ESGAP
ESCMID STUDY GROUP FOR ANTIBIOTIC POLICIES
European Society of Clinical Microbiology and Infectious Diseases

KLİMİK
TÜRK KLİNİK MİKROBİYOLOJİ VE İNFEKSİYON HASTALIKLARI DERNEĞİ

Antimicrobial Stewardship in Primary Care

Dr. Okan Derin

Medipol University School of Medicine

Medipol Mega Hospital

Istanbul

MEDİPOL UNV İSTANBUL MEDİPOL UNIVERSITY

Plan

Primary Healthcare Systems

Facts about AMR

Current antibiotic consumption

Overuse/Underuse/Misuse of antibiotics

Interventions/Guidelines

Primary Care Systems

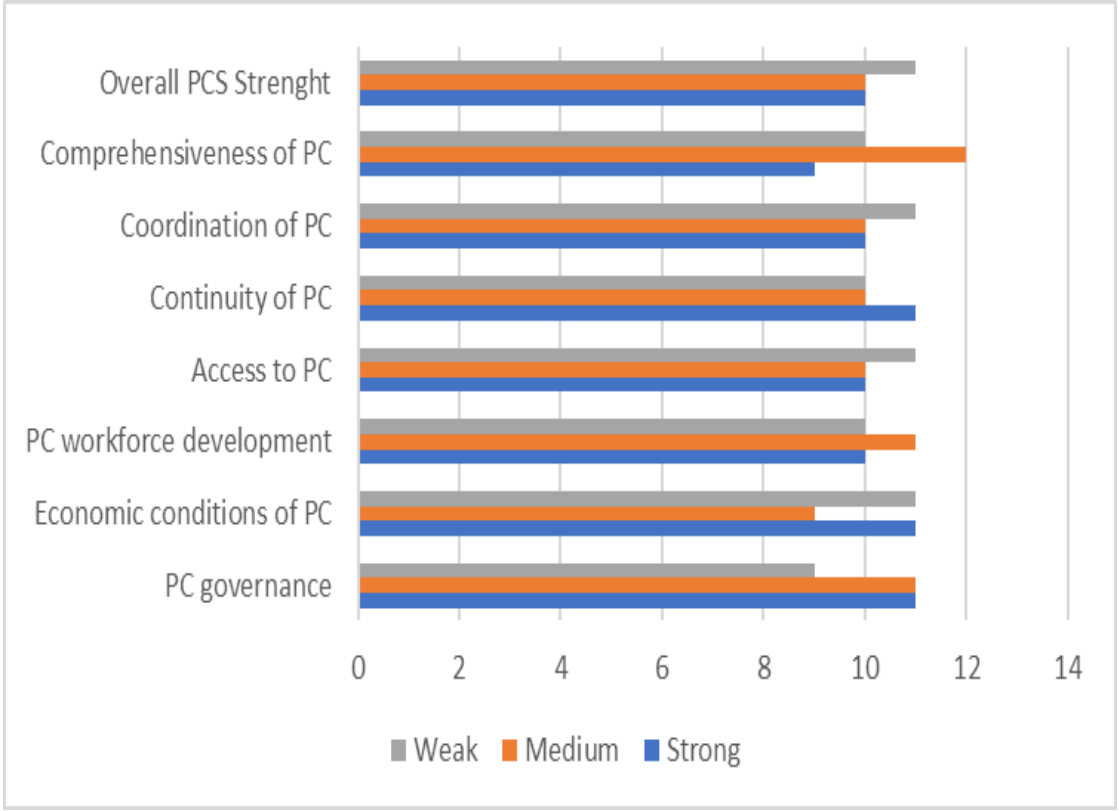
- The first level of contact for the population with the healthcare system, bridging health care as close as possible to where people live and work (WHO-Alma Ata Declaration- 1978)

- Strong primary care system produces better health outcomes against lower costs

Table 2

The strengths of countries' primary care dimensions based on scoring system (see Box 2)

	The structure of primary care			The service-delivery process of primary care				
Country	Primary care governance	Economic conditions of primary care	Primary care workforce development	Access to primary care	Continuity of primary care	Coordination of primary care	Comprehensiveness of primary care	Overall primary care system strength
Austria	Medium	Medium	Weak	Medium	Weak	Weak	Weak	Weak
Belgium	Medium	Strong	Medium	Weak	Strong	Medium	Strong	Strong
Bulgaria	Medium	Weak	Weak	Weak	Medium	Weak	Strong	Weak
Cyprus	Weak	Weak	Weak	Weak	Medium	Weak	Weak	Weak
Czech Republic	Medium	Weak	Weak	Strong	Strong	Medium	Weak	Medium
Denmark	Strong	Medium	Strong	Strong	Strong	Strong	Medium	Strong
Estonia	Strong	Weak	Medium	Medium	Strong	Medium	Medium	Strong
Finland	Medium	Strong	Strong	Medium	Medium	Medium	Strong	Strong
France	Medium	Medium	Medium	Weak	Medium	Medium	Strong	Medium
Germany	Medium	Strong	Medium	Medium	Strong	Weak	Medium	Medium
Greece	Medium	Weak	Weak	Weak	Weak	Strong	Weak	Weak
Hungary	Weak	Medium	Medium	Strong	Medium	Weak	Weak	Weak
Iceland	Weak	Weak	Weak	Medium	Strong	Weak	Medium	Weak
Ireland	Weak	Weak	Strong	Weak	Strong	Weak	Medium	Weak
Italy	Strong	Strong	Medium	Medium	Weak	Medium	Weak	Medium
Latvia	Medium	Medium	Weak	Weak	Strong	Medium	Medium	Medium
Lithuania	Strong	Medium	Medium	Strong	Weak	Strong	Strong	Strong
Luxembourg	Weak	Weak	Weak	Weak	Weak	Medium	Medium	Weak
Malta	Weak	Weak	Strong	Weak	Weak	Strong	Medium	Weak
Netherlands	Strong	Strong	Strong	Strong	Weak	Strong	Medium	Strong
Norway	Strong	Weak	Medium	Medium	Medium	Weak	Strong	Medium
Poland	Weak	Weak	Weak	Strong	Medium	Strong	Weak	Medium
Portugal	Strong	Medium	Strong	Strong	Medium	Medium	Strong	Strong
Romania	Strong	Strong	Medium	Medium	Medium	Weak	Weak	Medium
Slovak Rep.	Weak	Medium	Weak	Medium	Strong	Weak	Weak	Weak
Slovenia	Strong	Strong	Strong	Strong	Weak	Strong	Weak	Strong
Spain	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong
Sweden	Medium	Medium	Medium	Medium	Weak	Strong	Strong	Medium
Switzerland	Weak	Medium	Strong	Weak	Medium	Medium	Medium	Medium
Turkey	Medium	Medium	Medium	Weak	Weak	Weak	Medium	Weak
UK	Strong	Strong	Strong	Strong	Medium	Strong	Strong	Strong



