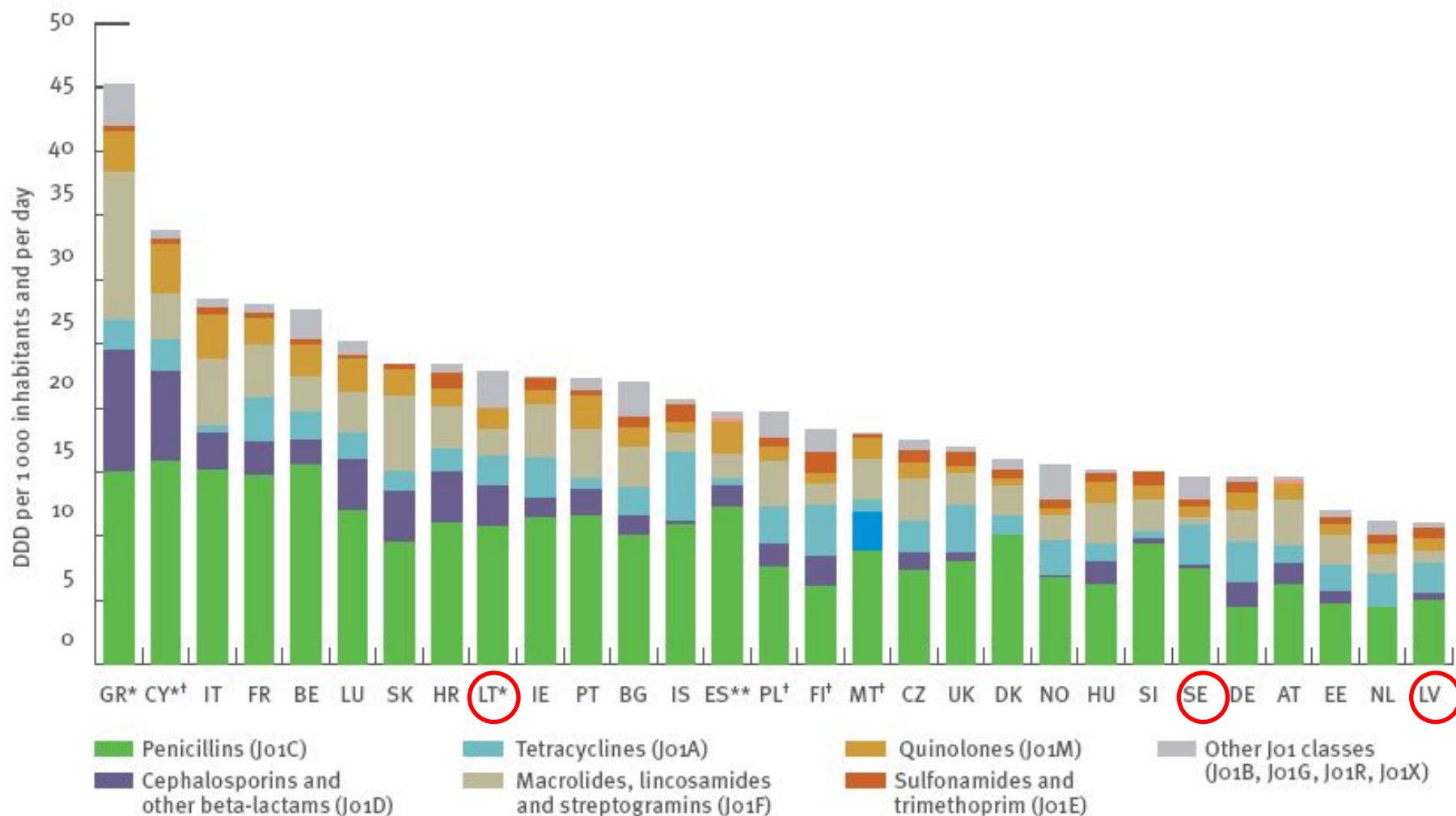


# Management of common infections in general practice: Experiences from a diagnose-prescribing survey in Sweden, Latvia and Lithuania

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**Figure 2.6.5.** Outpatient antibiotic (ATC group J01) use subdivided into major antibiotic classes according to ATC classification, 2008



Source: ESAC.

\* Total use, i.e. including inpatients, for Cyprus, Greece and Lithuania.

