

# Why Clinical Pharmacy ?



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[www.md.ucl.ac.be/pharma/cfcl](http://www.md.ucl.ac.be/pharma/cfcl)

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**International Society for Anti-infective  
Pharmacology (ISAP)**



[www.isap.org](http://www.isap.org)

# Pharmacodynamics of antibiotics: Correlation between kinetics and activity

- Patients are dying in spite of "according to package insert" antibiotic prescription ... and resistance is growing ...
- Do we use antibiotics in a rational way ? ...
- What is pharmacodynamics and how can it help you ? ...
- Can we prevent (or slow down) the emergence of resistance ? ...
- Can we also reduce health care costs ? ...



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# Pharmacodynamics of antibiotics: Correlation between kinetics and activity

**This is not an "off topic" dream, but something we all thought about, but did not know how to tackle with 15 years ago...**



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# An American-European encounter ...



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1: [Antimicrob Agents Chemother.](#) 1993 May;37(5):1073-81.

[Related Articles, Links](#)

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**Pharmacodynamics of intravenous ciprofloxacin in seriously ill patients.**

**Forrest A, Nix DE, Ballow CH, Goss TF, Birmingham MC, Schentag JJ.**

Center for Clinical Pharmacy Research, School of Pharmacy, State University of New York,  
Buffalo 14260.

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## Observation #1:

- North-american pharmacists are able to optimize antibiotic usage ... and save patients ...

# I then saw a nice book on Pharmacotherapy by browsing at the Publisher's row at ICAAC

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## Pharmacotherapy

### A Pathophysiologic Approach

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Editors

**Joseph T. DiPiro, PharmD**

Associate Professor, College of Pharmacy, University of Georgia;  
Associate Clinical Professor of Surgery, Medical College of Georgia,  
Augusta, Georgia

**Robert L. Talbert, PharmD**

Professor, College of Pharmacy, University of Texas at Austin, Austin, Texas;  
Professor, Departments of Pharmacology and Medicine, University of Texas  
Health Science Center at San Antonio, San Antonio, Texas

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Richmond, Virginia

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University of Florida, J. Hillis Miller Health Center, Gainesville, Florida

**L. Michael Posey**

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## Observation #2:

- North-american pharmacists are able to optimize the use of many drugs ... in direct relation with patients and starting from sound pathophysiologic and pharmacological bases, ... and they teach it !

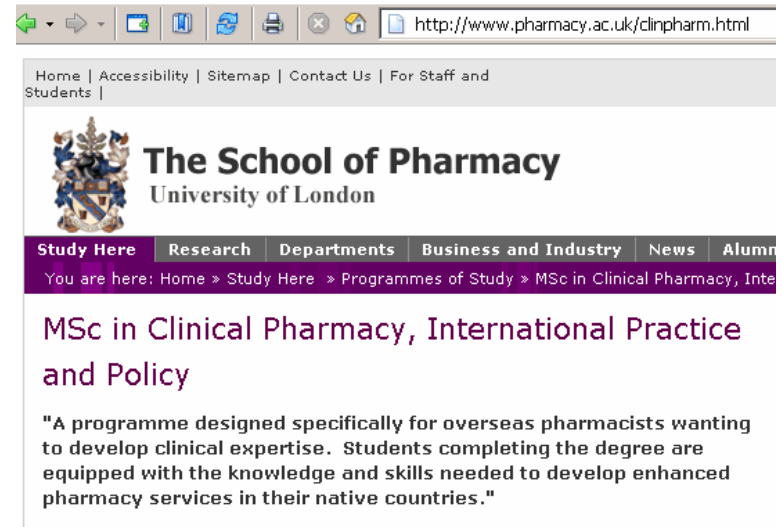
# Then, I also discovered through Anne Spinewine the British approach to Clinical Pharmacy

International and British literature were reviewed...

Particular attention was given to ...

- Indicative Prescribing Scheme and the Prescribing Analyses and Cost (PACT); ...
- the new roles of medical and pharmaceutical advisers for Primary Care prescriptions;
- the new "Medical Resource Centres" (MeReC)
- and "Medical Advisers Support Centre" (MASC)

**RESULTS:** The British approach has improved prescription use and patient care and has helped to discipline uncontrolled growth in pharmaceutical expenditures.