The strength of primary care in Europe: an international comparative study

Br J Gen Pract. 2013 Nov; 63(616): e742–e750

- Primary care physicians are the first point of contact in 15 EU health systems
- In half of EU countries primary care is organized around solo practice
- Fee-for-service and capitation are still the most common methods of payment in primary care, although use of blended forms of payments is growing
- Patients generally report positive experience with primary care
- Prescribing patterns in primary care raise concerns about appropriate use of medications

Health at a Glance: Europe 2016 State of Health in the EU Cycle

Plan

Primary Healthcare Systems

Facts about AMR

Current antibiotic consumption

Overuse/Underuse/Misuse of antibiotics

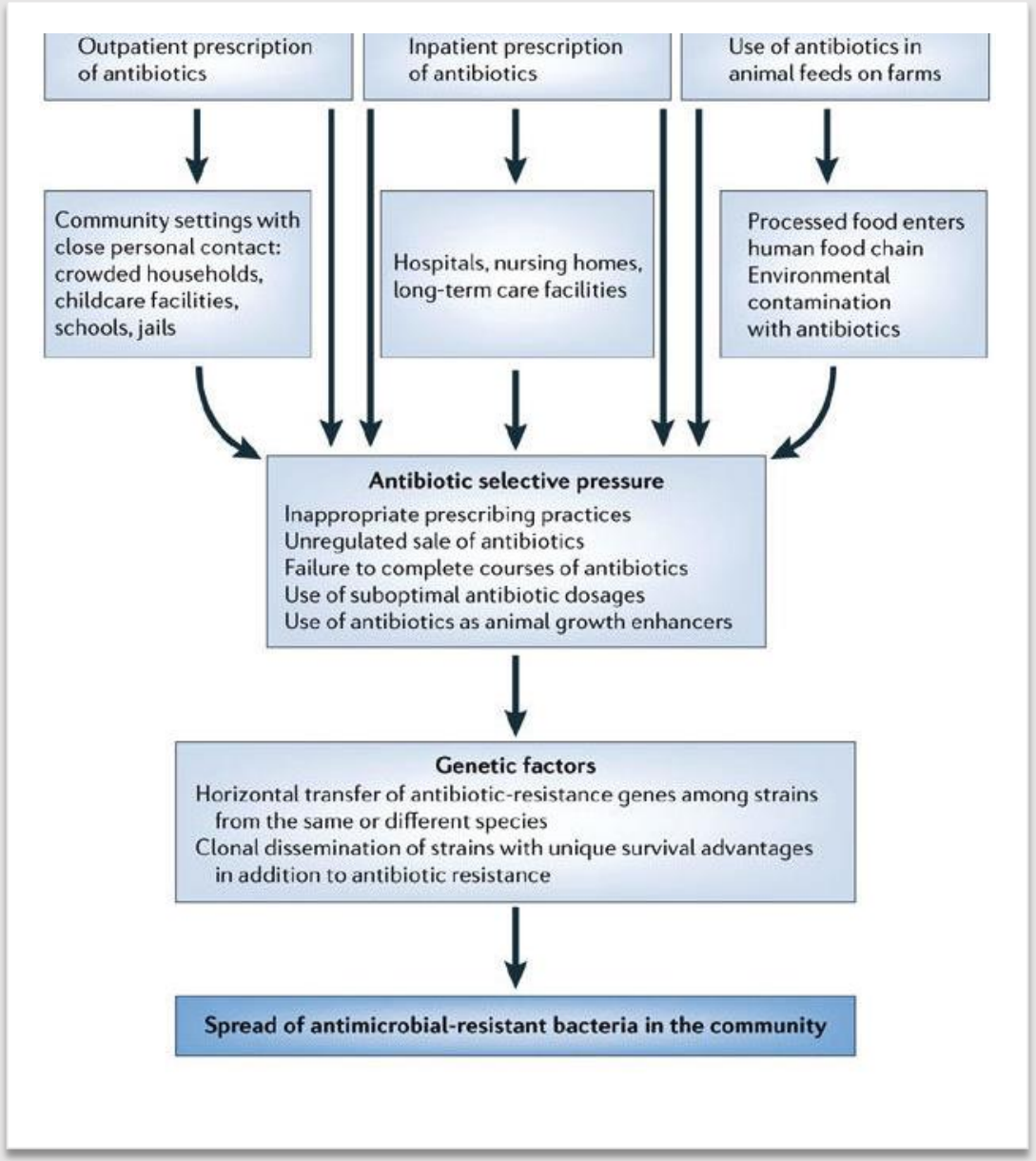
Interventions/Guidelines

Some facts about AMR/AMS

- Antimicrobial resistance is strongly related to misuse of antimicrobial agents
- Antimicrobial resistance is rising
- There is not new antibiotics on pipeline
- Vast majority of antibiotic consumption in outpatient setting
- The main prescribers of antibiotics in primary care settings are general practitioners (GPs), pediatricians and dentists
- Approximately half of outpatient antibiotic prescribing in humans might be inappropriate, including antibiotic selection, dosing, or duration, in addition to unnecessary antibiotic prescribing

How can we improve antibiotic prescribing in primary care? Expert review of anti-infective therapy. 2016;14(4):403-13

- Antimicrobial resistance is strongly related to inappropriate use of antimicrobial agents



Plan

Primary Healthcare Systems

Facts about AMR

Current antibiotic consumption

Overuse/Underuse/Misuse of antibiotics

Interventions/Guidelines

Some facts about AMR/AMS

- Antimicrobial resistance is strongly related to misuse of antimicrobial agents
- Antimicrobial resistance is rising
- There is no new antibiotics on pipeline
- Vast majority of antibiotic consumption occurs in outpatient setting
- The main prescribers of antibiotics in primary care settings are general practitioners (GPs), pediatricians and dentists
- Approximately half of outpatient antibiotic prescribing in humans might be inappropriate, including antibiotic selection, dosing, or duration, in addition to unnecessary antibiotic prescribing

How can we improve antibiotic prescribing in primary care? Expert review of anti-infective therapy. 2016;14(4):403-13