\*\* Reimbursement data, i.e. not including over-the-counter sales without a prescription, for Spain.

† 2005 data for Poland; 2007 data for Cyprus, Finland and Malta.

Date:	1 Otitis (Acute media otitis, perforated otitis)	8 Acute bronchitis	15 Gastroenteritis	22 Bone/ joint
Clinic nr:	2 Recurrent otitis < 1month	9 Exacerbation COPD	16 C. difficile (treated antibiotic ass. diarrhea)	23 Prophylaxis-write focus
	3 Otitis media/otitis simplex	10 Influenzae, RS, other viral bronchitis	17 Lower UTI, cystitis in women, "uncomplicated UTI"	24 Other (specify)
Doctor nr:	4 Pharyngotonsillitis	11 Atypical pn. (mycoplasma, chlamydia)	18 Recurrent. Lower/uncomplicated UTI*	
	5 Recurr. pharyngotons.<1month	12 Pneumonia	19 Complicated UTI (lower UTI in men), upper UTI (pyelonephritis)	
Sheet nr:	6 Sinusitis	13 H. pylori	20 Sexually Transmitted Infection	
	7 Common cold, unspecified upper RTI	14 Intraabdominal "surgical"	21 Skin/ soft tissue	

Patient			Type of visit				Diagnostics mark X if used				Diagnosis		Treatment							
Patient #	Age (years, if < 1 write 0.5)	Gender (M/F)	Symptoms duration (no of days)	Ambulatory/ home visit (A/H)	New/return/test results (N/R/T)	Telephone/nurse only (T/N)	CRP ?	Strep A-test ?	Mononucleosis test ?	Nitrites ?	Diagnose (# 1-24)	Specify diagnosis/ focus if "23 prophylaxis" or "24 other"	Antibiotics ? (No=0/Contd=C/New=Y)	Antibiotic (Substance)	Dose (g or mg) each time	Times per day	Admin (PO/IM/IV)	Planned duration of treatment, no of days	Delayed perscription (Y/N)	Referred to hospital or equiv. (Y/N)
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N.B:Only first visits and failures should be included, Routine follow-ups should be excluded

\*2 episodes < 6 months or 3 episodes within a year

# Ethical considerations

- In Sweden, follow-up of antibiotic prescriptions is part of ongoing quality assurance and patient safety programs, and ethical approval is not needed for collection of anonymized data.
- In Lithuania, regulation was similar to that in Sweden and written consent from patient was not required.
- In Latvia, the study was approved by Pauls Stradins Clinical University Hospital Development Fund Ethical Committee as part of the National Research Programme BIOMEDICINE. In accordance with this decision, consent forms were not necessary since patients' and doctors' information was not collected.

# Recruitment of participants

Centres and doctors in each participating region were recruited through convenience sampling

In Sweden most GP practices had a range of 3-10 GPs.

- **The Strama groups sent invitations** the responsible doctor at every GP practise  
In Stockholm also to each individual GP
- The e-mail included invitations to a seminar for contact persons.
- In Västerbotten invitation also via the county council's intranet and also via e-mail.

In Latvia, family physicians are self-employed and usually located individually.

**An e-mail signed by the head of the Latvian Family Physicians Association and chief investigator** was sent to all selected GPs through the mailing list kept by the Family Physicians Association.

In Lithuania part of family physicians work in group practices, some in polyclinics and very small number own single practices.

**Invitations were sent via e-mail** to primary health care centers and family physicians directly.  
**Institute of Hygiene and Lithuanian Society of General Practitioners created the information-invitation form for study and invited all family doctors**, who expressed willingness to participate, to introductory seminar.

Västerbotten county

Pop: 259.000

Perscription rate: 314/1000 inh/yr  
(2nd lowest in Sweden)

13/36 GP-stations participated

63 doctors

2150 visits,

405 patients with infections

Stockholm county

Pop: 2.019.000

Perscription rate: 419/1000 inh/yr  
(highest in Sweden)

