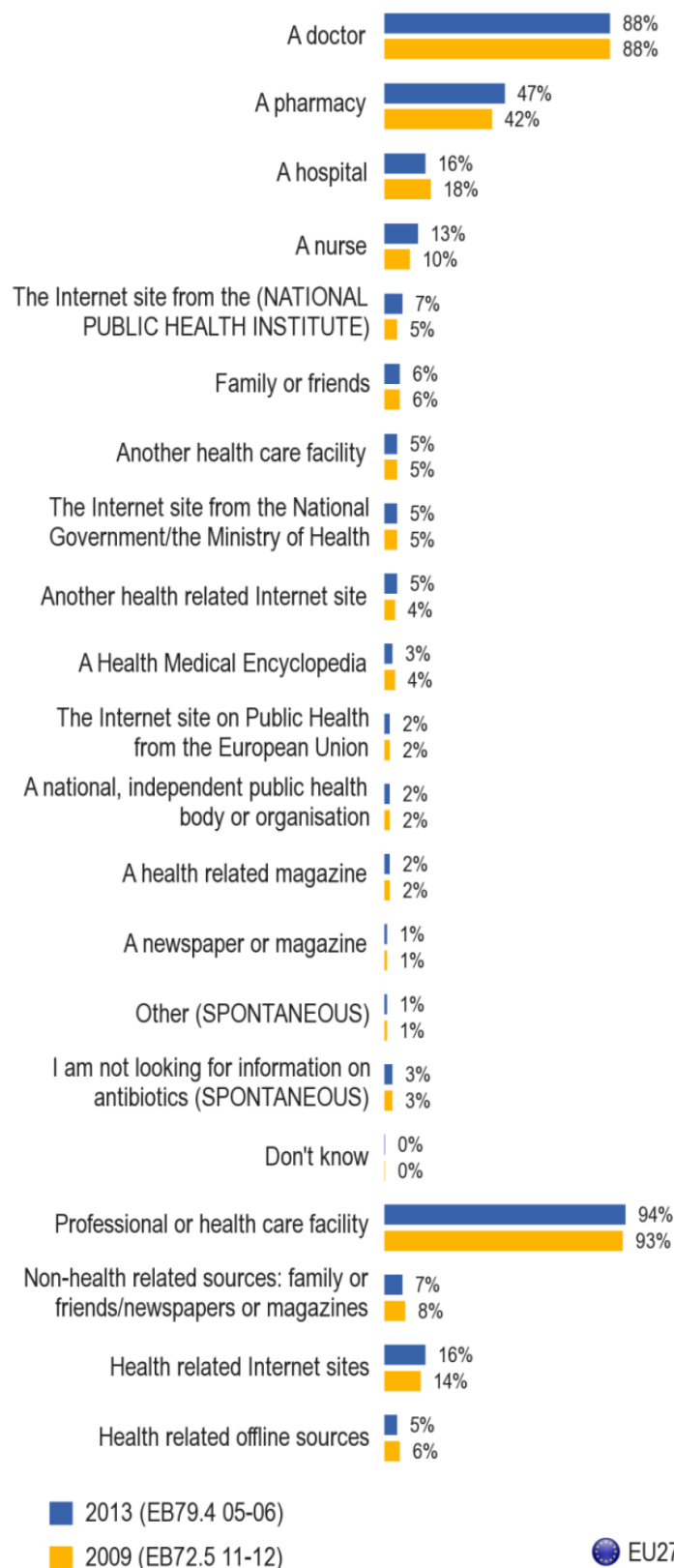
The results for the answers "A doctor", "A nurse", "A pharmacy", "A hospital", "Another health care facility" and "A national, independent public health body or organisation" are regrouped into the answer "Professional or health care facility".

The results for the answers "Family or friends" and "A newspaper or magazine" are regrouped into the answer "Non-health related sources: family or friends / newspapers or magazines".

The results for the answers "The Internet site from the National Government\the Ministry of Health", "The Internet site from the (NATIONAL PUBLIC HEALTH INSTITUTE – USE APPROPRIATE NAMING IN EACH COUNTRY)", "The Internet site on Public Health from the European Union" and "Another health related Internet site" are regrouped into the answer "Health related Internet site".

The results for the answers "A Health Medical Encyclopedia" and "A health related magazine" are regrouped into the answer "Health related offline source".

QE4. Which of the following sources of information would you use in order to get trustworthy information on antibiotics?



