



## Utrecht WHO Winter Meeting 2016

**Antibiotic use in paediatric respiratory infections:  
national public awareness and OTC practice survey  
- work in progress -**



*Ivanovska V. Angelovska B. Mantel Teewisse A. Zdravkovska M.*

## Background on AB use in URTI

- Inappropriate use of AB propagates antimicrobial resistance
- Most URTI are viral and self-limiting conditions, but often inappropriately treated with antibiotics
- AB use high in children due to concerns about susceptibility to bacterial infections and secondary complications
- Inappropriate use includes AB self-medication by public:
  - AB purchased in pharmacies without prescription (OTC)
  - left-over AB from previous courses
- Reasons for AB self-medication in developed countries context:
  - poor regulation enforcement of AB as prescription-only-medicines (POM)
  - patients' misconceptions on AB efficacy in URTI

## Some facts about Macedonia

- 2 million inhabitants
- South East Europe, EU candidate country
- WB: Upper middle income country
- Health expenditure: 7% of GDP
- Medicines: 14% of health expenditure
- 2/3 Government health expenditure
- Universal health insurance
- Patients entitled to GPs & children to paediatricians
- National list of reimbursable medicines, incl. AB



# AB national context



- AB regulated as POM, EBM treatment guidelines

- < 20 DID for reimbursable AB & 25-30 DID for all AB (= Croatia, Bulgaria, Italy)

- AMR nation action plan/2011 & European Antibiotic Awareness Day/2008

- CAESAR network/2012 to strengthen national AMR surveillance (high resistance rates due to selective sampling of isolates)

- Signals for public misconceptions on AB use and AB OTC use in MK

- Little known on AB OTC use in children & parental understanding of AB, but (urban) parents begin to question AB use in URTI

# AB national strategy in 2014

**Introduction of health education campaigns to raise awareness on adequate AB use and danger of AMR**



- **Nation-wide mass media (TV) campaign on AB use**
- **Kindergarten seminars for parents on AB use**
- **Seminars for health workers on RTI management and AB prescribing**

## **Study objectives**

- **Assess parental knowledge, attitudes and practice re: AB & URTI**
- **Evaluate impact of AB interventions on parental awareness and action re: AB for URTI (2015 vs 2014)**

**TV campaign autumn 2014**

**Kindergarten sessions autumn 2014**

**H. workers seminars autumn 2014**

**Criminal provision on OTC sales of  
antibiotics added to the Law May 2015**

## Study methodology



- 2 community-based surveys in May 2014 & 2015 (pre & post intervention)
- Parents of children < 15 years in 3/8 regions (25%) in MK
- Recruitment near markets, pharmacies, paediatric offices, schools
- Structured questionnaire (*EC Eurobarometer 407 AMR, 2013*)
- Descriptive quantitative statistical analysis (frequencies, %), SPSS
- Student t-test / Mann-Whitney U test for associations ( $p < 0.05$ )