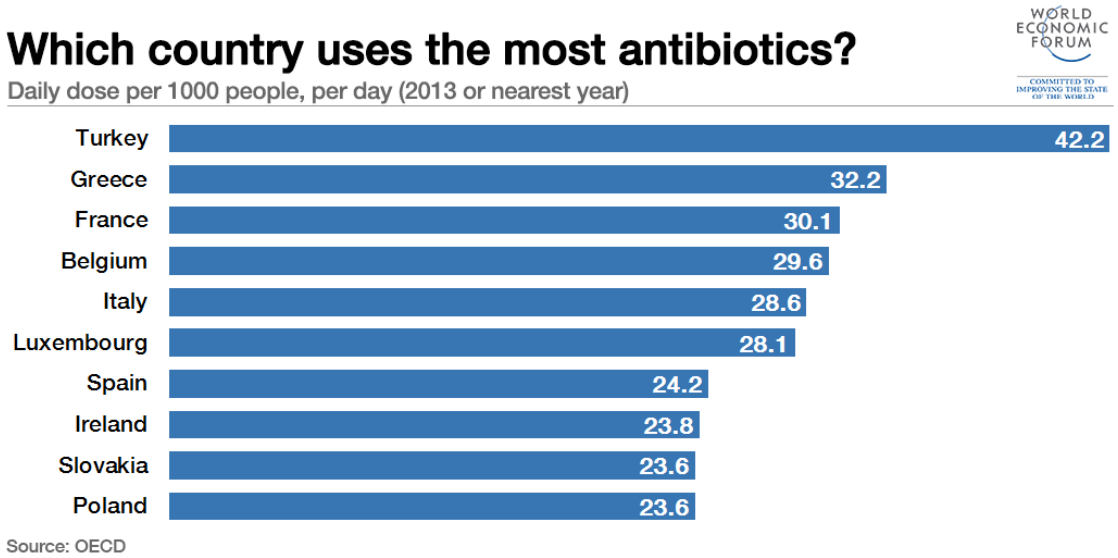
Defined daily dose

- The DDD is the assumed average maintenance dose per day for a drug used for its main indication in adults
- Rough estimate of consumption and not exact picture of actual use
- DDDs per 1000 inhabitants per day; DDDs per 100 bed-days; DDDs per inhabitant per year

10 DDDs/1000 inhabitants/day

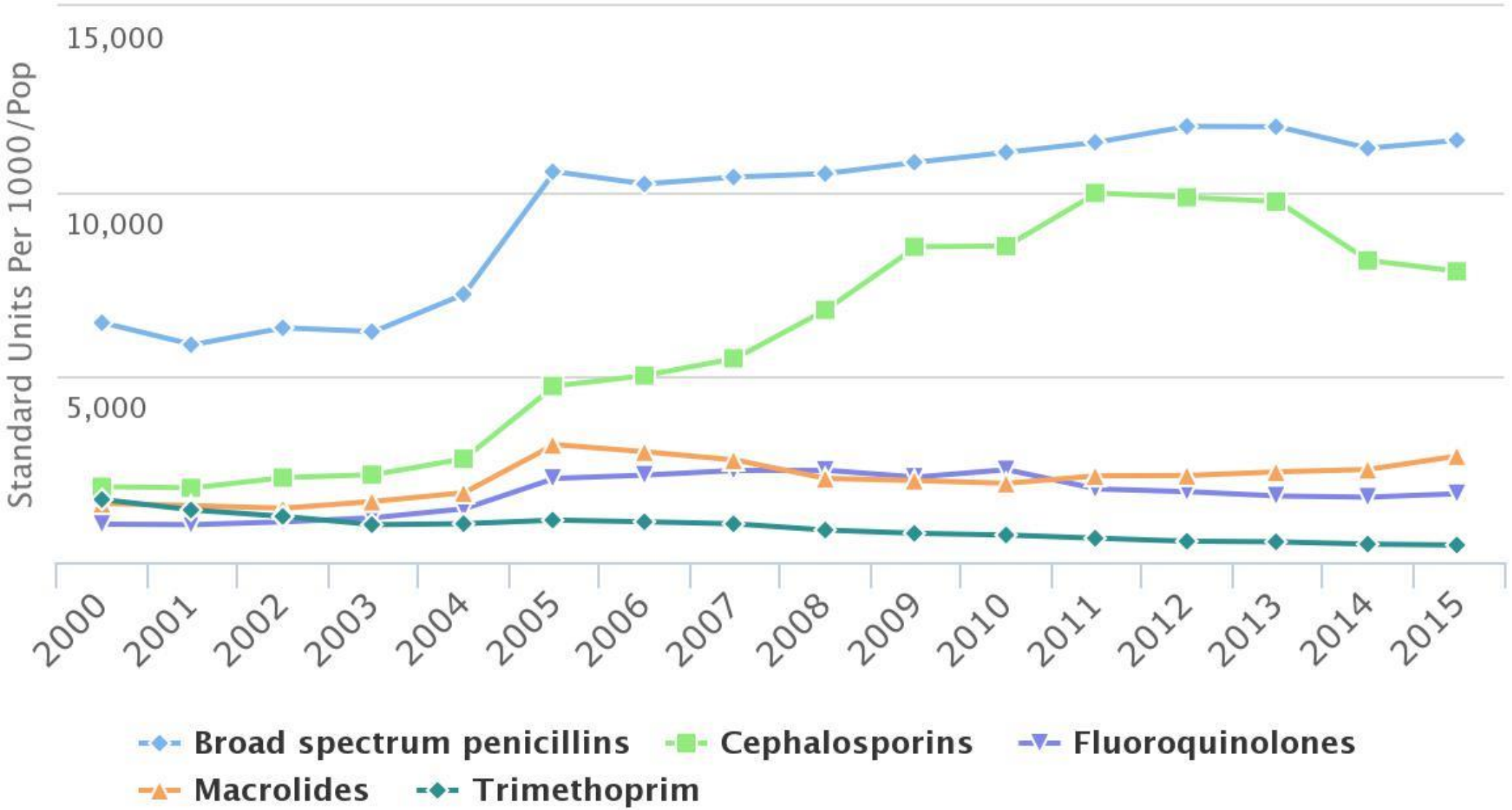
1% of the population can receive certain treatment daily

Outpatient antibiotic consumption accounted for between 85 to 95% of total antibiotic use in 2012 in the European Union, according to European Centre for Disease Prevention and Control (ECDC)