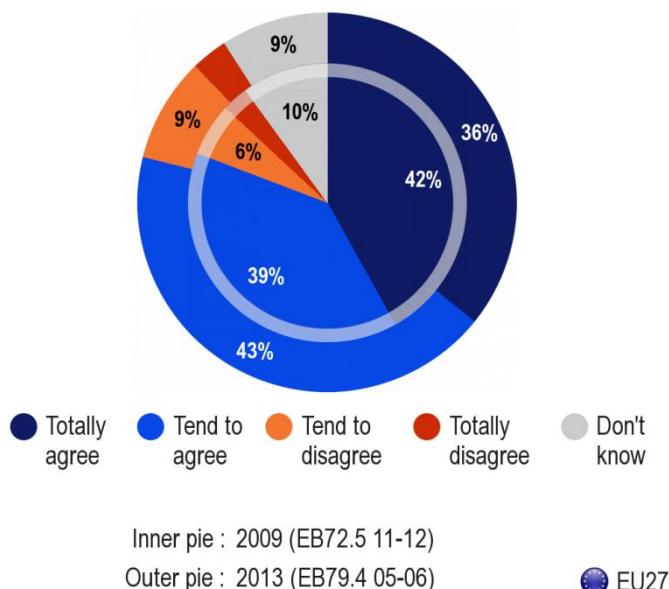
Base: all respondents (N= 26 680)
(MAXIMUM 3 ANSWERS POSSIBLE)

5. INDIVIDUAL RESPONSIBILITY IN PRESERVING THE EFFECTIVENESS OF ANTIBIOTICS

-Nearly eight out of ten respondents agree to some extent that everyone has a role to play in preserving the effectiveness of antibiotics-

Respondents were asked to what extent they agree or disagree with the opinion that everyone has a role to play in ensuring that antibiotics remain effective.²¹ Nearly eight out of ten (79%) respondents agree to a certain extent with this statement. However, since 2009, the proportion of respondents who ‘totally agree’ has declined from just over two fifths (42%) to just over one third (36%).

QE2b. Please tell me to what extent you agree or disagree with the following statement: Everyone has a role to play to ensure that antibiotics remain effective.



Base: all respondents (N= 26 680)

²¹ QE2b Please tell me to what extent you agree or disagree with the following statement: Everyone has a role to play to ensure that antibiotics remain effective. ONE ANSWER ONLY. “Totally agree”, “Tend to agree”, “Tend to disagree”, “Totally disagree”, “Don’t know”.

CONCLUSIONS

This study of the attitudes, knowledge and behaviour of Europeans concerning the use of antibiotics shows persistent wide differences between countries and between different socio-demographic groups. Nevertheless, the following broad conclusions can be drawn about the effectiveness of antibiotic awareness campaigns in Europe in the wider context of how Europeans obtain medical knowledge: firstly, media campaigns are efficient as sources of information and need to be targeted more effectively. Secondly, doctors and pharmacies are trusted sources of information and considered as being influential authorities who have an important role to play in correcting views and behaviours regarding the appropriate use of antibiotics.

There has been a significant decline in the use of antibiotics among Europeans, with the proportion of respondents who have taken antibiotics during the last 12 months decreasing from two fifths (40%) in 2009 to just over a third (35%) in 2013, country-group differences are less substantial than in 2009, when southern European countries stood out with a higher rate of antibiotic use. Both Italy and Spain have seen a substantial decline in the proportion of respondents using antibiotics in general.²²

The overwhelming majority of respondents obtain antibiotics from their health care provider, but there remains a persistent minority (3% of those taking antibiotics) who use antibiotics without prescription, contrary to the legal requirement that all antibiotics in the EU be dispensed on prescription only. This is particularly high in Romania (18%), Greece (15%) and Cyprus (10%).

Overall knowledge of antibiotics remains rather low: as in 2009, only less than a fifth (22%) of Europeans are able to give the correct answer to four questions on this topic, although there are considerable country variations. In Luxembourg, the proportion of those giving correct answers to all the questions increased by 15 percentage points (pp), followed by 8pp in the Czech Republic and 7pp in Hungary. Although the vast majority (84%) are aware that overuse of antibiotics makes them ineffective, this simply illustrates the problem confronting those who are trying to persuade Europeans to change their habits for the better: persistently low levels of knowledge about what antibiotics are for are reflected in a widespread misuse of these medicines. Half (49%) of Europeans erroneously believe that antibiotics can be used to treat viruses, while two fifths (41%) make the same mistake regarding colds and flu. Indeed, flu remains one of the most commonly cited reasons for taking antibiotics, with nearly a fifth (18%) of respondents doing so. However, the proportion who responded correctly has increased for both these two questions.

²² The question on whether or not the economic crisis has influenced behaviour as to antibiotic use is not within the remit of this report to analyse, however, it should be highlighted that it cannot be excluded.

It appears that the media and communications campaigns have been successful in raising awareness, albeit rather unevenly across the Member States. Those who have been exposed to information of any kind are generally more likely to have better knowledge about antibiotics than those who have not been, but those who received information from media campaigns are more likely to be better informed than those who received advice from medical professionals.

