Evaluation of Clinical Pharmacy Projects:
A Belgian Experience

Clinical Pharmacy in Hanoi:
A "Wallonie-Bruxelles"- supported mission of the
Université catholique de Louvain,
Brussels, Belgium

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with material borrowed from

- Olivia Dalleur (*Université catholique de Louvain*)
- The Belgian Ministry of Public Health

Optimizing drugs through Clinical Pharmacy...

Appropriateness of use of medicines in elderly inpatients: qualitative study

Anne Spinewine, Christian Swine, Soraya Dhillon, Bryony Dean Franklin, Paul M Tulkens, Léon Wilmotte and Vincent Lorant

BMJ 2005;331;935-; originally published online 10 Aug 2005; doi:10.1136/bmj.38551.410012.06

Centre of Clinical Pharmacy at UCL
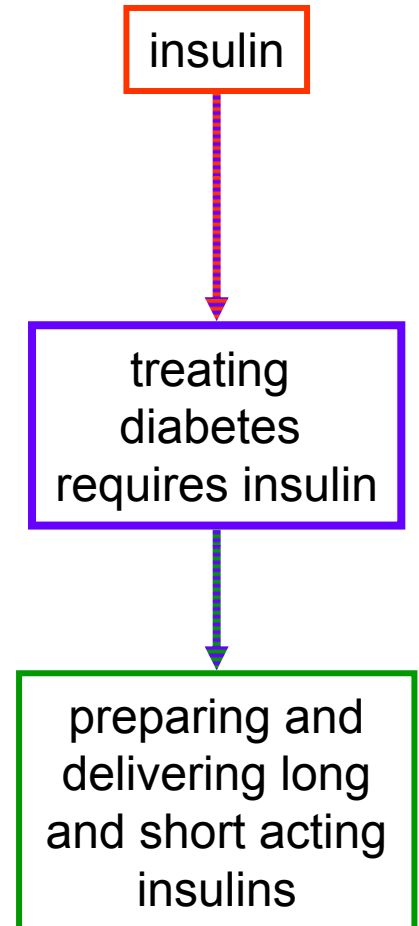
A few definitions…

- **Pharmacology:**
  Scientific discipline in Life Sciences that study the **mecanisms of action of drugs** when interacting with their targets, in order to use this information to propose specific modifications at a the level of a given pathological process

- **Pharmacotherapy:**
  Medico-pharmaceutical discipline that uses physiopathological and pharmacological knowledge to **select the appropriate drug(s) for curing a specific diseases**
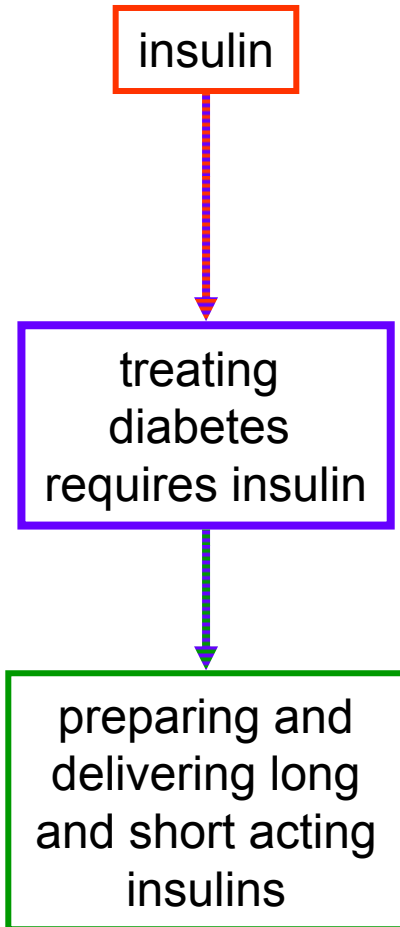
- **Pharmacy**
  (From the Greek φάρμακον/pharmakôn, meaning drug, venom, poison ...) is concerned with the **formulation, preparation** and **delivery** of drugs ordered by a Medical Doctor

insulin

↓

treating diabetes requires insulin

↓

preparing and delivering long and short acting insulins

The problem...

Will this be effective and optimized for THIS patient?

insulin

↓

treating diabetes requires insulin

↓

preparing and delivering long and short acting insulins

Does HE / SHE need insulin ?

What are the disadvantages of insulin ?