## Observation #3:

- British Schools of Pharmacy have also fully integrated the Clinical Pharmacy in their teaching ... because it is useful in the daily practice...
- Some schools even propose it to foreign students ...

# Could we do this in Belgium ?

TABLEAU V

Potentiel de développement futur de la pharmacie clinique en Belgique d'après des pharmaciens hospitaliers belges (73)

<i>Facteurs favorisants</i>	<i>Difficultés</i>
<ul style="list-style-type: none"><li>- Volonté politique d'améliorer la qualité d'utilisation des médicaments</li><li>- Informatisation des prescriptions</li><li>- Changement de politique de financement des médicaments (forfaitarisation) et volonté de diminuer le coût des soins de santé</li><li>- Diminution du nombre de médecins dans un futur proche (numerus clausus)</li></ul>	<ul style="list-style-type: none"><li>- Manque de temps et de moyens (pharmaciens hospitaliers)</li><li>- Problèmes d'acceptation de la part du corps médical</li><li>- Formation universitaire insuffisante / inappropriée</li></ul>

LOUVAIN MED. 122: 127-139, 2003.

# Where are we now... in Belgium?

**Tabel 5:** Perceptie van 10 Belgische artsen <sup>1</sup> die samenwerken met klinische apothekers over het nut, de voordelen en de nadelen van klinische farmacie na een schriftelijke enquête met open en gesloten vragen

## 1. analyse van antwoorden op open vragen

	termen en/of concepten die door artsen vermeld werden	totaal aantal keren genoteerd	aantal artsen
a. globale tevredenheid	klinische farmacie heeft een positieve impact	14	8
b. voordelen <sup>2</sup>	optimalisatie van geneesmiddelen therapie	15	9
	educatie van patiënt	8	7
	farmacologische meerwaarde in een multidisciplinair team	8	6
	verhoogde veiligheid geneesmiddelen therapie	6	5
	verhoogde rationaliteit geneesmiddelen therapie	6	5
	voorkomen en verminderen van ongewenste effecten	6	5
	geneesmiddelen informatie aan het personeel	7	4
	aandacht vestigen op het belang van een goede farmacotherapie	5	4
	verbeterde opvolging van therapie bij ontslag uit het ziekenhuis	5	4
	voorkomen en verminderen van geneesmiddelen interacties	4	4
c. nadelen <sup>3</sup>	moeilijke acceptatie door sommige artsen ('wijzen op fouten')	1	1
	eventuele verminderde aandacht en verantwoordelijkheid van medisch personeel voor farmacotherapie	1	1

*Tijdschrift voor Geneeskunde, In press*

# What the Encyclopedia (now) says ...

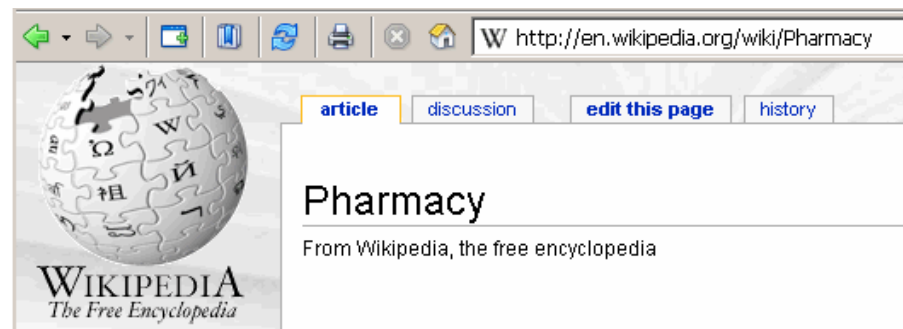
## The future of pharmacy

[edit]

In the coming decades, pharmacists are expected to become more integral within the health care system. Rather than simply dispensing medication, pharmacists expect to be paid for their cognitive skills.

This paradigm shift has already commenced in some countries; for instance, pharmacists in [Australia](#) receive remuneration from the [Australian Government](#) for conducting comprehensive Home Medicines Reviews. In Great Britain, pharmacists (and nurses) who undertake additional training are obtaining prescribing rights. In the United States, [consultant pharmacists](#), who traditionally operated primarily in [nursing homes](#) are now expanding into direct consultation with patients, under the banner of "senior care pharmacy."