56/~230 GP-stations participated

464/~2000 doctors

4454 patients with infections



Latvia

Pop: 2.200.000

~1500 GPs

69 doctors participated

1969 patients with infections

Lithuania

Pop: 3.390.000

21 GP-station participated

71 doctor participated

1472 patients with infections

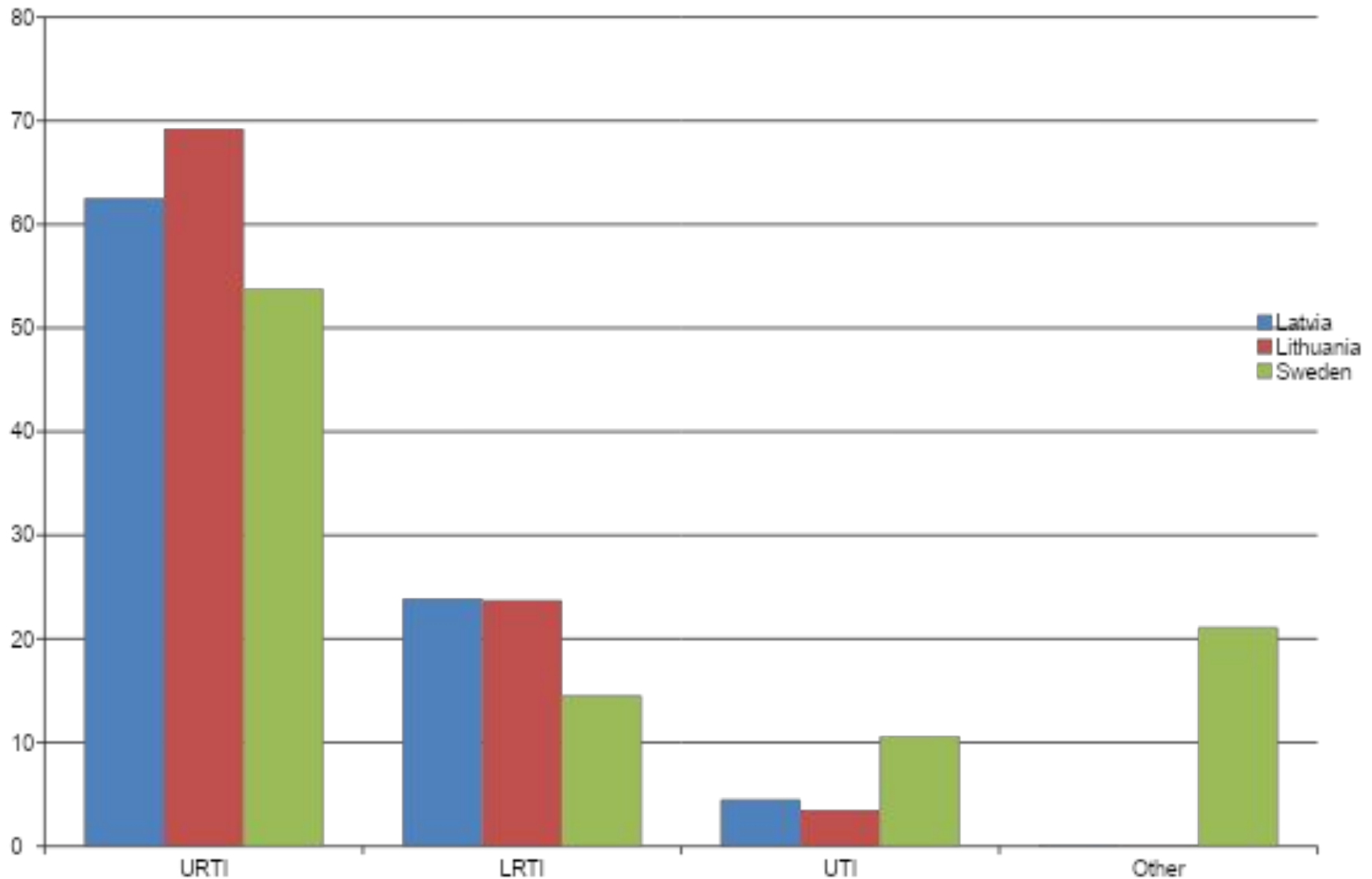


	<u>Latvia</u>	<u>Lithuania</u>	<u>Sweden</u>
Number of patients with suspected infection	1969	1524	4858

**Table 1** General information on patients, use of diagnostics, and treatment in a point prevalence survey of ambulatory treatment and antibiotic prescription for infections in three countries around the Baltic Sea

