

Clinical microbiologist/ID vs.
Pharmacist in infectious diseases:
Co-operation or confrontation ?

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Overview

- Clinical Pharmacy:
History, definition, goals, competences
- PharmD Europe vs. USA
- Confrontation or controversies?
- Areas of co-operation in handling of infectious diseases
- Future

Pharmacy -> Pharmaceutical care

Pharmacy profession in Europe has developed through the following stages

- 1910 – 20s Compounding
- 1950s Dispensing
- 1990s Pharmaceutical care,
clinical pharmacy



"Viagra? You're kidding!"

European Society for Clinical Pharmacy (ESCP) History

The European Society of Clinical Pharmacy was founded in 1979 by clinical practitioners, researchers and educators from various countries across Europe.

Since its foundation there has been a gradual and sustained growth of [clinical pharmacy](#) in many European countries.

Clinical Pharmacy - a Definition

- Clinical Pharmacy is a commonly used term in pharmacy practice and in pharmacy literature. It is a health specialty, which describes the activities and services of the clinical pharmacist to develop and promote the rational and appropriate use of medicinal products and devices.
- Clinical Pharmacy includes all the services performed by pharmacists practising in hospitals, community pharmacies, nursing homes, home-based care services, clinics and any other setting where medicines are prescribed and used.
- The term “clinical” does not necessarily imply an activity implemented in a hospital setting. A community pharmacist may perform clinical activities as well as a hospital practitioner.

Clinical pharmacy – Overall goal

- ***to promote the correct and appropriate use of medicinal products and devices.***

These activities aim at:

- **maximising the *clinical effect*** of medicines, i.e., using the most effective treatment for each type of patient
- **minimising** the risk of treatment-induced ***adverse events***, i.e., monitoring the therapy course and the patient's compliance with therapy
- **minimising the *expenditures*** for pharmacological treatments born by the national health systems and by the patients, i.e., trying to provide the best treatment alternative for the greatest number of patients.

Level of Action of Clinical Pharmacists

1. Before the prescription

- Clinical trials
- Formularies
- Drug information

2. During the prescription

- Counselling activity

3. After the prescription

- Counselling
- Preparation of personalised formulation
- Drug use evaluation
- Outcome research
- Pharmacoeconomic studies



Activities of Clinical Pharmacists

The principle activities of a clinical pharmacist include

Consulting

Selection of drugs

Drug information

Formulation and preparation

Drug use studies and research

Pharmacokinetics/ therapeutic drug monitoring

Clinical Trials

Pharmacoeconomy

Dispensation & Administration

Teaching & Training



“Don’t chew them. They’re supposed to hatch in your intestines.”

How to Pursue a Profession in Clinical Pharmacy

- At present Schools of Pharmacy in Europe do not satisfy the minimal requirements for an appropriate education in clinical pharmacy. They are still largely focused an old model of pharmacy activity, e.g., based on chemistry and basic sciences knowledge.
- A few universities have modified and broadened their curriculum including topics as epidemiology, pharmacoeconomics, clinical medicine, communication skills, the latter being particularly important for community pharmacists.
- The majority of new graduates in pharmacy will therefore work either in the community or the hospital setting to learn the skills unique to a Clinical Pharmacist.

PharmD: USA

- The **PharmD.** (Doctor of [Pharmacy](#)) degree is a professional degree that prepares the graduate for pharmacy practice.
- Traditionally in the United States, the [bachelor's degree](#) in pharmacy was the first-professional degree for pharmacy practice. However, in 1990, the American Association of Colleges of Pharmacy (AACCP) mandated that a doctor of pharmacy degree would be the new first-professional degree.

PharmD: Europe

- **Portugal** Master's degree in Pharmaceutical Sciences
- **Czechia** PharmDr. (Pharmaciae doctor) diploma can be obtained by pharmacists who have graduated in pharmacy before (the undergraduate study of pharmacy takes 5 years).
- **France** complicated education course in pharmacy, pharmaceutical industry or hospital internship. State diploma for the Doctorate of Pharmacy granted after thesis
- **Italy** Dottore in Pharmacia lasts 5 years and includes a guided professional apprenticeship in a pharmacy.
- **Netherlands** M.Sc.Degree (3 y bachelor, 3 y master) in Pharmacy comparable to the PharmD title in use in the United States
- **UK** 3 years of clinical practice followed by 2 years of research (new degree)

Activities of Clinical Pharmacists

The principle activities of a clinical pharmacist include

Possible controversy with CM&ID

Consulting



Selection of drugs



Drug information

Formulation and preparation

Drug use studies and research

Pharmacokinetics/ therapeutic drug monitoring



Clinical Trials

Pharmacoeconomy



Dispensation & Administration



Teaching & Training

Controversies: Areas of possible conflict re. infectious disease

- Antibiotic therapy:
 - Choice of drug
 - Dosing, type of administration
 - Step-down therapy
- Antibiotic policy
 - Drug formulary
 - Control of prescription
- Pharmaco-economics
 - Gate-keeper function



“The generic version is the same as the brand name, but cheaper. You might find that highly addictive.”