The picture is more mixed when it comes to the impact these campaigns have had on actual behaviour. As in 2009, only just over a third (36%) of those Europeans who have received information say that the information they received – from whichever source – has led them to reconsider their use of antibiotics, and there are wide variations between Member States.

Nevertheless, there are signs that media campaigns could have more substantial effects if targeted more effectively. At present, it seems the campaigns reach more of those Europeans who are in any case more likely to act responsibly anyway. Those with lower levels of objective knowledge about antibiotics and those in socio-demographic cohorts associated with greater use of antibiotics - respondents with low levels of education, those in difficult economic circumstances, and students – are more likely to have their views changed by the information they receive.

On current evidence, the on-going campaigns to improve Europeans' knowledge about and the appropriate use of antibiotics could benefit from being targeted more clearly at those countries and socio-demographic groups whose knowledge about and use of antibiotics still leaves much to be desired. As the findings in section 3 suggest, use of the more traditional sources of information dissemination such as broadcast (TV or radio) and print media should be used.

However, the strategy to raise awareness of antibiotics among low-knowledge groups cannot rely only on better targeting the media campaigns. It also needs to involve the medical professionals and pharmacies which, as this report shows, have a significant role to play. While the media is efficient at conveying information, doctors and pharmacists are most likely to be able to influence the people who are less well-informed about antibiotics in order to correct their way of using these medicines.

ANNEXES

TECHNICAL SPECIFICATIONS

SPECIAL EUROBAROMETER 407

Antimicrobial resistance

TECHNICAL SPECIFICATIONS

Between the 24 May and 9 June 2013, TNS opinion & social, a consortium created between TNS plc and TNS opinion, carried out the wave 79.4 of the EUROBAROMETER survey, on request of the EUROPEAN COMMISSION, Directorate-General for Communication, "Research and Speechwriting".

The SPECIAL EUROBAROMETER 407 survey is part of wave 79.4 and covers the population of the respective nationalities of the European Union Member States, resident in each of the Member States and aged 15 years and over.

The SPECIAL EUROBAROMETER 407 survey has also been conducted in Croatia where the survey covers the national population of citizens and the population of citizens of all the European Union Member States that are residents in this country and have a sufficient command of the national languages to answer the questionnaire.

The basic sample design applied in all states is a multi-stage, random (probability) one. In each country, a number of sampling points was drawn with probability proportional to population size (for a total coverage of the country) and to population density.

In order to do so, the sampling points were drawn systematically from each of the "administrative regional units", after stratification by individual unit and type of area. They thus represent the whole territory of the countries surveyed according to the EUROSTAT NUTS II (or equivalent) and according to the distribution of the resident population of the respective nationalities in terms of metropolitan, urban and rural areas. In each of the selected sampling points, a starting address was drawn, at random. Further addresses (every Nth address) were selected by standard "random route" procedures, from the initial address. In each household, the respondent was drawn, at random (following the "closest birthday rule"). All interviews were conducted face-to-face in people's homes and in the appropriate national language. As far as the data capture is concerned, CAPI (*Computer Assisted Personal Interview*) was used in those countries where this technique was available.

For each country a comparison between the sample and the universe was carried out. The Universe description was derived from Eurostat population data or from national statistics offices. For all countries surveyed, a national weighting procedure, using marginal and intercellular weighting, was carried out based on this Universe description. In all countries, gender, age, region and size of locality were introduced in the iteration procedure. For international weighting (i.e. EU averages), TNS Opinion & Social applies the official population figures as provided by EUROSTAT or national statistic offices. The total population figures for input in this post-weighting procedure are listed below.

Readers are reminded that survey results are estimations, the accuracy of which, everything being equal, rests upon the sample size and upon the observed percentage. With samples of about 1,000 interviews, the real percentages vary within the following confidence limits:

**Statistical Margins due to the sampling process
(at the 95% level of confidence)**

various sample sizes are in rows

various observed results are in columns

	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	
	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	
N=50	6,0	8,3	9,9	11,1	12,0	12,7	13,2	13,6	13,8	13,9	N=50
N=500	1,9	2,6	3,1	3,5	3,8	4,0	4,2	4,3	4,4	4,4	N=500
N=1000	1,4	1,9	2,2	2,5	2,7	2,8	3,0	3,0	3,1	3,1	N=1000
N=1500	1,1	1,5	1,8	2,0	2,2	2,3	2,4	2,5	2,5	2,5	N=1500
N=2000	1,0	1,3	1,6	1,8	1,9	2,0	2,1	2,1	2,2	2,2	N=2000
N=3000	0,8	1,1	1,3	1,4	1,5	1,6	1,7	1,8	1,8	1,8	N=3000
N=4000	0,7	0,9	1,1	1,2	1,3	1,4	1,5	1,5	1,5	1,5	N=4000
N=5000	0,6	0,8	1,0	1,1	1,2	1,3	1,3	1,4	1,4	1,4	N=5000
N=6000	0,6	0,8	0,9	1,0	1,1	1,2	1,2	1,2	1,3	1,3	N=6000
N=7000	0,5	0,7	0,8	0,9	1,0	1,1	1,1	1,1	1,2	1,2	N=7000
N=7500	0,5	0,7	0,8	0,9	1,0	1,0	1,1	1,1	1,1	1,1	N=7500
N=8000	0,5	0,7	0,8	0,9	0,9	1,0	1,0	1,1	1,1	1,1	N=8000
N=9000	0,5	0,6	0,7	0,8	0,9	0,9	1,0	1,0	1,0	1,0	N=9000
N=10000	0,4	0,6	0,7	0,8	0,8	0,9	0,9	1,0	1,0	1,0	N=10000
N=11000	0,4	0,6	0,7	0,7	0,8	0,9	0,9	0,9	0,9	0,9	N=11000
N=12000	0,4	0,5	0,6	0,7	0,8	0,8	0,9	0,9	0,9	0,9	N=12000
N=13000	0,4	0,5	0,6	0,7	0,7	0,8	0,8	0,8	0,9	0,9	N=13000
N=14000	0,4	0,5	0,6	0,7	0,7	0,8	0,8	0,8	0,8	0,8	N=14000
N=15000	0,3	0,5	0,6	0,6	0,7	0,7	0,8	0,8	0,8	0,8	N=15000
	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	
	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	

ABBR.	COUNTRIES	INSTITUTES	N° INTERVIEWS	FIELDWORK DATES		POPULATION 15+
BE	Belgium	TNS Dimarso	1.006	25/05/2013	09/06/2013	8.939.546
BG	Bulgaria	TNS BBSS	1.025	25/05/2013	02/06/2013	6.537.510
CZ	Czech Rep.	TNS Aisa	1.026	24/05/2013	06/06/2013	9.012.443
DK	Denmark	TNS Gallup DK	1.010	25/05/2013	09/06/2013	4.561.264
DE	Germany	TNS Infratest	1.505	24/05/2013	09/06/2013	64.336.389
EE	Estonia	Emor	1.008	24/05/2013	09/06/2013	945.733
IE	Ireland	IMS Millward Brown	1.001	25/05/2013	09/06/2013	3.522.000
EL	Greece	TNS ICAP	1.002	25/05/2013	08/06/2013	8.693.566
ES	Spain	TNS Demoscopia	1.008	24/05/2013	09/06/2013	39.127.930
FR	France	TNS Sofres	1.053	24/05/2013	08/06/2013	47.756.439
IT	Italy	TNS Italia	1.025	25/05/2013	07/06/2013	51.862.391
CY	Rep. of Cyprus	Synovate	506	24/05/2013	09/06/2013	660.400
LV	Latvia	TNS Latvia	1.018	25/05/2013	09/06/2013	1.447.866
LT	Lithuania	TNS LT	1.023	25/05/2013	09/06/2013	2.829.740
LU	Luxembourg	TNS ILReS	502	25/05/2013	09/06/2013	434.878
HU	Hungary	TNS Hoffmann Kft	1.033	25/05/2013	09/06/2013	8.320.614
MT	Malta	MISCO	500	24/05/2013	09/06/2013	335.476
NL	Netherlands	TNS NIPO	1.013	24/05/2013	09/06/2013	13.371.980
AT	Austria	Österreichisches Gallup-Institut	1.034	24/05/2013	09/06/2013	7.009.827
PL	Poland	TNS OBOP	1.000	25/05/2013	09/06/2013	32.413.735
PT	Portugal	TNS EUROTESTE	1.007	28/05/2013	09/06/2013	8.080.915
RO	Romania	TNS CSOP	1.053	25/05/2013	04/06/2013	18.246.731
SI	Slovenia	RM PLUS	1.005	25/05/2013	09/06/2013	1.759.701
SK	Slovakia	TNS Slovakia	1.000	25/05/2013	09/06/2013	4.549.955
FI	Finland	TNS Gallup Oy	1.003	25/05/2013	09/06/2013	4.440.004
SE	Sweden	TNS GALLUP	1.000	25/05/2013	09/06/2013	7.791.240
UK	United Kingdom	TNS UK	1.314	25/05/2013	09/06/2013	51.848.010
TOTAL EU27			26.680	24/05/2013	09/06/2013	408.836.283
HR	Croatia	Puls	1.000	25/05/2013	09/06/2013	3.749.400
TOTAL EU28			27.680	24/05/2013	09/06/2013	412.585.683