# Questionnaire description

## Method:

Face-to-face interview with anonymous 33-item KAP questionnaire

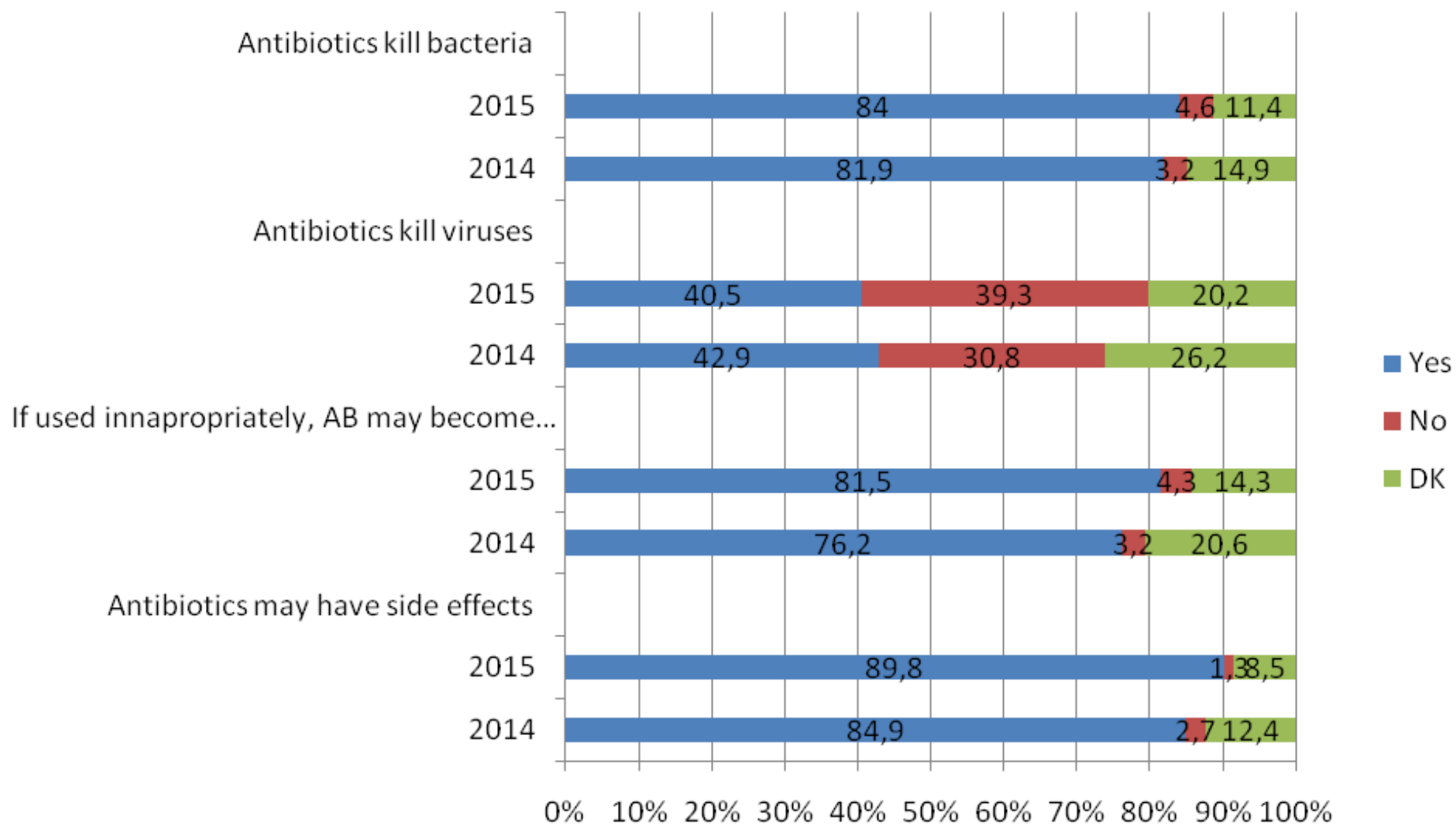
## Content:

- 1. Socioeconomic/demographic characteristics - parents & children**
- 2. Parental knowledge and attitudes about AB and ARI**
  - Usefulness of AB to treat ARI & risks of unnecessary use
- 3. Info on ARI management and use of AB by children & parents**
  - AB use in the preceding year
  - Sources of AB
  - Reasons for taking AB without prescriptions