Controversies¹

Sexton DJ, Craig WA: Clinical Affairs Committee (IDSA). Hospital pharmacists and infectious diseases specialists. Clin Infect Dis 1997; 25: 802

”the training and daily activities of clinical pharmacists do not provide them with the expertise and knowledge needed to interpret the adequacy and significance of historical, physical, laboratory, and radiographic findings for individual patients” and that *”therapeutic decisions and recommendations should be made only by physicians”*



“Apparantly, you’re allergic to pharmacists.”

Controversies² :

Letters to the CID editor

- **Quintillany et al:** "no reason – once the diagnosis has been made – that a pharmacist could not be involved integrally with patient care "
- **Bauman et al:** "..many pharmacists have developed and demonstrated competence as pharmacotherapy specialists....including infectious diseases"
- **Chin & Pipa:** "Training in the pharmaceutical care process allows pharmacists to make systematic and rational decisions and recommendations for drug therapy"



"I can tell this prescription is a phony.
The doctor's signature is legible."

Controversies³ : The role of microbiology (CMD) and pharmacy departments (PD) in the stewardship of antibiotic prescribing in European hospitals

(MacKenzie et al: J Infect Hosp 2007; 65 Suppl 2:73-81)

- 71% of CMD and 41% of PD provided out of hours clinical advice
- 41% of CM/ID and 16% of PD visited wards on daily basis
- 100% hospitals in North held antibiotic stocks vs. 39% of hospitals in the South-East
- 16% hospitals in North dispensed antibiotics on individual patient basis vs. 60% of hospitals in South-East
- Outside normal working hours advice resulted in higher antibiotic use (!)
- No evidence that pharmacy services reduced the amount of antibiotics prescribed (!)

The impact of pharmacy services has been proven as effective

- *Reduction of hospital mortality rates*

Not specified degree of reduction

Bond et al., Pharmacotherapy 1999

- *Reduction of the rate of preventable adverse drug events caused by ordering errors*

66% reduction in the occurrence of preventable adverse drug events caused by ordering errors

Leape et al. JAMA 1999

- *Reduction of the medical costs*

average benefits to cost of 16.7 to 1. **Schumock et al. Pharmacotherapy 1996**

- *Improve of efficacy and ADR reduction*

efficacy improved in 24% of the cases

Hawksworth et al. Br J Clin Pharmacol 1999

Almiñana et al. ESCP homepage

Present state of co-operation in Northern Europe: The role of the Hospital Pharmacists¹

Traditional tasks:

- Purchase and logistics of medication
- Manufacturing/ dispensing of specific drugs
- Therapeutic drug monitoring
- Member of infection control team

New tasks:

- Better control of costs of medication
- Improvement of guideline adherence
- Reduction in medication related errors and morbidity
- Increasing patient safety

Present state of co-operation in Northern Europe: The role of the Hospital Pharmacists²

Re: Infectious Diseases:

- Antimicrobial policy making (ab. adv. b.)
- Management of antimicrobial guidelines (web)
- Guidance in the use of new and 'last line of defence' antimicrobials
- Performance of audits on the prudent use of antimicrobials
- Participation in multidisciplinary infectious diseases patient reviews



Present state of co-operation in Northern Europe: The role of the pharmacists in primary care

- Private, local pharmacy level: Patient advice, prevention of prescription error, registration of prescriptions, GCP and QA in dispensing medicine
- Regional (county) level: Registration of medicine use (DDD, prescriptions), feed back to each GP on monthly use with benchmarking to other GP's, audits.
- Central (government) level: Medicines agency, registration of drugs, registration and monitoring on country use, audits etc.