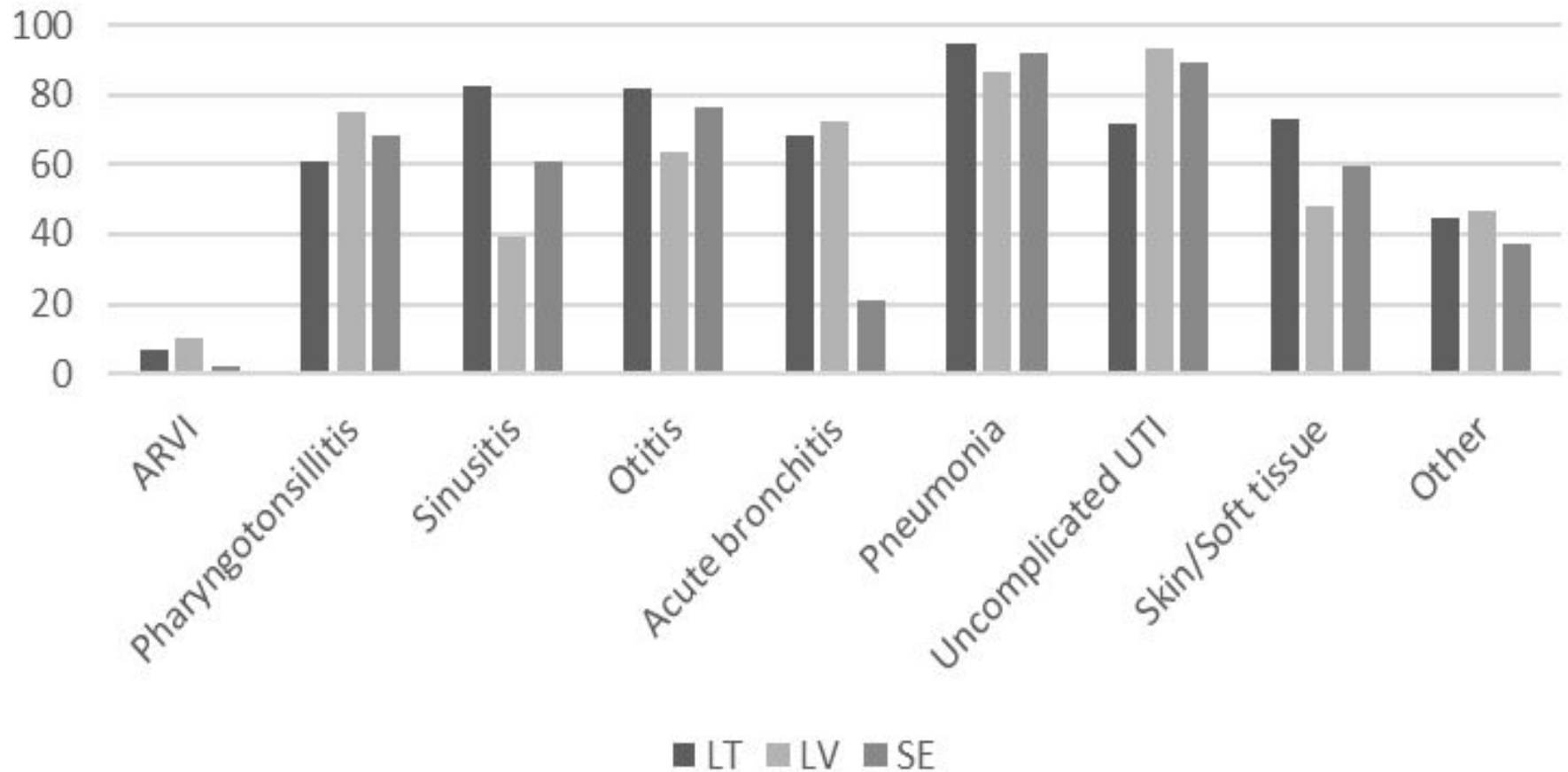
Variable	Latvia	Lithuania	Sweden
Mean age (all patients, years)	20 (STd 20)	20 (STd 19)	<u>31 (STd 25)</u>
Gender (all patients)	Female 55% (95% CI, 53%–7%)	Female 53% (95% CI, 50%–55%)	<u>Female 40%</u> (95% CI, 39%–2%)
Mean age in patients who received an antibiotic	26.9 (STd 22.4)	24.7 (STd 21.3)	37.2 (STd-26.1)
Gender in patients who received an antibiotic	Female 58% (95% CI, 54%– 61%)	Female 52% (95% CI, 48%– 56%)	<u>Female 35%</u> (95% CI, 33%–37%)
Mean duration of symptoms before the visit (days)	6.4 (STd 11)	7.3 (STd 16)	<u>11 (STd 17)</u>
Proportion receiving an antibiotic prescription (%)	42% (95% CI, 40%–45%)	42% (95% CI, 39%–44%)	<u>38% (95% CI, 37%–40%)</u>
CRP test performed (% of all cases with infection)	<u>7% (95% CI, 6%–8%)</u>	27% (95% CI, 25–29%)	32% (95% CI, 31%–33%)
Nitritis test performed in cases with uncomplicated urinary tract infection	<u>57% (95% CI, 44%–70%)</u>	68% (95% CI, 53%–83%)	70% 95% CI, 65%–75%)
Strep A test performed (% of pharyngotonsillitis cases)	11% (95% CI, 7%–15%)	0.3% (95% CI, 0.3%–0.9%)	<u>74% (95% CI, 70%–78%)</u>
X-ray performed (% of pneumonia cases)	3% (95% CI, 0.4%–6%)	<u>74% (95% CI, 62%–85%)</u>	1.4% (95% CI, 0.6%–3.4%)

