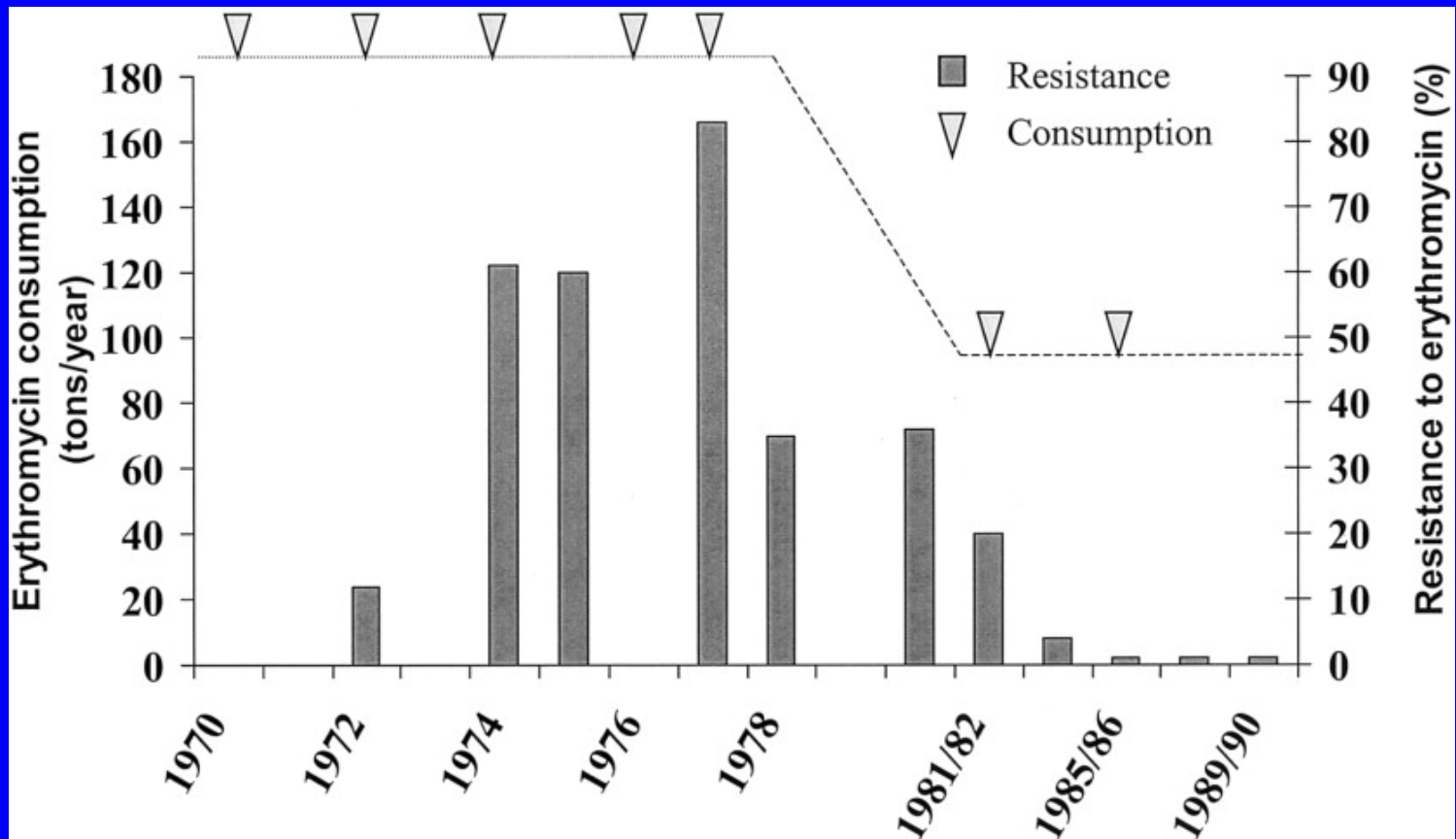


Appropriate use of antibiotics: introduction

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Antimicrobial drug use and resistance

- Inappropriate use of antibiotics is a major cause for the emergence of resistance
- most important contributors of the problem:
 - mechanisms of the resistance
 - ability of the resistant strains to disseminate in the community → use of antimicrobial drugs to which the organism is resistant facilitates an increase in **number** and **transmission**



Antimicrobial drug use and resistance

Inappropriate use of antibiotics

1. Overuse

- unnecessary antibiotic prescribing practices in clinical medicine (and agriculture)
- relationship exists between frequency of resistance to a defined antibiotic and the volume of drug use

National Ambulatory Medical Care Survey (USA, 1998)

	N° (mill.) of visits	Presence (%) of bacterial pathogens	% treated with AB
Rhinitis	25	5	30
Otitis media	13	65	76
Pharyngitis	14	25	62
Bronchitis	13	10	59
Sinusitis	11	40	70

Gonzales et al., CID, 2001, **33**, 757

Antimicrobial drug use and resistance

Inappropriate use of antibiotics

2. Misuse

- suboptimal choice of antibiotic
- inappropriate dose: exposure to low and/or prolonged concentrations
- inappropriate duration and/or frequency of administration

Use of antibiotics

- 4 major paradigms:
 - acute infections in outpatients
 - acute infections in hospitalized patients
 - chronic infections (e.g. tuberculosis, HIV infections ...)
 - agriculture/veterinary medicine
- factors that influence drug use and the challenges that are associated with promoting more appropriate use are different in each of the various paradigms

Appropriate drug use

1. Acute infections in outpatients

- major objective: **reduce** antimicrobial drug prescribing for the treatment of patients who have respiratory illnesses
- developing educational materials
 - ascertaining factors that lead to misuse and overuse through surveys
 - working with professional societies

Careful Antibiotic use

- Pharyngitis in children
 - most sore throats are caused by viral agents
 - clinical findings alone do not adequately distinguish Strep vs Non-Strep pharyngitis
 - antigen tests or culture should be positive before beginning antibiotic treatment
 - if an antibiotic is prescribed:
 - use a penicillin for group A Strep
 - use macrolide if penicillin allergic

Appropriate drug use

2. Acute infections in hospitalized patients

- major objective: prevention of nosocomial **transmission** of pathogens → importance of hospital hygiene
- influencing drug prescribing:
 - access to diagnostic testing
 - computer-assisted decision support
 - infectious diseases consultations
 - monitoring and feedback of prescribing practices

Appropriate drug use

3. Chronic infections

- selection of appropriate drug regimens
 - ensure patient adherence to prolonged therapy
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Evolution of resistance in *S. pneumoniae* (Belgium)