If insulin is chosen,
- **does the patient know how to use it**
- **who is going to monitor effectiveness and compliance**

Among all available insulin, which one will provide the best benefit/cost ratio (which may not mean the cheapest)

CLINICAL PHARMACY

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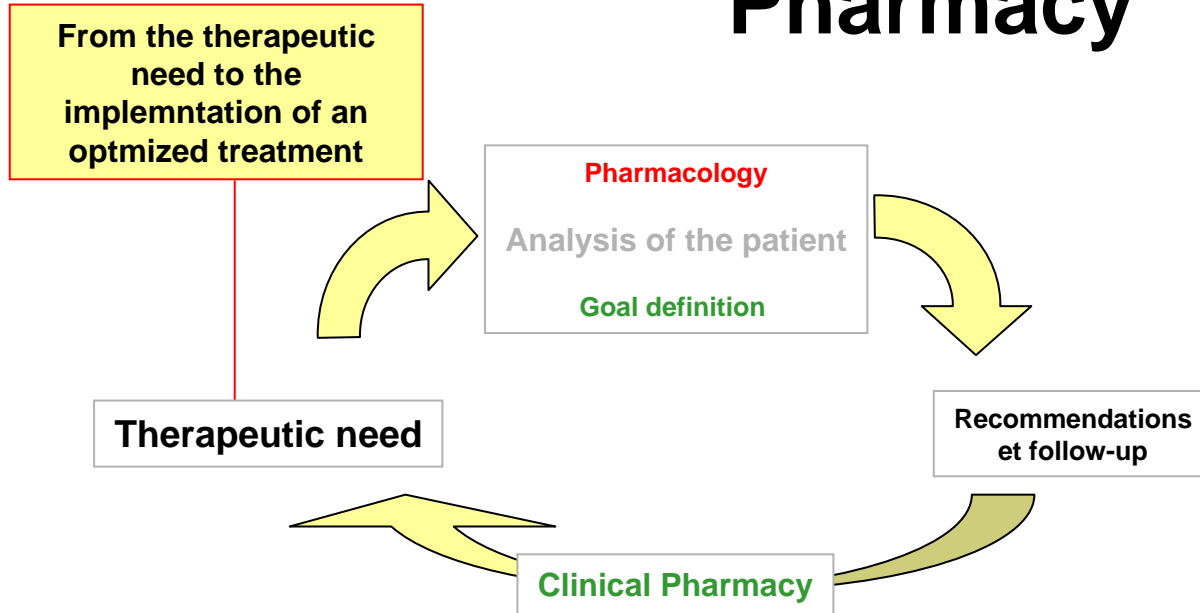*BMJ* 2005;331;935–; originally published online 10 Aug 2005; doi:10.1136/bmj.38551.410012.06

Remember this !

Centre of Clinical Pharmacy at UCL

What is Clinical Pharmacy all about ?

- By providing "Pharmaceutical Care", the Clinical Pharmacist takes in charge the responsibility of reaching the clinical objectives of the therapy (as defined by the prescriber) in terms of
  - therapeutic effectiveness
  - avoidance of undesired effects
  - optimized benefit / cost ratio

- This may be oriented and made effective at the level
  - of individual patients through direct detailing activities (ward activities)
  - of a group of patients, through the setting of processes and guidelines
    (centralized hospital activities)
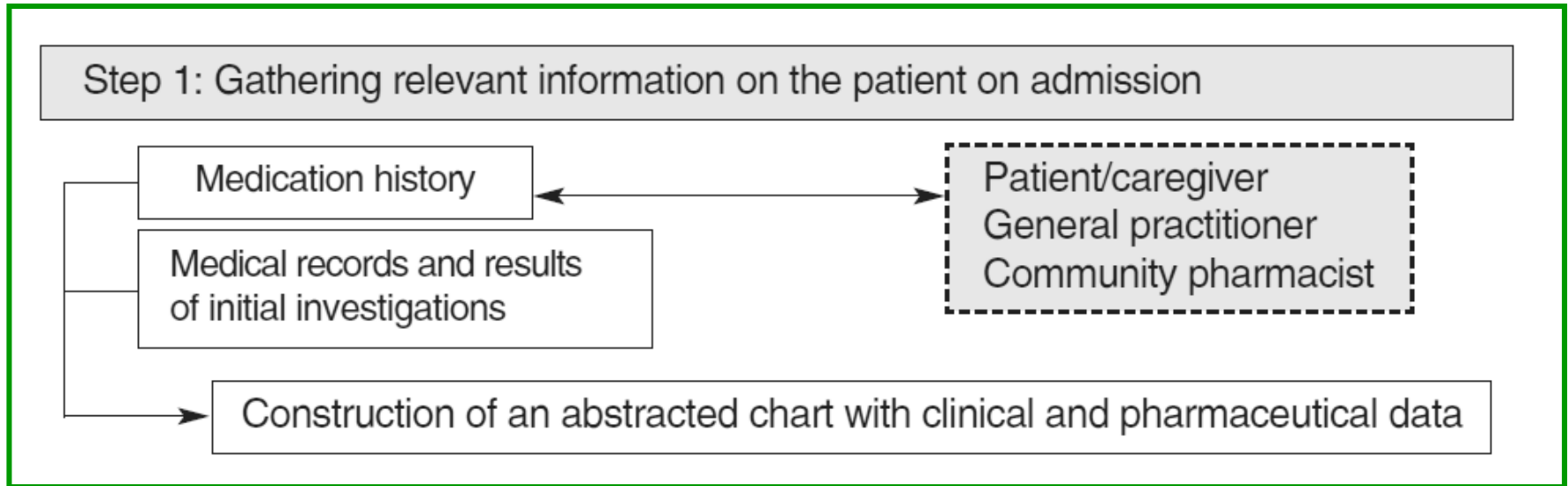 - the society, through region- and nation-wide programs (including awareness actions, guidelines, and so on…)