# Most frequent reason for seeking a doctor

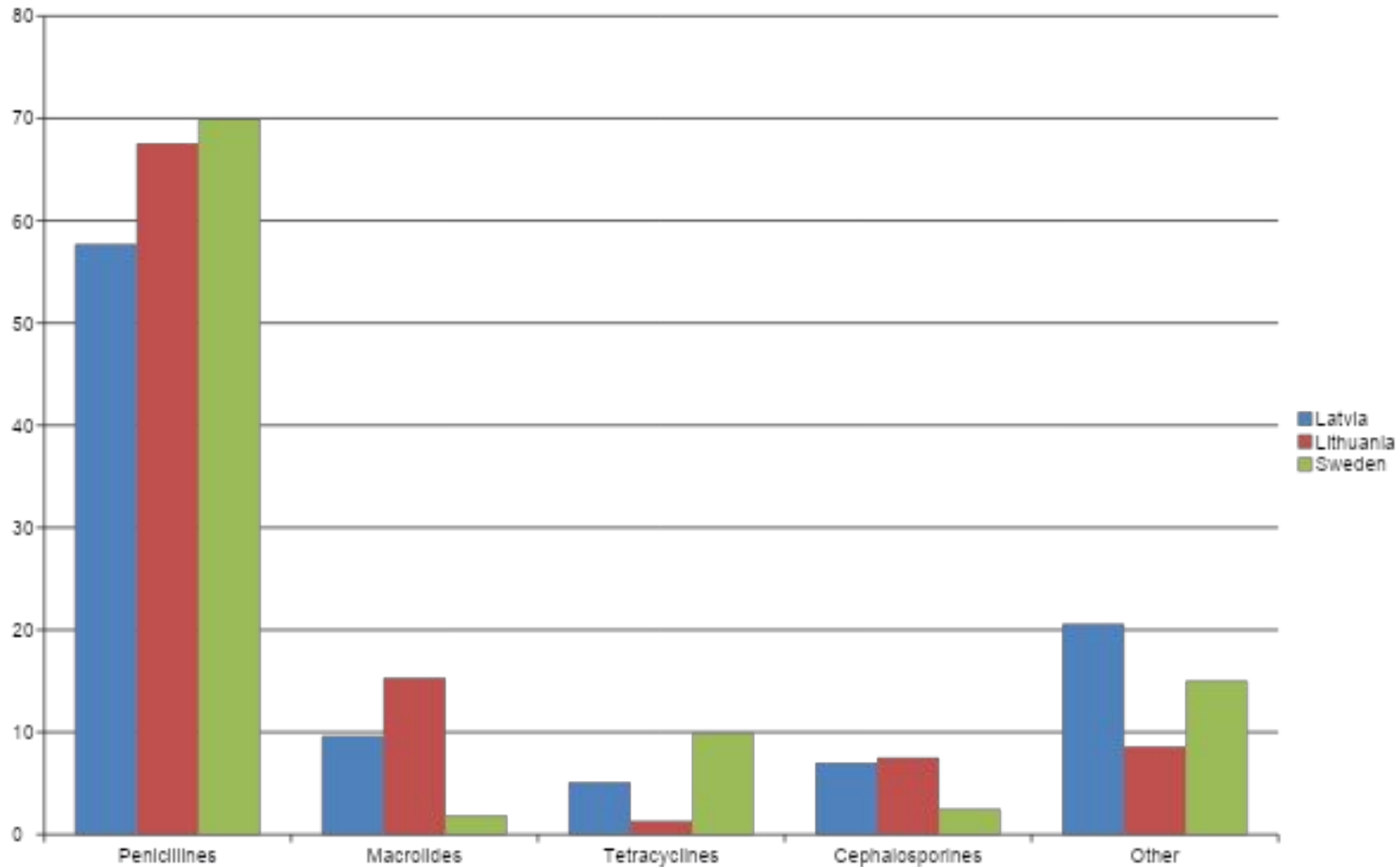