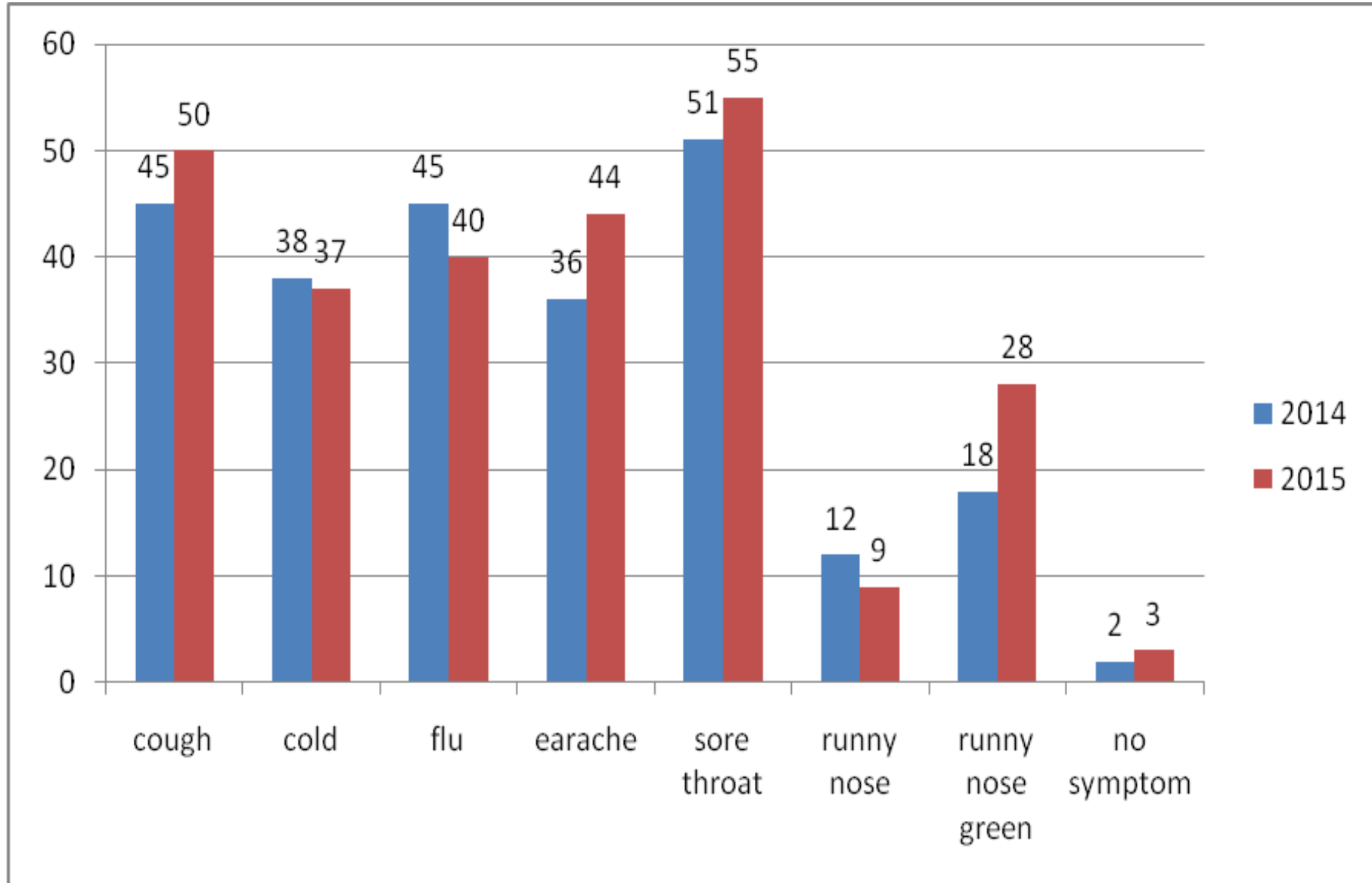
| <b>Parents' demography</b>  | <b>2014 (n=403)</b> | <b>2015 (n=400)</b> | <b>p</b>       |
|-----------------------------|---------------------|---------------------|----------------|
| Mean age (years)            | 33±6.4              | 32.3±6.2            | 0.1575         |
| Female gender               | 76.4%               | 78%                 | 0.5009         |
| Minorities                  | 12.7%               | 11.2%               | 0.3835         |
| Urban residents             | 72%                 | 68.3%               | 0.2165         |
| Married                     | 94.5%               | 95.3%               | 0.9987         |
| University degree           | 35.5%               | 36.8%               | 0.7015         |
| Employed                    | 68.7%               | 71.3%               | 0.5365         |
| <b>Children' demography</b> | <b>2014 (n=403)</b> | <b>2015 (n=400)</b> | <b>p</b>       |
| Mean age (years)            | 6.9±4.2             | 5.6±3.8             | 0.1564         |
| Younger than 5 years        | 48.4%               | 52.5%               | 0.2456         |
| Female gender               | 44.9%               | 51.5%               | <b>0.0475*</b> |
| With siblings (<18y)        | 44.9                | 49.8%               | 0.1564         |