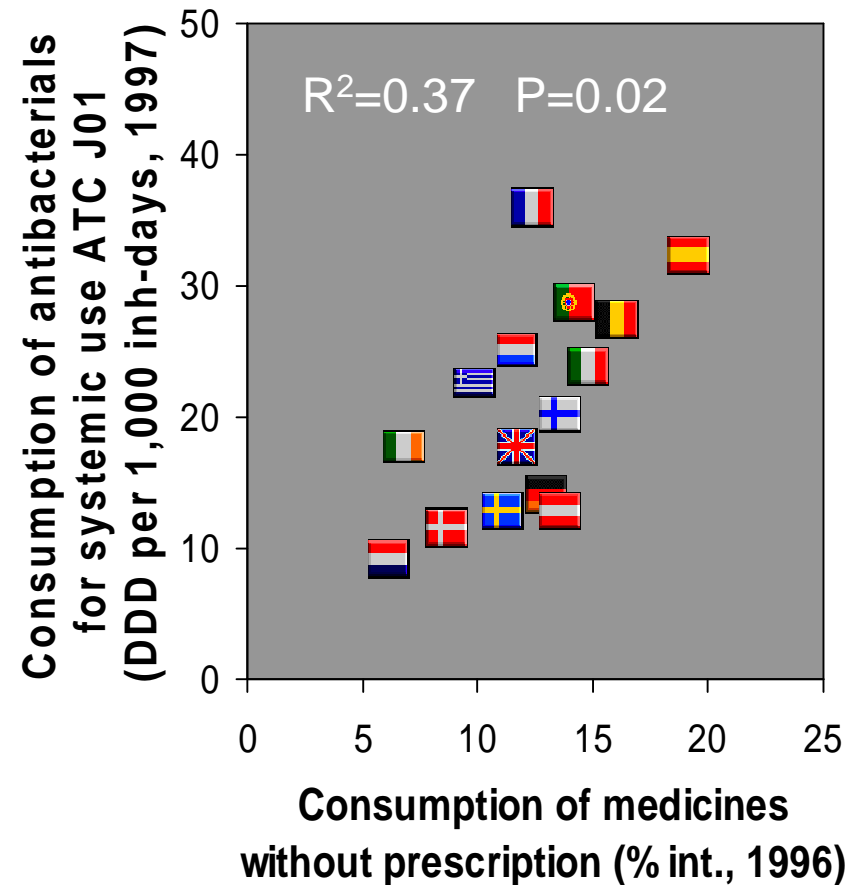
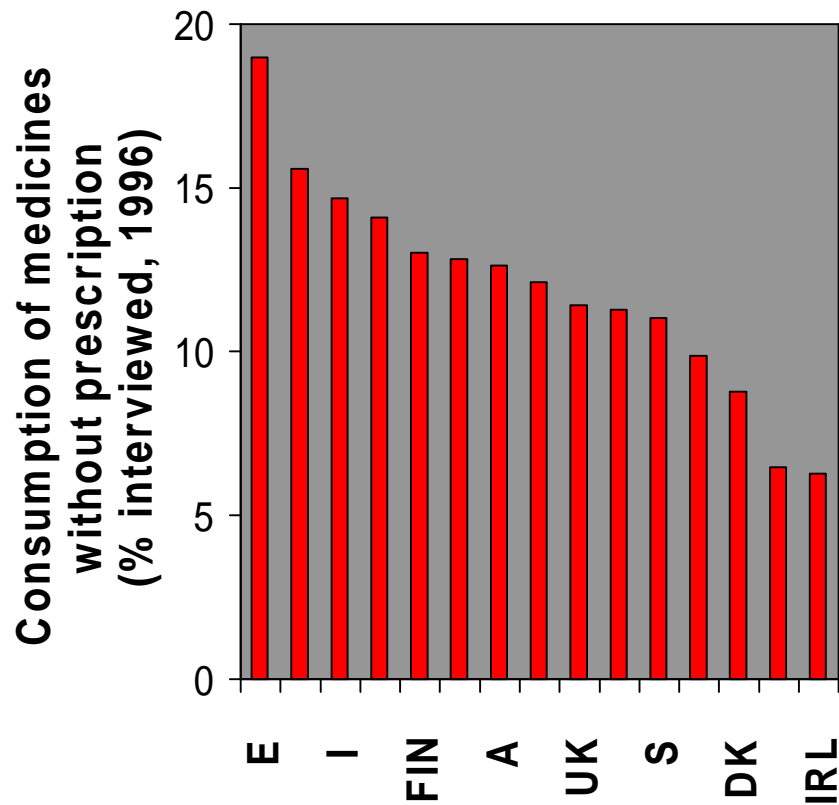
No reason for controversy...