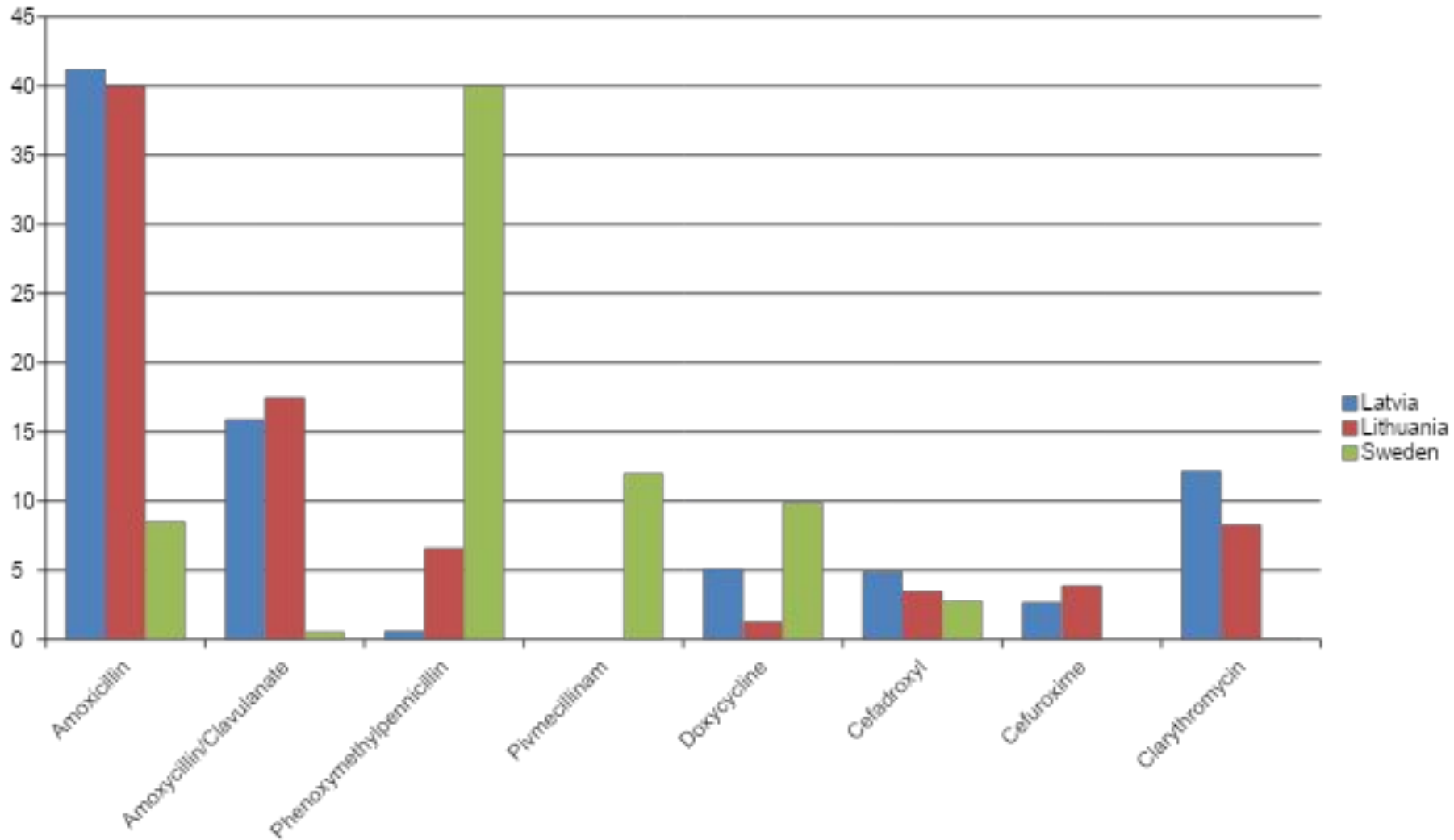
## Proportion treated per diagnosis according to country