# Figure 1: Parental knowledge on antibiotics in 2014 and 2015



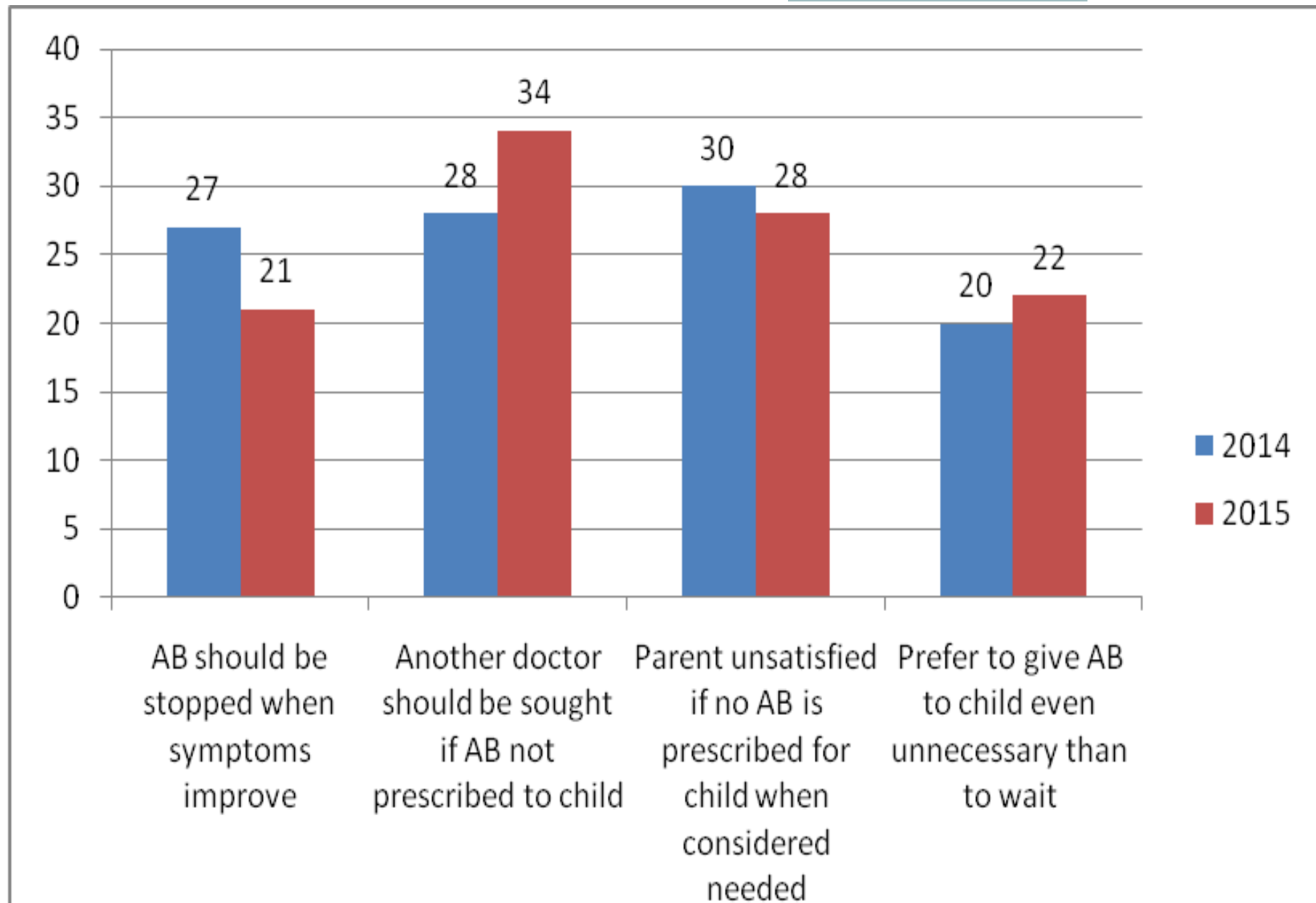
49% of Europeans don't know AB are ineffective against viruses (Eurobarometer 2013). In Bulgaria, Cyprus, Romania and Portugal these figures were over 80%.