Ethical issues.....



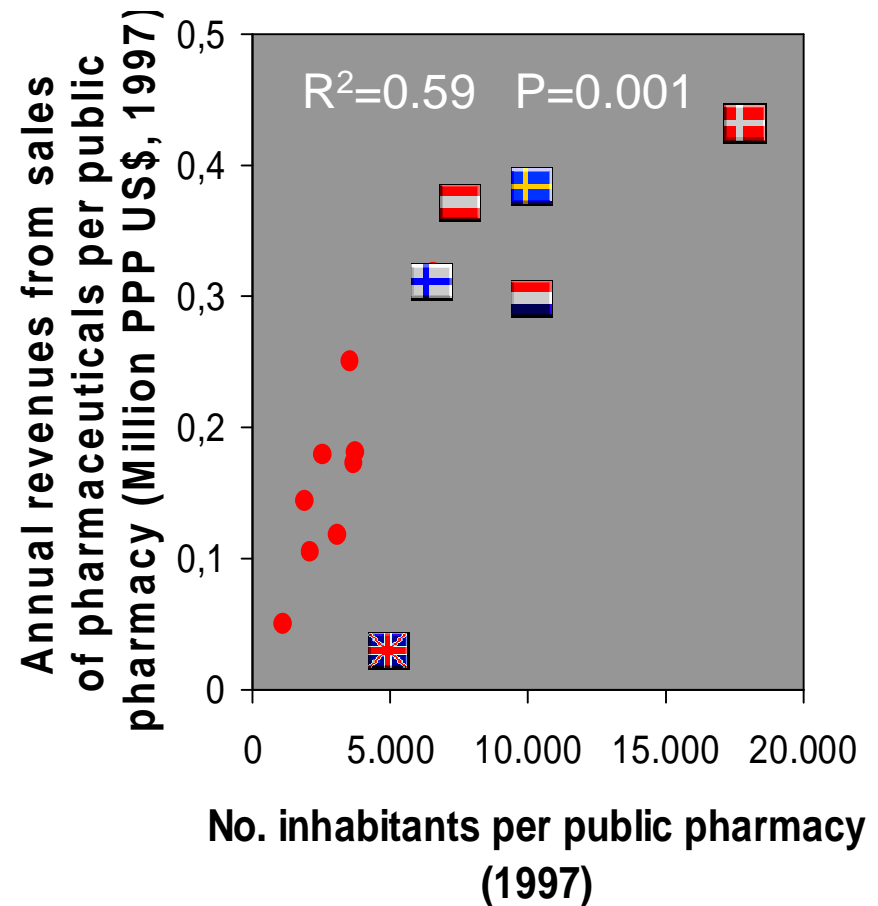
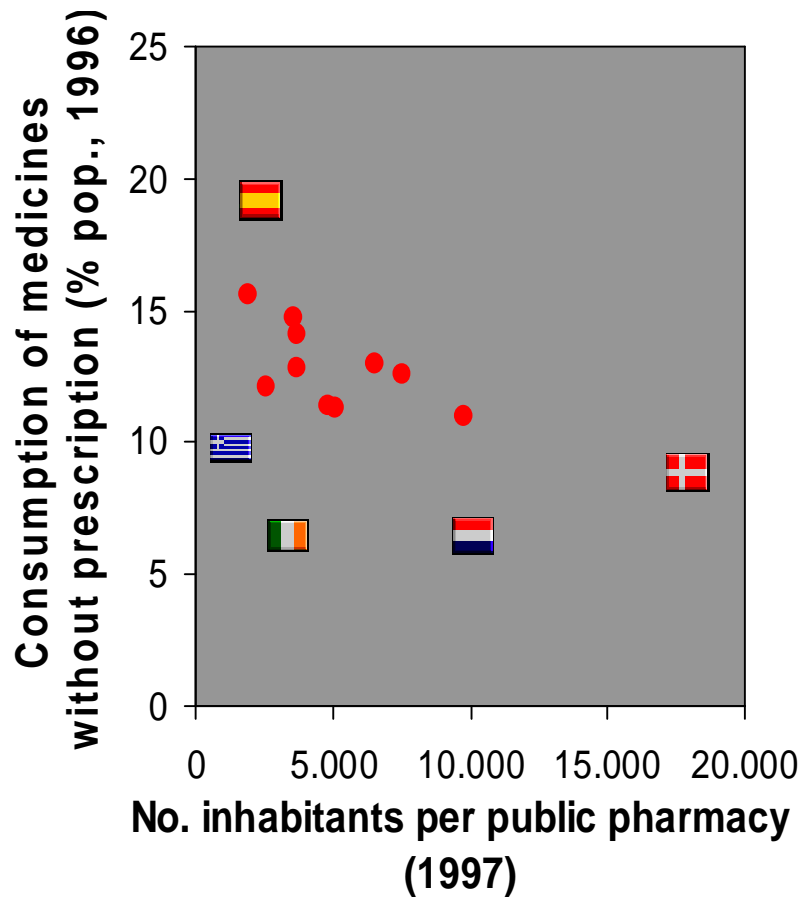
“It’s a prescription for one of those new super-antibiotics. You won’t just get better, you’ll get even.”