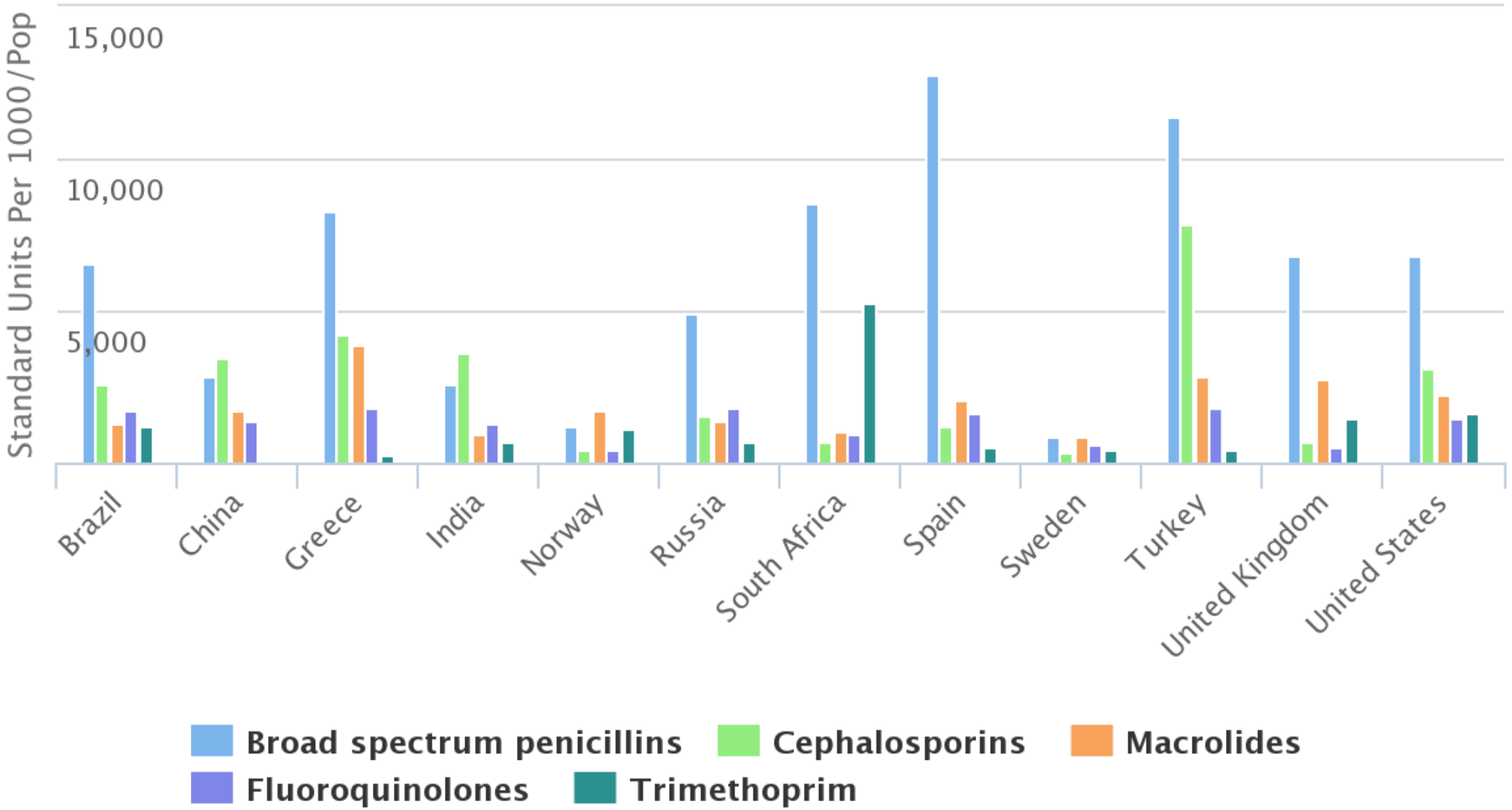
Antibiotic Use in Turkey

Source: IMS Health



Antibiotic Use in 2015

Source: IMS Health



Plan

Primary Healthcare Systems

Facts about AMR

Current antibiotic consumption

Overuse/Underuse/Misuse of antibiotics

Interventions/Guidelines

Some facts about AMR/AMS

- Antimicrobial resistance is strongly related to misuse of antimicrobial agents
- Antimicrobial resistance is rising
- There is no new antibiotics on pipeline
- Vast majority of antibiotic consumption in outpatient setting
- The main prescribers of antibiotics in primary care settings are general practitioners (GPs), pediatricians and dentists
- Approximately half of outpatient antibiotic prescribing in humans might be inappropriate, including antibiotic selection, dosing, or duration, in addition to unnecessary antibiotic prescribing

How can we improve antibiotic prescribing in primary care? Expert review of anti-infective therapy. 2016;14(4):403-13

What Drives Inappropriate Antibiotic Use in Outpatient Care?

- Patient satisfaction and pressure
- Time constraints
- Diagnostic uncertainty
- Externalized responsibility

http://www.pewtrusts.org/en

Patient satisfaction and pressure

- Patients or their families may expect to get a prescription at an office visit, even when an antibiotic is not necessary. They may wrongly believe that antibiotics can relieve symptoms similar to those they've experienced in the past, such as a high fever

Gaarslev et al. Antimicrobial Resistance and Infection Control (2016) 5:39

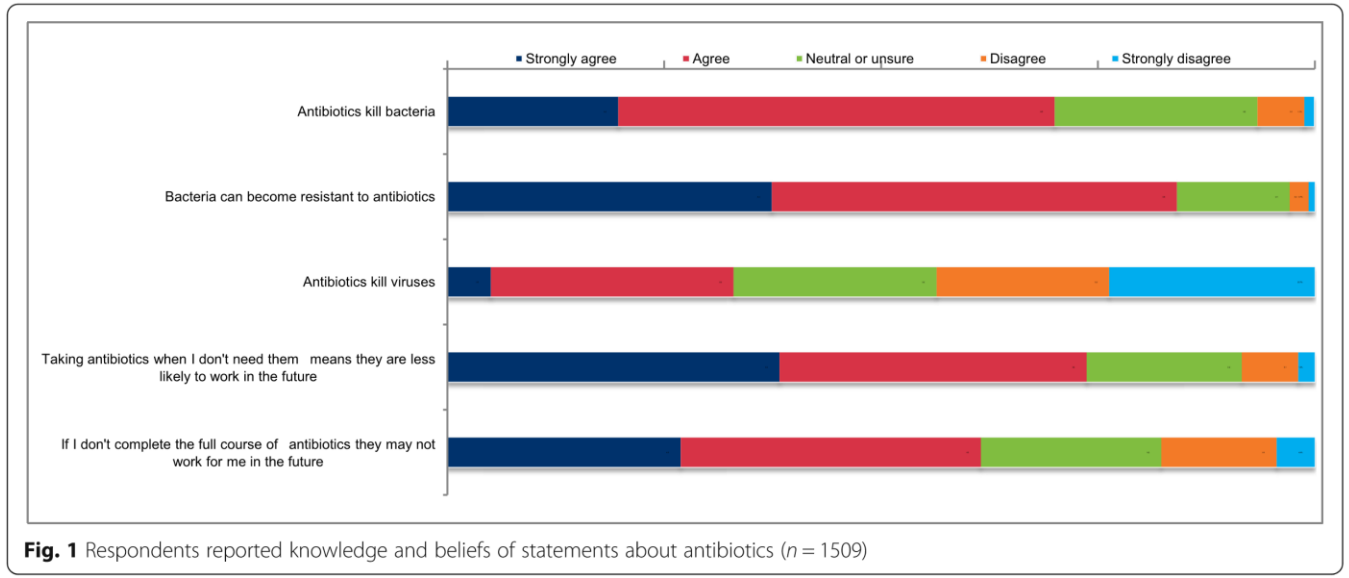


Fig. 1 Respondents reported knowledge and beliefs of statements about antibiotics ($n = 1509$)

- Antibiotics help them feel better,
- Prevention of potential deterioration of illness,
- Previous successful experience and investment of time and money to consult a doctor.