Many universities are altering their programs to increase emphasis in fields such as pharmacotherapeutics, clinical pharmacy, nuclear pharmacy, disease state management, etc.



# Our programme for today


## Session 1: Lessons from abroad

- 13:40 Clinical Pharmacy in the hospital setting: the UK experience**  
Professor S. Dhillon, School of Pharmacy, University of Hertfordshire, U.K.
- 14:00 Clinical Pharmacy in ambulatory care patients: the US experience**  
Professor Shelly L. Gray, School of Pharmacy, University of Washington, Seattle, WA
- 14:20 Education for Clinical Pharmacists: the Canadian experience**  
Professor L. Mallet, Faculté de Pharmacie, Université de Montréal, Montréal, Qué.
- 14:40 Interactive session**  
Each speaker will be asked to answer and discuss with the participants the three following questions:
- where have clinical pharmacists been the most successful in patient care ?
  - how were health care providers and authorities convinced to increase pharmacists involvement ?
  - which were the main difficulties and which are the errors to avoid...
- 15:00** Break (coffee and light refreshments)

## Session 2: Belgian experiences

- 15:15 Clinical pharmacy and Infectious Diseases as an exemple of implementation in a specific discipline**  
P. De Cock and B. Claus, Universiteit Gent & UZ Gent
- 15:30 Implementation of Clinical Pharmacy services in a teaching hospital: opportunities and difficulties**  
L. Wilmotte, Université catholique de Louvain & Cliniques universitaires St-Luc
- 15:45 Implementation of Clinical Pharmacy Services in non-academic hospitals: opportunities and links to University programmes**  
E. De Troy, Virga Jesse Ziekenhuis, Hasselt
- 16:00 Interactive session and discussion**
- 16:30 The future of Clinical Pharmacy in Belgium**  
A. Somers, on behalf of the "Special Interest Group for Quality of Drug Use in Hospitals"
- 16:45 Final discussion and close of the symposium**

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Supported through an unrestricted, educational grant from  MSD

# Pharmacodynamics of antibiotics: Correlation between kinetics and activity

- Rising resistance and correlation with antibiotic use ...
- Did we use antibiotics in a rational way ? ...
- What is pharmacodynamics and how can it help you ? ...
- Can we prevent (or slow down the emergence of resistance ? ...
- Can we also reduce health care costs ? ...