Overall Consumption of Systemic Antibacterials (ATC J01) in Primary Health Care and Consumption of Medicines Without Prescription, EU, 1996-1997



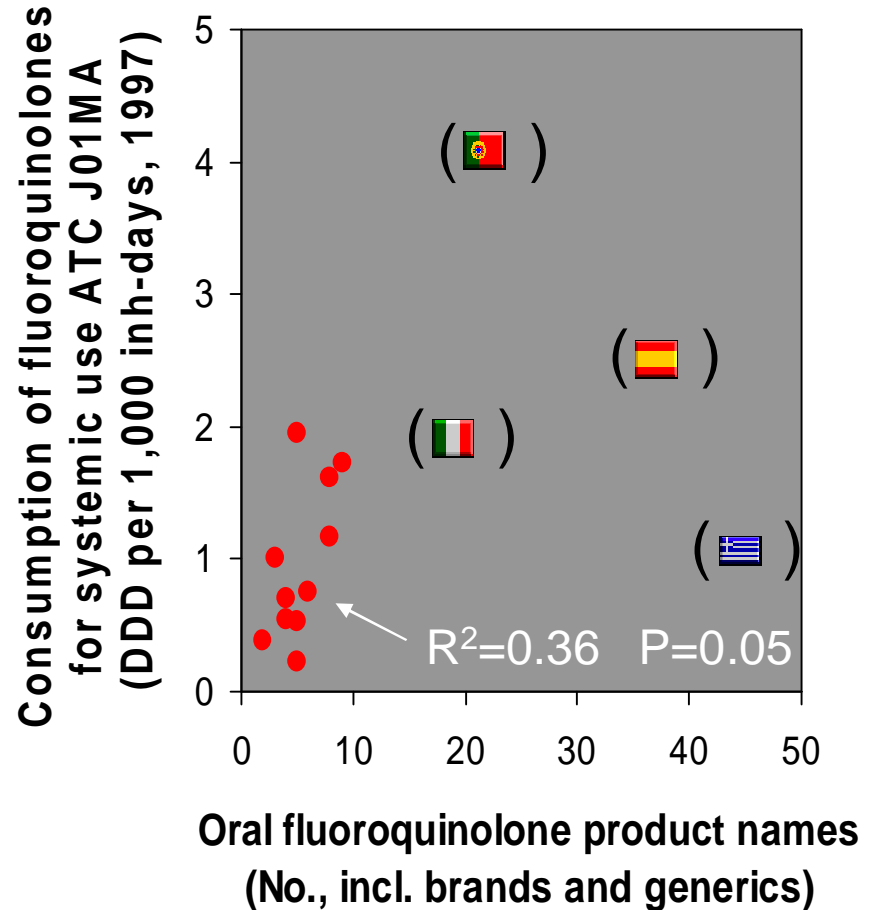
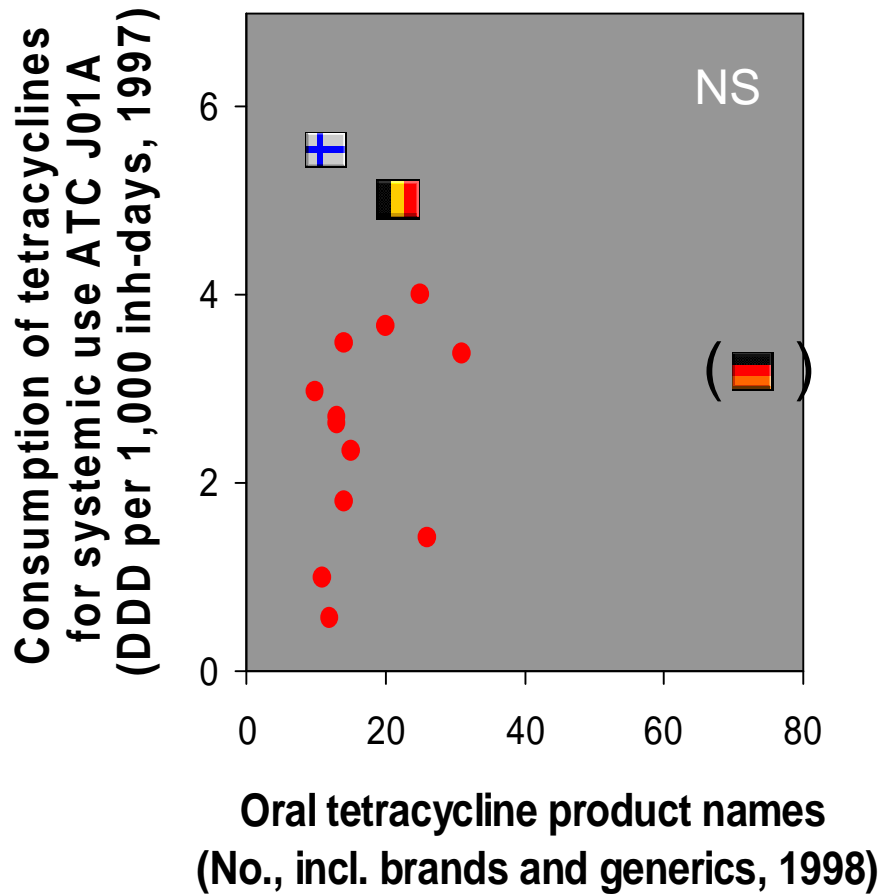
Sources: Eurobarometer 44.3, European Commission; Cars O, et al. Lancet 2001; 357: 1851-3.