Time constraints

- In outpatient settings, doctors have limited time to see patients, diagnose their illnesses, and formulate a treatment plan.
- In interviews, physicians often say workload and time pressures contribute to the over-prescription of antibiotics.

Diagnostic uncertainty

- Diagnostic uncertainty is another reason given for inappropriate prescriptions. Patients with viral and bacterial infections often have similar symptoms—congestion, cough, sore throat—making it difficult for physicians to differentiate between the two diagnosis.

Table 2. Sampled Visits With Antibiotics Prescribed and Mean Annual Rate per 1000 Population of Ambulatory Care Visits With Antibiotics Prescribed by Age Group and Diagnosis From the US NAMCS/NHAMCS, 2010-2011

	Age Group, y							
	0-19		20-64		≥65		All Ages	
Diagnosis[a]	Unweighted No. of Sampled Visits With Antibiotics Prescribed	Weighted Mean Annual Rate of Visits With Antibiotics Prescribed, % (95% CI)[b,c]	Unweighted No. of Sampled Visits With Antibiotics Prescribed	Weighted Mean Annual Rate of Visits With Antibiotics Prescribed, % (95% CI)[b,c]	Unweighted No. of Sampled Visits With Antibiotics Prescribed	Weighted Mean Annual Rate of Visits With Antibiotics Prescribed, % (95% CI)[b,c]	Unweighted No. Sampled Visits With Antibiotics Prescribed	Weighted Mean Annual Rate of Visits With Antibiotics Prescribed, % (95% CI)[b,c]
Sinusitis	457	65 (51-79)	1055	55 (45-64)	151	44 (32-57)	1663	56 (48-64)
Suppurative otitis media	1660	154 (131-177)	305	9 (7-11)	23	[d]	1988	47 (41-54)
Pharyngitis	1001	91 (76-105)	785	29 (23-35)	39	[d]	1825	43 (38-49)
Skin, cutaneous, and mucosal infections	570	39 (32-46)	1493	39 (33-44)	230	38 (29-47)	2293	39 (34-43)
Other skin, cutaneous, and mucosal conditions	607	37 (30-43)	1321	32 (25-39)	384	64 (39-89)	2312	38 (30-45)
Urinary tract infections	436	23 (17-28)	1465	35 (30-41)	459	64 (51-77)	2360	35 (31-40)
Viral upper respiratory tract infections	369	42 (31-53)	371	19 (15-23)	79	29 (16-41)	819	26 (21-31)
Bronchitis or bronchiolitis[e]	259	28 (18-39)	608	23 (18-28)	140	30 (20-40)	1007	25 (20-30)
Other gastrointestinal conditions	132	9 (5-12)	947	21 (17-25)	85	19 (10-28)	1164	17 (14-21)
Other genitourinary conditions	133	8 (5-11)	646	19 (14-23)	144	31 (22-40)	923	17 (14-21)
Miscellaneous bacterial infections	272	20 (13-26)	390	11 (9-13)	40	[d]	702	14 (11-17)
Other respiratory conditions (eg, chronic bronchitis)	73	10 (6-14)	210	7 (5-9)	117	33 (21-45)	400	11 (8-14)
Gastrointestinal infections	112	10 (6-13)	423	11 (9-14)	65	13 (7-20)	600	11 (9-13)
Pneumonia	275	22 (16-27)	219	5 (4-7)	105	12 (7-17)	599	11 (9-13)
Acne	134	22 (17-27)	119	8 (5-11)	3	[d]	256	11 (8-13)
Asthma or allergy	125	14 (9-18)	189	8 (6-11)	30	[d]	344	9 (7-12)
Miscellaneous nonbacterial infections	23	[d]	105	3 (1-4)	7	[d]	135	2 (1-3)
Nonsuppurative otitis media	81	5 (3-7)	21	[d]	3	[d]	105	2 (1-3)
Influenza	5	[d]	14	[d]	1	[d]	20	[d]
Viral pneumonia	2	[d]	1	[d]	0	[d]	3	[d]
Remaining codes not listed elsewhere	784	48 (39-57)	2479	83 (71-95)	936	200 (166-234)	4199	89 (77-100)
All conditions	7510	646 (571-721)	13 166	418 (372-464)	3041	617 (544-689)	23 717	506 (458-554)

Original Investigation

FREE

May 3, 2016

Prevalence of Inappropriate Antibiotic Prescriptions Among US Ambulatory Care Visits, 2010-2011

Katherine E. Fleming-Dutra, MD[1]; Adam L. Hersh, MD, PhD[2]; Daniel J. Shapiro[3]; et al

» Author Affiliations | Article Information

JAMA. 2016;315(17):1864-1873. doi:10.1001/jama.2016.4151

Acute Respiratory Tract Infections

DDx- Examples

- Acute sore throat
  - Viral/Bacterial
- Pneumonia
- Acute Bronchitis

- Symptoms & Signs

  ±

- CRP- level

  ±

- Rapid antigen tests

Guidelines on management of RTI

- National Guidelines

- European Respiratory Society (ERS)
- European Society for Clinical Microbiology and Infectious Diseases(ESCMID)
- Infectious Disease Society of America (IDSA)

Acute Sore Throat

GUIDELINE

- Swabbing the throat and testing for GAS pharyngitis by rapid antigen detection test (RADT) and/or culture should be performed **(strong, high)**
- In children and adolescents, negative RADT tests should be backed up by a throat culture **(strong, high)**
- Positive RADTs do not necessitate a back-up culture because they are highly specific **(strong, high)**
- Routine use of back-up throat cultures for those with a negative RADT is not necessary for adults in usual circumstances, **(strong, moderate)**

Clinical Infectious Diseases, Volume 55, Issue 10, 15 November 2012, Pages e86–e102

Acute Sore Throat

GUIDELINE

- Testing for GAS pharyngitis usually is not recommended for children or adults with acute pharyngitis with clinical and epidemiological features that strongly suggest a viral etiology (eg, cough, rhinorrhea, hoarseness, and oral ulcers; **strong, high**).
- Diagnostic studies for GAS pharyngitis are not indicated for children <3 years old because acute rheumatic fever is rare in children <3 years old and the incidence of streptococcal pharyngitis and the classic presentation of streptococcal pharyngitis are uncommon in this age group. Selected children <3 years old who have other risk factors, such as an older sibling with GAS infection, may be considered for testing (**strong, moderate**).