**Fig 2: Parental expectations on URTI symptoms that improve faster with AB (%)**

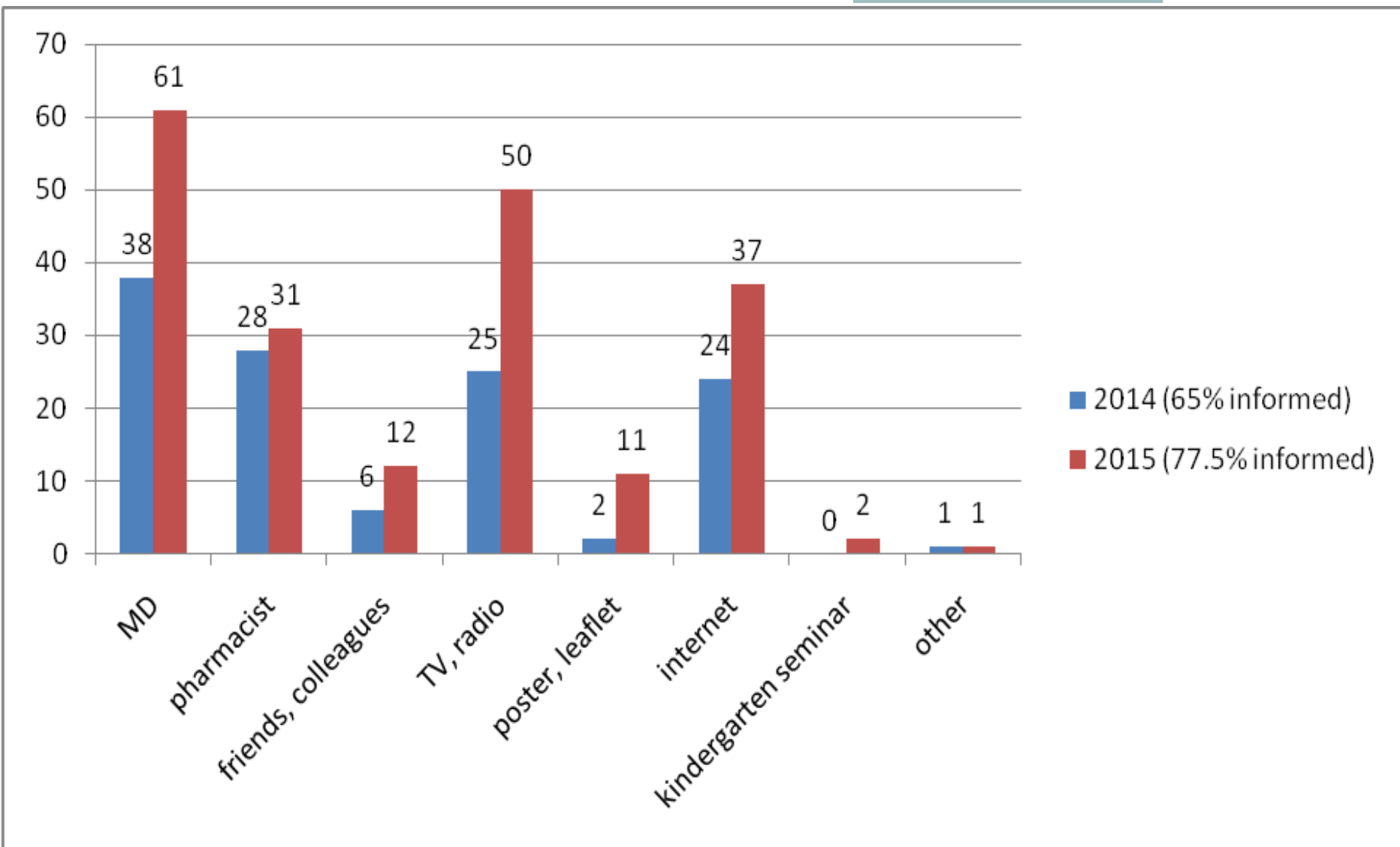


40% of Europeans don't know AB are ineffective against colds and flu.