Consumption of Medicines Without Prescription, No. Inhabitants per Pharmacy, and Annual Revenues from Sales of Pharmaceuticals per Pharmacy, EU, 1996-1997



Sources: Eurobarometer 44.3, European Commission in Key Data on Health 2000, Eurostat; and GIRP and IMS Health.

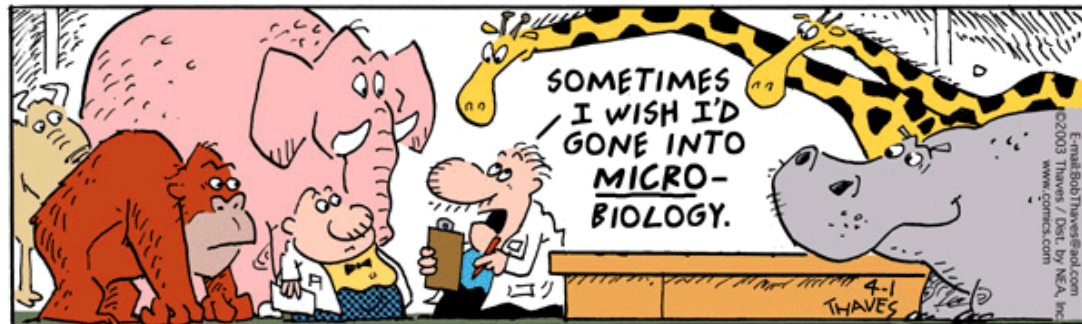
Overall Consumption of Fluoroquinolones (ATC J01MA) in Primary Health Care, Companies and Brands of Antibiotics, EU Member States, 1997



Sources: Sources: Cars O, et al. Lancet 2001; 357: 1851-3, and EudraMat, April 1998.

Future aspects for pharmacist-ID relationship

- Further specialisation of pharmacists: HIV, infection control, transplant medicine
- Antibiotic control (patrol?) teams: Auditing to reduce use
- Endorse QA, GCP, GLP -> medicine
- Patient-centered clinical pharmacy services



Questions ?

- *Should the pharmacist be allowed to*
 - *monitor medication in individual patients ?*
 - *adjust antibiotic drugs and doses ?*
 - *educate patients in antibiotic use ?*
 - *write prescriptions ?*
 - *provide immunizations e.g. childhood imm.?*
 - *be part of the labelling of OTC medicine:
"Consult your doctor or pharmacist" ?*

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- PubMed
- Google

WHAT DO YOU
GIVE TO A MAN
WHO HAS EVERYTHING?

ANTIBIOTICS!

GIFTS



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