Clinical Infectious Diseases, Volume 55, Issue 10, 15 November 2012, Pages e86–e102

Acute sore throat

GUIDELINE

- Follow-up posttreatment throat cultures or RADT are not recommended routinely but may be considered in special circumstances (**strong, high**).
- Diagnostic testing or empiric treatment of asymptomatic household contacts of patients with acute streptococcal pharyngitis is not routinely recommended (**strong, moderate**).

Clinical Infectious Diseases, Volume 55, Issue 10, 15 November 2012, Pages e86–e102

Acute sore throat –summary-

GUIDELINE

- Signs and symptoms of GAS and non-streptococcal pharyngitis usually overlap
- RADT can be useful to distinguish between GAS and non-GAS pharyngitis
  - Fast & Sensitivity: 65-96% Specifity > 96%
  - Missing Group C & G
  - Chronic carrier state
  - Cost of testing
- Throat culture is sensitive up to 95%
  - Gold standard
  - Time consuming
- Molecular tests (PCR-based)
  - High sensitivity & Specifity
  - Expensive

RADT-Turkish Experience-

- Strep-A test is mandatory in Turkey since mid-2016
  - If prescribing antibiotics with Pharyngitis/Tonsillitis diagnosis
- Improvement on antibiotic prescribing?

Misuse of antibiotics

- Non-compliance with therapy : 1/3
- Re-use of leftover antibiotics: 1/4

ELSEVIER

International Journal of Antimicrobial Agents 26 (2005) 106–113

A systematic review and meta-analysis of misuse of antibiotic therapies in the community

Przemyslaw Kardas [a], Scott Devine [b,*], Amanda Golembesky [c], Craig Roberts [d]

Plan

Primary Healthcare Systems

Facts about AMR

Current antibiotic consumption

Overuse/Underuse/Misuse of antibiotics

Interventions

AMS

- Systematic measurement and coordinated interventions
    - choice,
    - dosing,
    - route,
    - duration of administration

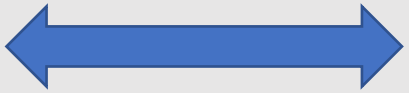
Infection control and hospital epidemiology. 2012 Apr;33(4):322-7.

Main Goals of AMS in Primary Care Setting

- Optimizing clinical outcomes without unintended consequences
  - Toxicity
  - Selection of pathogenic organisms such as *Clostridium difficile*
  - The emergence of antibiotic resistance
- Optimizing resource utilization

Interventions to optimize antibiotic use

- Patient/Provider oriented
- Structural/Behavioral



- Persuasive
- Restrictive

Centers for Disease Control and Prevention
MMWR
Morbidity and Mortality Weekly Report
Recommendations and Reports / Vol. 65 / No. 6
November 11, 2016

Core Elements of Outpatient Antibiotic Stewardship

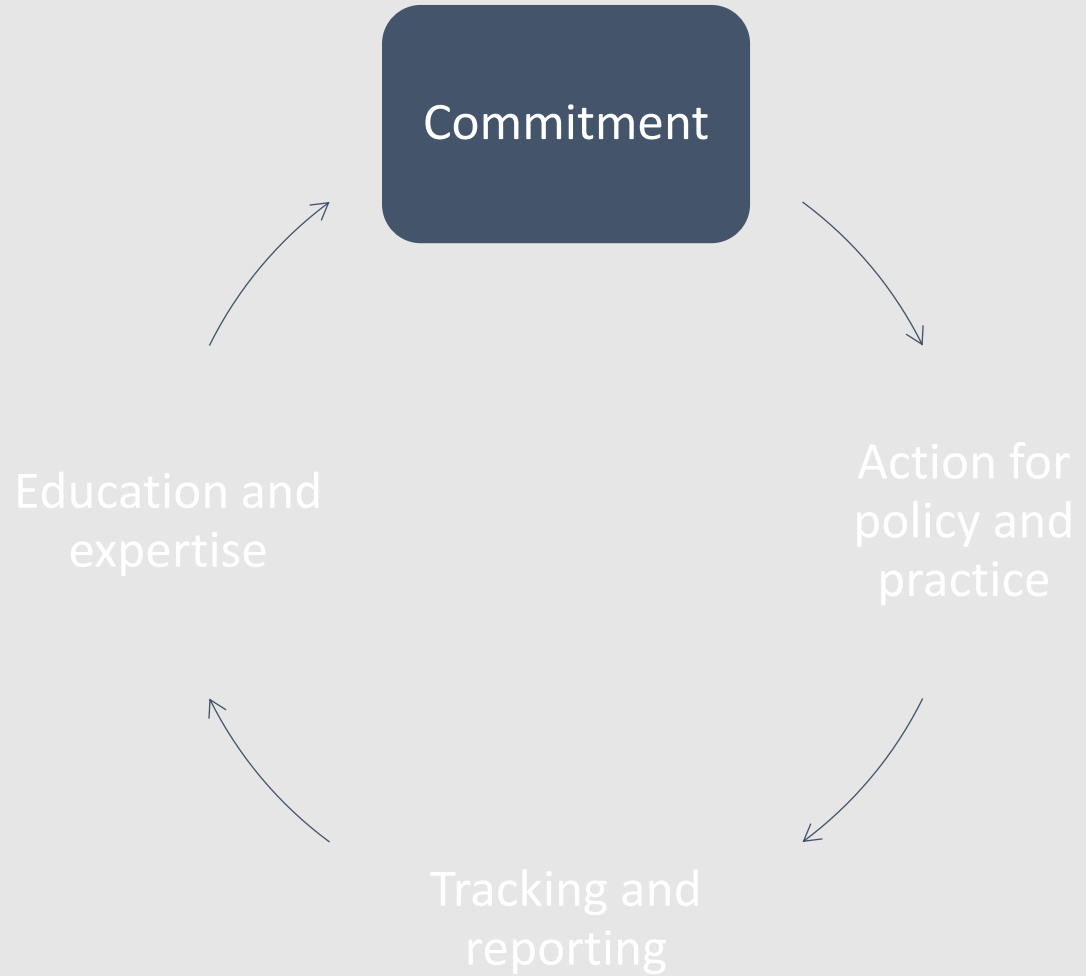
Initial steps

- Identify
  - High-priority conditions
  - Barriers that may lead antibiotic misuse
- Establish standards for antibiotic prescription