**Figure 3: Parental attitudes towards AB prescribing and use (%)**



**Figure 4: Source of information about not taking antibiotics unnecessary (%)**

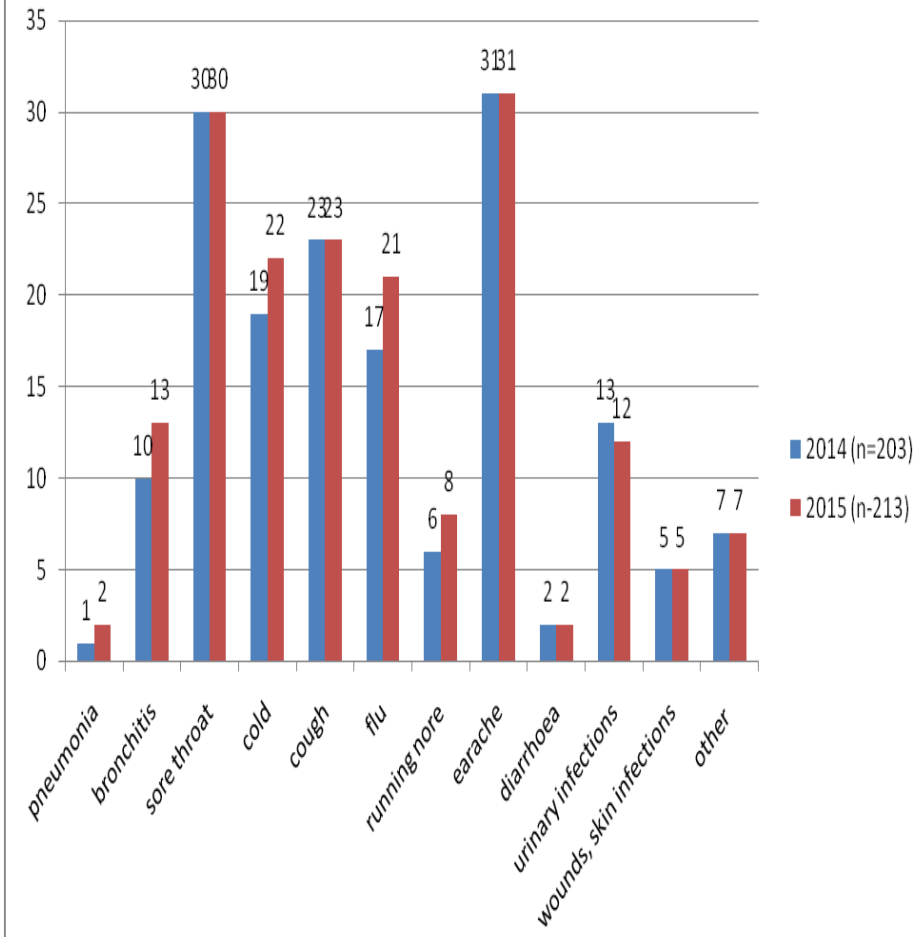
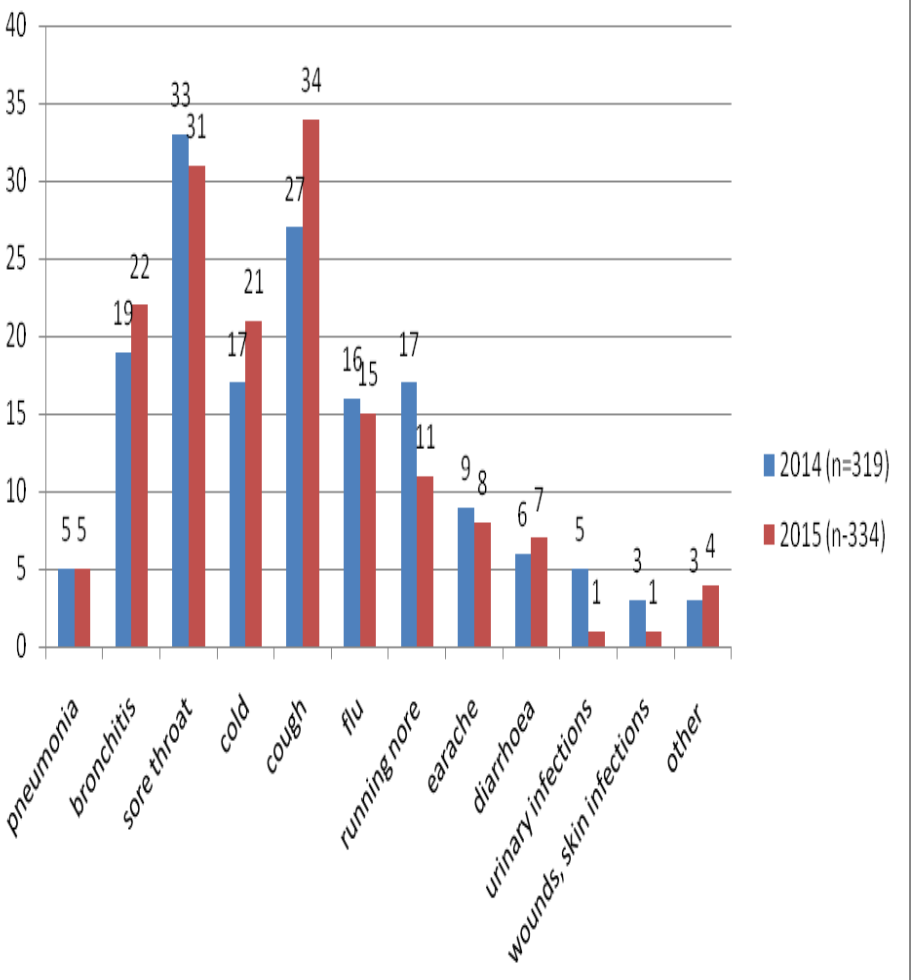


Only a third of EU respondents remember receiving information about not taking AB unnecessarily in the last 12 months (France 65%, Portugal 12%).