# Most prescribed groups of antibiotics



# Most prescribed substances



# Main conclusions

- On average, Swedish patients were older and waited longer with symptoms
- Latvia and Lithuania used more amoxicillin +/- clavulanate and macrolides, Sweden used more penicillin V and doxycycline
- The protocol was easy to use and provided useful information for discussions about how to manage common infections in general practice
- Important antibiotics were not available, or comparatively expensive, in Latvia and Lithuania, increasing risk for use of more broad-spectrum antibiotics



# Planning and preparation for diagnose-prescribing survey in general practice

- Define target period for survey (one week, same in all regions)
- Define coordinator/ trainer in each region
- Define, and develop, database to enter manually completed protocols.  
Decide whether data entry should be done at each unit or at regional level (recommended)
- Define plan for feed-back to participating doctors/ centers

# Plan recruitment and reach-out method

- Define reach-out method
- Invite practitioners/ practices to participate.
- Ask each practice interested in participation to nominate one contact person

Participation should be voluntary and not involve financial incentives, except for costs for travel and housing for contact persons to attend work-shop/s



# Prepare contact persons

- Arrange information workshop for contact persons in each region.  
Supply them with information material.  
Assign each unit a number for identification.
- Contact persons go back and inform colleagues.  
Give each doctor a random identifying number.
- A second workshop/ information for contact persons a couple of weeks before survey might be useful
- Distribute protocols unless they can be printed/ copied at participating clinics

# Roles for contact persons before, during and after the survey

- Arrange a meeting to inform colleagues and go the instructions for the protocol, answer (or pass on to the regional coordinator) questions regarding how to fill in the protocol
- Contact person give heads up to colleagues, remind them about their number, and provide them with protocols and extra as needed
- Contact person informs and regularly reminds during registration period
- Denominator data: Collect data on total number of visits to all participating doctors during the study week (i.e. not only infections)
- Contact person sends all completed protocols and denominator data to regional coordinator at the end of the study (unless it has been agreed that they should enter the data)
- Participate in feed-back to participating doctors/ centers

# The protocol; at least one to be completed/ day

Date:	1 Otitis (Acute media otitis, perforated otitis)	8 Acute bronchitis	15 Gastroenteritis	22 Bone/ joint
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N.B. Only first visits and failures should be included, Routine follow-ups should be excluded

\*2 episodes < 6 months or 3 episodes within a year

# Instructions for participating doctors

## Study period

Monday XXXXXXXX 07.00 am to Monday XXXXXXXX 07.00 am

## Every day, on each sheet write:

Date and sheet number for that day

Clinic nr: and Doctor nr: As assigned by your contact person

## Eligible patients

### Inclusion criteria

- All patients evaluated by a doctor where the doctor considers the patient's symptoms caused by an infection
  - When symptoms are new
  - When evaluation is due to that symptoms have changed
  - When symptoms have worsened/therapeutic failure and other cases when the consultation leads to a note in the medical record. This means that most patients will be seen by the doctor, but also that patients
  - subject to planned telephone contact for test results as part of decision on antibiotics or not
  - prescribed systemic antibiotics during telephone consultation or after evaluation by a nurse should be included

### Exclusion criteria

- Patients seen for routine follow-up of for example after acute media otitis or pneumonia should not be registered
- Patients seen where the only purpose is prolongation of sick-leave should not be included
- General "open" consulting over telephone should not be included.

### Denominator data

The total number of visits to each participating doctor (for any diagnose) during the study week should be counted and submitted to the national coordinator together with the protocols (however only patients with infections should be registered in the protocol).