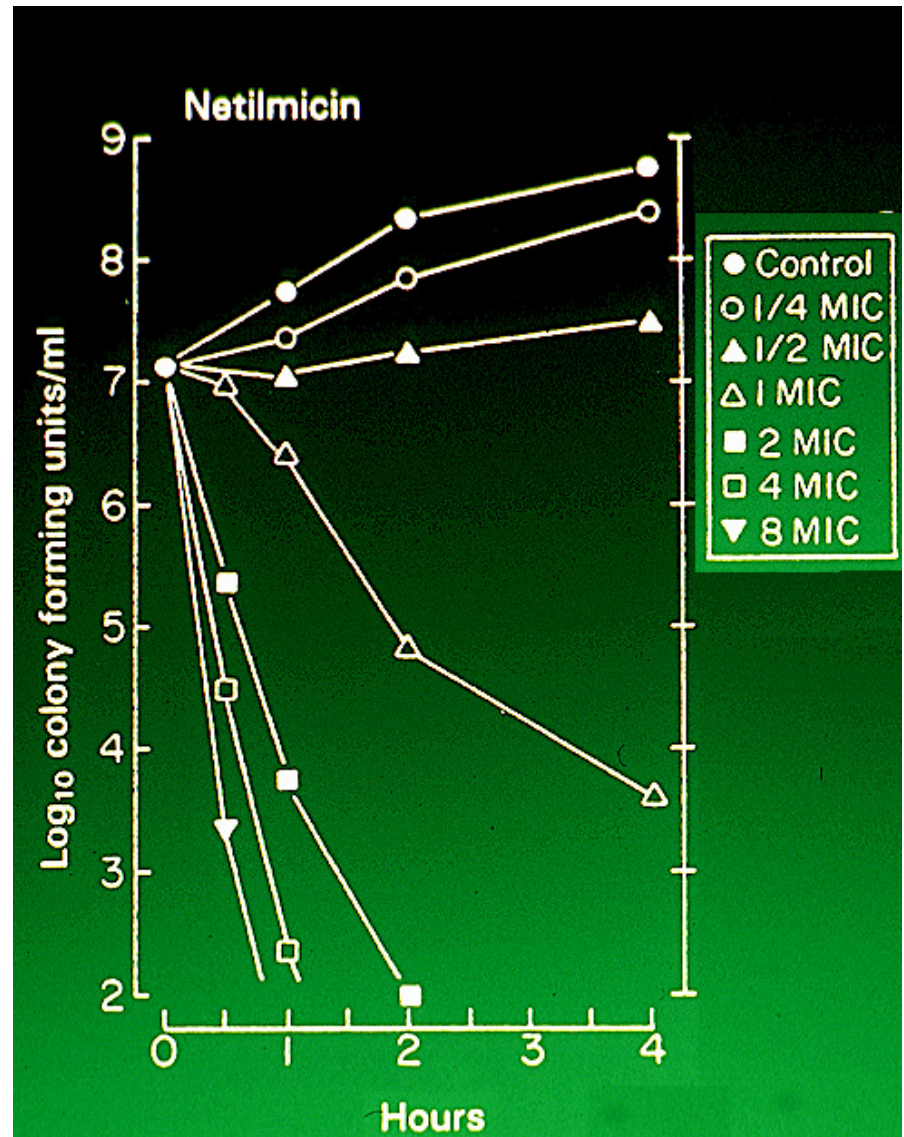


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# Aminoglycosides: why a peak ?

Aminoglycosides are concentration-dependent drugs in the clinically meaningful concentration range ...