# Reasons for taking AB in the last year in adults (R) and children (L)

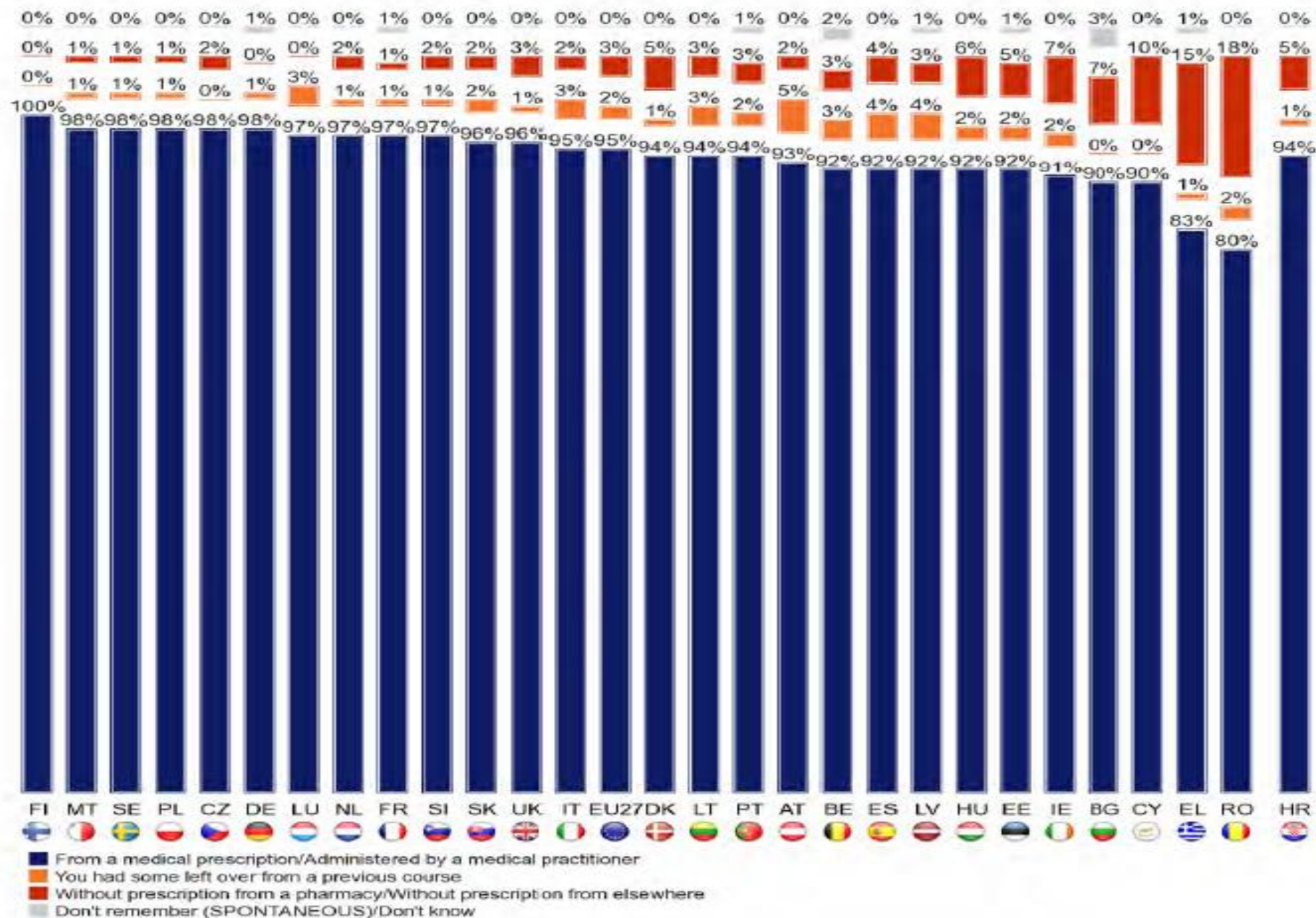
**80% of children used AB in the last year.**