The Partners of AMS in Primary Care

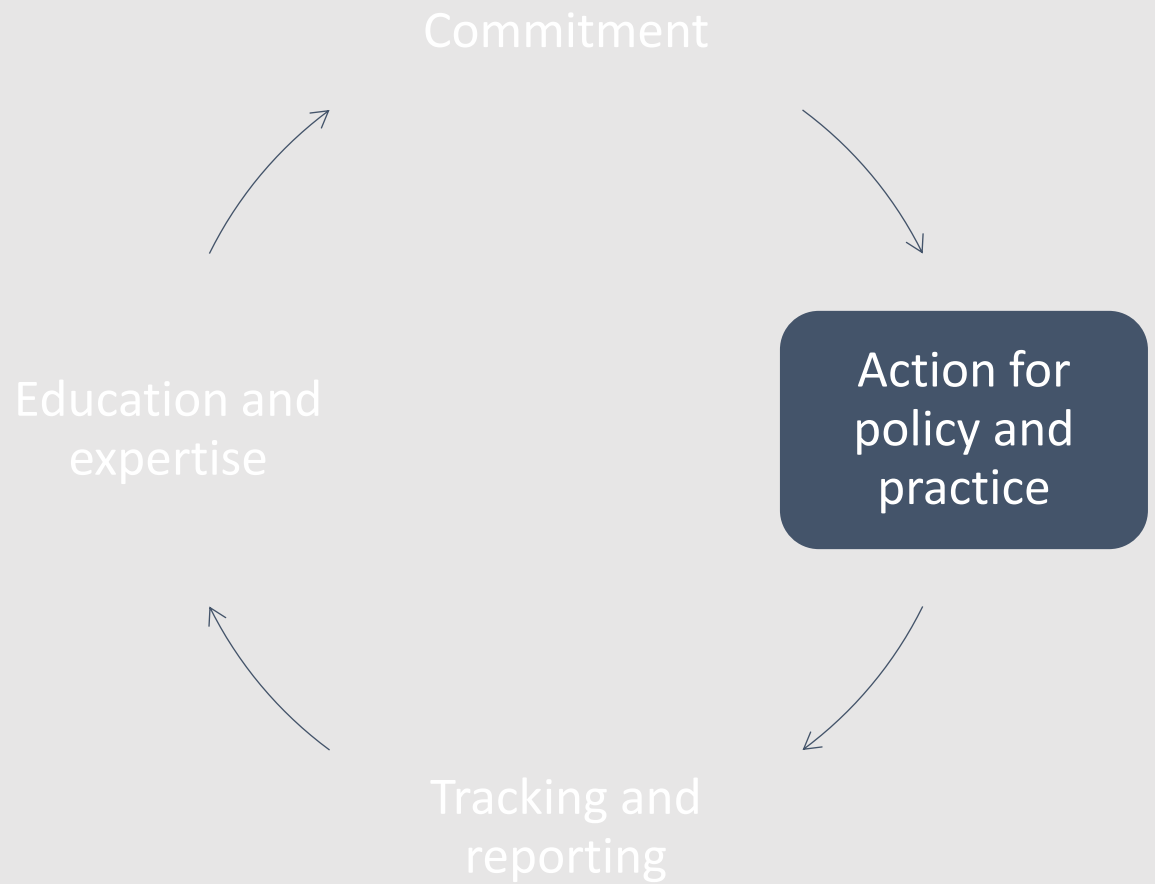
- Acute care hospitals
- Long-term care facilities
- Local health departments
- Health insurance companies
- Health care professional societies
- Community pharmacies and pharmacists
- Local microbiologic laboratories

Core elements of AMS in Primary Care



- Write and display public commitments in support of antibiotic stewardship
- Identify a single leader to direct antibiotic stewardship activities within a facility
- Include antibiotic stewardship-related duties in position descriptions or job evaluation criteria
- Communicate with all clinic staff members to set patient expectations

Core elements of AMS in Primary Care

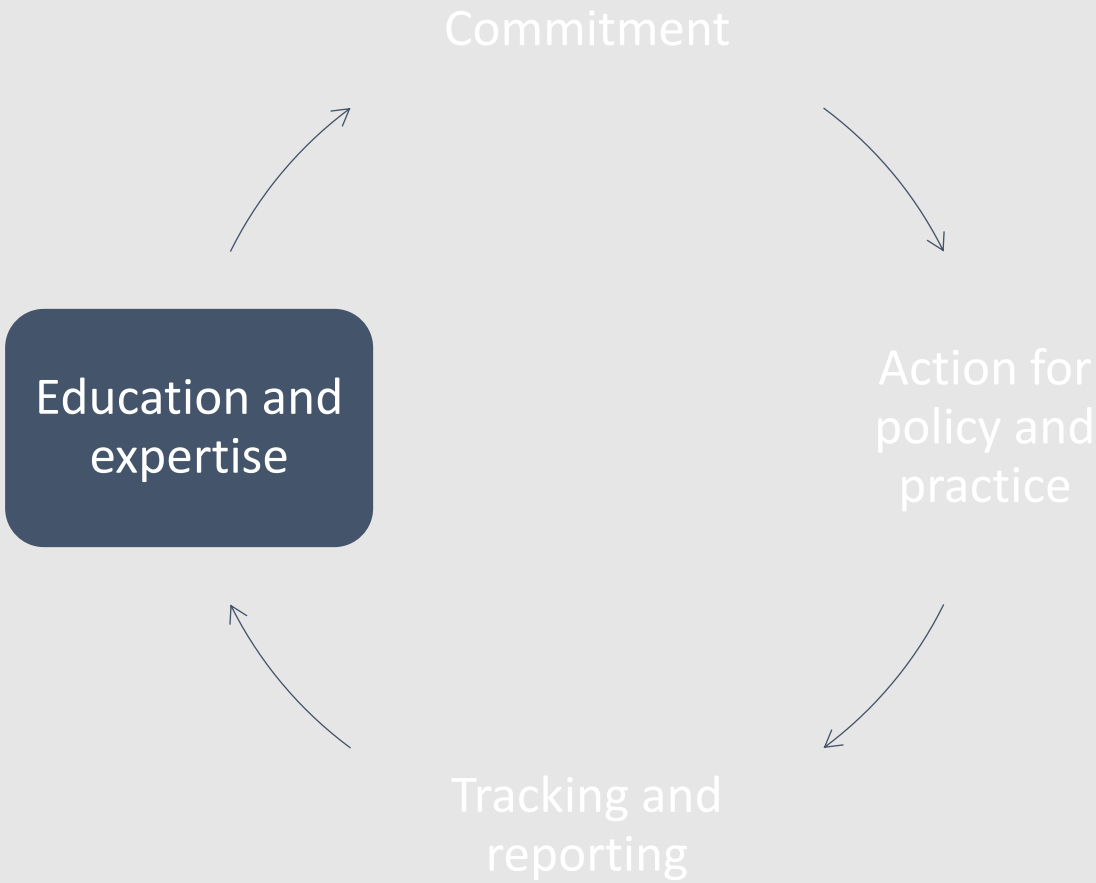


- Use evidence-based diagnostic criteria and treatment recommendations
- Use delayed prescribing practices or watchful waiting, when appropriate
- Provide communications skills training for clinicians
- Require explicit written justification in the medical record for non-recommended antibiotic prescribing
- Provide support for clinical decisions
- Use call centers, nurse hotlines, or pharmacist consultations as triage systems to prevent unnecessary visits

Core elements of AMS in Primary Care

- Self-evaluate antibiotic prescribing practices
- Participate in continuing medical education and quality improvement activities to track and improve antibiotic prescribing
- Implement at least one antibiotic prescribing tracking and reporting system.
- Assess and share performance on quality measures and established reduction goals addressing appropriate antibiotic prescribing from health care plans and payers.