## Instructions to the protocol

Each page of the protocol is for ten patients (one line each). Patients should be registered just with consecutive numbers, **without personal identifiers**.

### Date

Begin each day with a new sheet, if more than one sheet is needed during one day give them numbers 1, 2 etc

### Clinic

Write the identifying number for your clinic you have been provided by the national coordinator or by the contact person at our clinic

### Doctor

You write your personal code (a number) you have been assigned.

### Sheet nr

Begin each day with 1, then 2,3 etc

### Patient

- Age: Write age (years) at day for visit.  
If a child is less than one year old – write 0,5 (regardless of how many months the child is)
- Gender-write **M** for male, **F** for Female
- Symptoms: write approximate duration in days for the symptoms relevant for the diagnose. If a child first has common cold/rhinosinusitis one week and then shows up with pain from the ear and gets a diagnose of otitis, write number of days with pain from the ear.

### Type of visit

- Write **A** for ambulatory, **H** for home visit
- Write **N** (new) if it is the first visit for the problem, **R** if it is a return due to therapeutic failure/lack of improvement **T** if it is a follow-up of test results leading to a new decision (treatment or not)
- If evaluation is made without seeing the patient,
  - Write **T** telephone contact with a patient only. This includes telephone follow up (compare with above) of test results like cultures, x-ray etc which leads to a new evaluation of treatment (or not).
  - write **N** if it is based on information from nurse only
  - otherwise leave empty

## Diagnostic tools

This refers to point-of care diagnostics only that you have used for your evaluation for the diagnose, i.e. results should be available immediately, mark with an X when appropriate, otherwise leave empty

## Diagnose

Only list the most important diagnose of infection, even if several options are possible.

Choose best option from the list, write the number in the field below under diagnosis.

- If you cannot find an appropriate diagnose, use 24 and specify in the field below
- Further explanations to some diagnoses
  - 1 Otitis=Acute Media Otitis, perforated otitis
  - 3 Otitis media with effusion= non-bacterial otitis, transudate
  - 7 includes common cold, un-specified upper respiratory tract infection
  - 10 diagnoses of influenza and RS (in children) may be set if there is an ongoing epidemic. Microbiological confirmation not necessary in the individual patient.
  - 11 “atypical pneumonia” refers to lower respiratory infections caused by bacteria that do not grow on routine culture media i.e. chlamydia, mycoplasma, Q-fever, ornithosis, legionella etc
  - 12 pneumonia refers to common bacterial pneumonias presumably caused by pneumococci, haemophilus etc (microbiology not necessary)
  - 14 Intraabdominal refers to surgical infections like diverticulitis, cholecystitis, appendicitis etc
  - 15 gastroenteritis include all contagious diarrhéal infections such as salmonellosis, norovirus (“winter vomiting disease”), rotavirus, giardiasis etc
  - 17 Lower UTI, cystitis in women, “uncomplicated UTI”
  - 18 Complicated UTI (lower UTI in men) and upper UTI (pyelonephritis)
  - 21 include erysipelas, furunculosis, Lyme borreliosis, acne etc

## Treatment

Only systemic antibiotics should be registered, not topically administered antibiotics (i.e. for external otitis, conjunctivitis, ointment for impetigo).

**Antifungals/antimycotics, antivirals, antiparasitic/ antihelminthic drugs should not be registered**

- If a new antibiotic treatment is initiated, write **Y**, if the patient is already on antibiotics but reevaluated for clinical reasons (not planned check-up!) but treatment is not altered, write **C** for continued, if no antibiotic is given write **N** for No
- Antibiotic substance: write generic name (i.e. amoxi-clav, doxycykline) not trading name
- Give amount for each administration as 1g, 500 mg, 200 mg etc
- Give number of times per day (1,2,3,4)
- PO=oral, i.m. = intramuscular, i.v.=intravenously
- State the number of days you want to treat, not the time that is covered by the package if there is a mismatch
- Delayed perscription means that you write a prescriprion of antibiotics but tell the patient to “wait and see” a few days and start the course only if worsening och lack of improvement. Write **Y** (=yes) or **N** (=no)
- By referred means that the patient is acutely so ill that he/she needs immediate treatment at a higher level of care. Write **Y** (=yes) or **N** (=no)