**50% of adults respondents used AB in the last year vs. average 35% in EU, 2013. (Malta, Cyprus, Romania 47%)**



| <b>Table 2: Patterns of AB provision for parents and children in preceding year (%)</b> |                        |                        |                |
|---|------------------------|------------------------|----------------|
| <b>Source of AB (PARENTS)</b>   | <b>2014 (n=203)</b>    | <b>2015 (n=213)</b>    | <b>p</b>       |
| <b>Doctor's prescription</b>  | <b>78.8% (160/203)</b> | <b>78.4% (167/213)</b> | <b>0.9208</b>  |
| <b>OTC sale in pharmacies</b>   | <b>8.87% (18/203)</b>  | <b>9.9% (21/213)</b>   | <b>0.7284</b>  |
| <b>Left-over AB at home</b>   | <b>10.84% (22/203)</b> | <b>11.7% (25/213)</b>  | <b>0.7496</b>  |
| <b>Don't remember / DK</b>  | <b>1.5% (3/203)</b>    | <b>0% (0/213)</b>      | <b>0.1442</b>  |
| <b>Source of AB (CHILDREN)</b>  | <b>2014 (n=318)</b>    | <b>2015 (n=334)</b>    | <b>p</b>       |
| <b>Doctor's prescription</b>  | <b>88.7% (282/318)</b> | <b>94.9% (317/334)</b> | <b>0.0047*</b> |
| <b>OTC sale in pharmacies</b>   | <b>5.7% (18/318)</b>   | <b>1.2% (4/334)</b>    | <b>0.0016*</b> |
| <b>Left-over AB at home</b>   | <b>4.4% (14/318)</b>   | <b>3.9% (13/334)</b>   | <b>0.9489</b>  |
| <b>Don't remember / DK</b>  | <b>1.2% (4/318)</b>    | <b>0% (0/334)</b>      | <b>0.0674</b>  |

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



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



## Reported use of non-prescribed AB

- Reasons for use in children
  - same AB prescribed by their paediatrician in the past for similar condition
- Reasons for use in parents
  - same AB prescribed by their MD in the past for similar condition
  - no time for doctors
  - condition not serious

**Further analysis on factors associated with AB misuse & parental poor knowledge (logistic regression)**

# Major findings

- Low level of public knowledge on AB/URTI (*average EU*)
- High expectations for URTI quick recovery with AB treatment
- Incomplete AB courses
  - low adherence & AMR
  - left-over AB for self – medication & AMR
- Parents better informed about AB use/AMR in 2015, mainly by MDs & mass media
- High rate (20%) of AB self-medication in 2014 and 2015 for URTI in parents (SEE)
- Increasingly, most children (95%) treated with AB by paediatricians, not self-medicated by parents (*=10% in Greece & Cyprus*)

## Discussion

- Monitoring system for prescribed (reimbursed) AB in place, but tracking OTC AB sales remains a challenge during study period
  - Regulation enforcement to restrict AB sales in pharmacies is vital
    - **amendment to the Medicines Law for criminal provision/fines on OTC sales of POM in May 2015**
  - Community pharmacists crucial to
    - advise patients on minor ailments (no need to treat URTI with AB)
    - refer to GPs,
    - advise to take full AB course
- Education and more innovative pharmacy service remuneration**
- Paediatric offices accessible for families

## Study limitations

- **Self-reported data re: 1 year** (recall bias, over/under-reporting), by interviews (socially acceptable answers)
  - \* from validated international studies, interviews for lower socioeconomic strata
    - combine different methods to validate self-reports (focus groups, prospective observational studies), but more resources
- **Restricted geographic coverage**
  - studies on national context – better, but need more resources
- **Use of positive statements** may enforce tendency to agree with questions more than disagree
  - \* positive statements from validated international studies
    - use of double/contrary statements to double check - but longer q

## Conclusion

- Despite limitations, our study provides important data on parental knowledge and behaviour on AB/URTI
- Mixed effects from AMR strategy 1 year after implementation
  - **Parental knowledge on AB use has improved**
  - **Parents still self-medicated with AB**
  - **But, less children treated with non-prescribed AB**
- More detailed subgroup analyses and further measurements in time may be needed
- Results to inform future efforts to address key gaps in public knowledge and monitor OTC practices in pharmacies





Thank you for your attention!

**Any suggestions/questions?**