Core elements of AMS in Primary Care



- Use effective communications strategies to educate patients about when antibiotics are and are not needed
- Educate patients about the potential harms of antibiotic treatment.
- Provide patient education materials
- Provide continuing education activities for clinicians
- Ensure timely access to persons with expertise

Core elements of AMS in Primary Care

Vaccines in AMS

- National Vaccine Advisory Committee:
  - Vaccines as part of antibiotic stewardship
  - Reduce transmission of antibiotic-resistant strains
  - Develop new vaccines to target resistant pathogens

EVIDENCE-BASED CHILD HEALTH: A COCHRANE REVIEW JOURNAL
Evid.-Based Child Health **1**: 623–690 (2006)
Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/ebch.23

Interventions to improve antibiotic prescribing practices in ambulatory care (Review)

Arnold SR, Straus SE

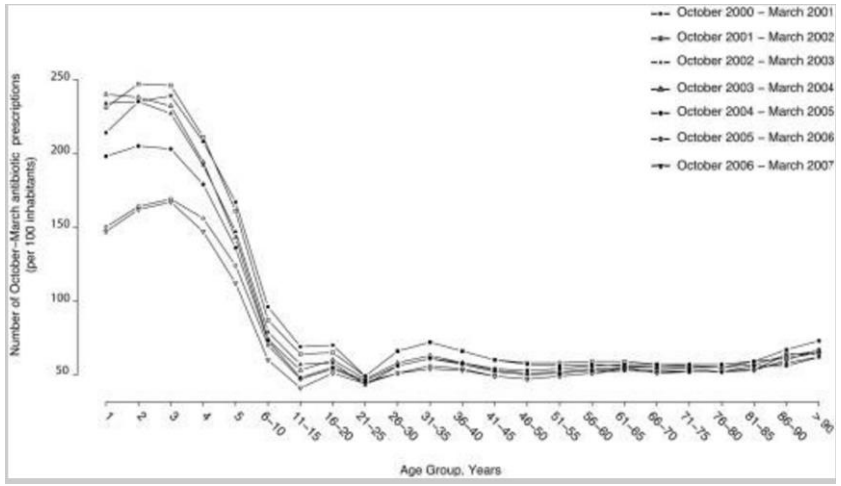
Multifaceted interventions tailored to precise target populations were most likely to have significant effects on prescribing

Are Interventions & Guidelines effective?

Significant Reduction of Antibiotic Use in the Community after a Nationwide Campaign in France, 2002–2007

Elifsu Sabuncu, Julie David, Claire Bernède-Bauduin, Sophie Pépin, Michel Leroy, Pierre-Yves Boëlle, Laurence Watier, Didier Guillemot

Published: June 2, 2009 • https://doi.org/10.1371/journal.pmed.1000084



“Les antibiotiques c'est pas automatique” (“Antibiotics are not automatic”) Campaign

An educational campaign was initiated for healthcare workers

The public campaign mainly targeted children and their parents, underlining that antibiotic efficacy is endangered by bacterial resistance and it is essential to preserve their efficacy

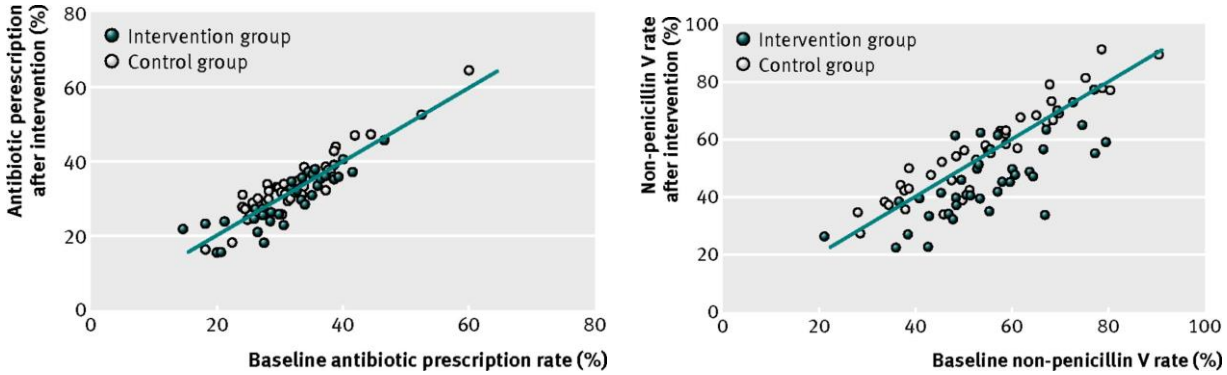
The French national campaign was associated with a marked reduction of unnecessary antibiotic prescriptions, particularly in children.

Are Interventions & Guidelines effective?

Research

Improving antibiotic prescribing in acute respiratory tract infections: cluster randomised trial from Norwegian general practice (prescription peer academic detailing (Rx-PAD) study)

BMJ 2013 ; 347 doi: https://doi.org/10.1136/bmj.f4403 (Published 26 July 2013)
Cite this as: *BMJ* 2013;347:f4403



The intervention was delivered by specially trained general practitioners acting as peer academic detailers

The main effects of this study of a prescription peer academic detailing intervention (Rx-PAD) were a decrease in overall prescription rates for antibiotics for acute respiratory tract infections and, in particular, an increased use of the narrow spectrum agent penicillin V when an antibiotic was issued.

Are Interventions & Guidelines effective?


BATMAN

Summary

Vast majority of antibiotic consumption occurs in outpatient setting
Approximately half of outpatient antibiotic prescribing might be inappropriate
Educational interventions are very important in AMS in primary care
Restrictive measures should be used more in outpatient setting
Vaccination can be effective to reduce misuse of antimicrobial drugs
Management with guidelines are effective yet not satisfactory
Interventions to improve antibiotic prescription is effective but need to be tailored to special circumstances
Strong primary care system produces better health outcomes against lower costs

Thank you

ESGAP
ESCMID STUDY GROUP FOR ANTIBIOTIC POLICIES
European Society of Clinical Microbiology and Infectious Diseases

KLİMİK
TÜRK KLİNİK MİKROBİYOLOJİ VE İNFEKSİYON HASTALIKLARI DERNEĞİ