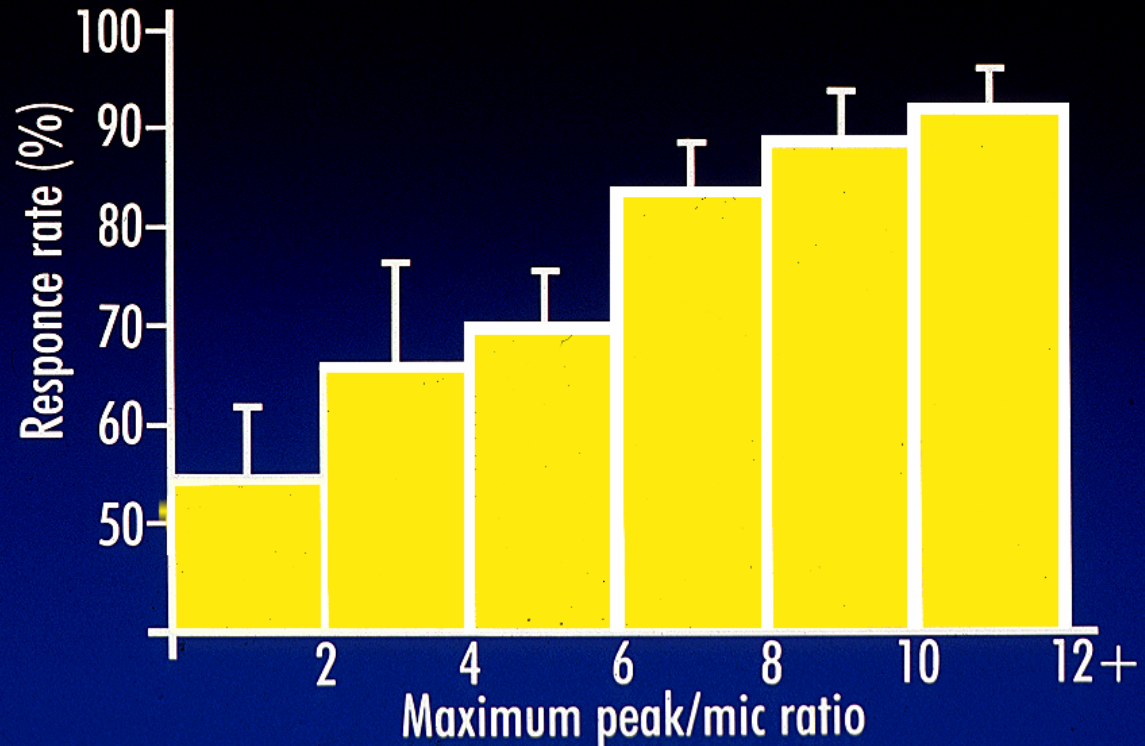




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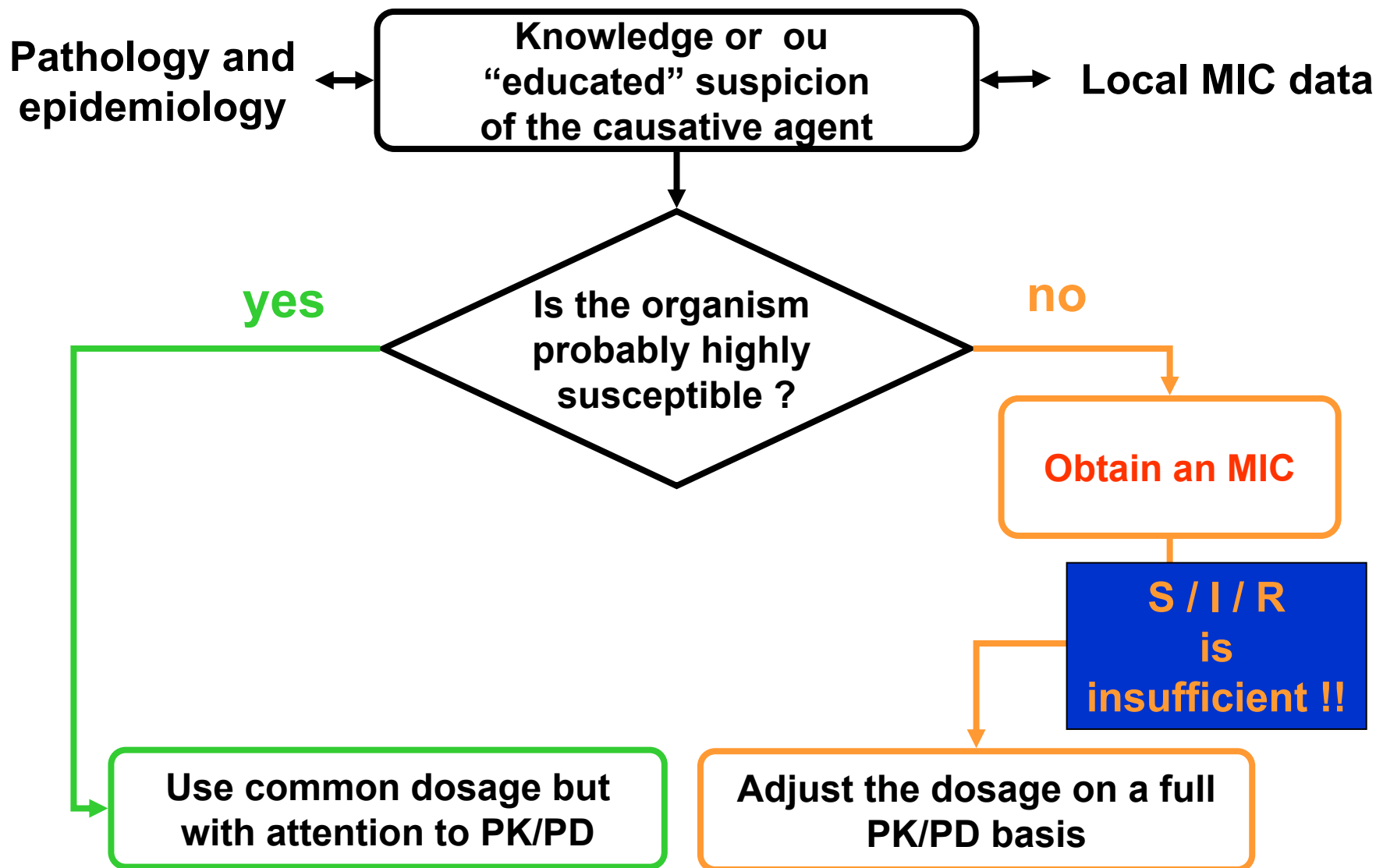
Clinical efficacy  
is linked to  
peak/MIC ratio

Relationship between the maximal peak level/MIC ratio and the rate of clinical response. Vertical bars represent SE values.



From Moore et al, J. Infect. Dis. 155 (1987)

# A clinical algorithm ...



# A clinical algorithm (follow.) ...