The English Model of Clinical Pharmacy

From the therapeutic need to the implemntation of an optmized treatment

Pharmacology

Analysis of the patient

Goal definition

Therapeutic need

Recommendations et follow-up

Clinical Pharmacy

HIPPOCRATE
PLACES LIBRES
VRIJE PLAATSEN

P

ESPLANADE
PLACES LIBRES
VRIJE PLAATSEN

The patient arrives…

How do you work that out (1) ?

Step 1: Gathering relevant information on the patient on admission

Medication history

Medical records and results of initial investigations

Patient/caregiver
General practitioner
Community pharmacist

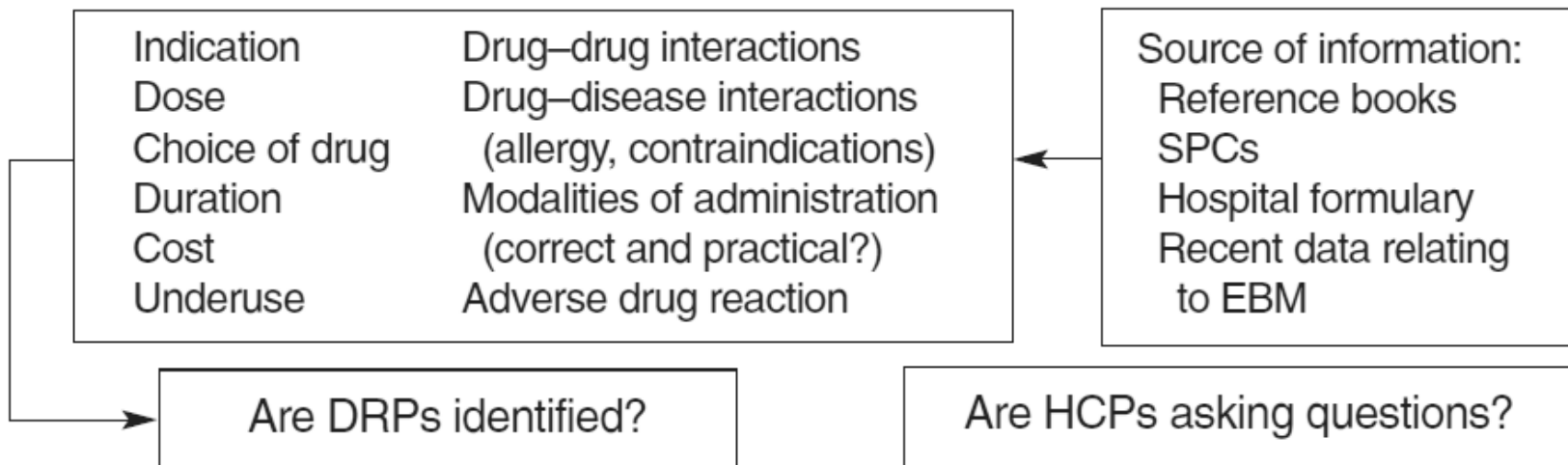Construction of an abstracted chart with clinical and pharmaceutical data

Spinewine *et al.* Annals of Pharmacotherapy (2006): 40:720-728

- Assemble as much information on the patient as possible
- Read the medical dossier and add / compare information
- Ask questions (politely, and only on key points at the beginning, more later on …)
- Construct YOUR clinical summary

How do you work that out (2) ?

Step 2–2a: Systematic analysis of medicines prescribed during hospital stay

Indication	Drug–drug interactions	Source of information:
Dose	Drug–disease interactions	Reference books
Choice of drug	(allergy, contraindications)	SPCs
Duration	Modalities of administration	Hospital formulary
Cost	(correct and practical?)	Recent data relating
Underuse	Adverse drug reaction	to EBM

Are DRPs identified?

Are HCPs asking questions?

Spinewine *et al.* Annals of Pharmacotherapy (2006): 40:720-728

- Perform an "in depth" pharmaceutical analysis
- Have information sources ready (and updated)
- identify the problems if any (DRP: drug related problems) …
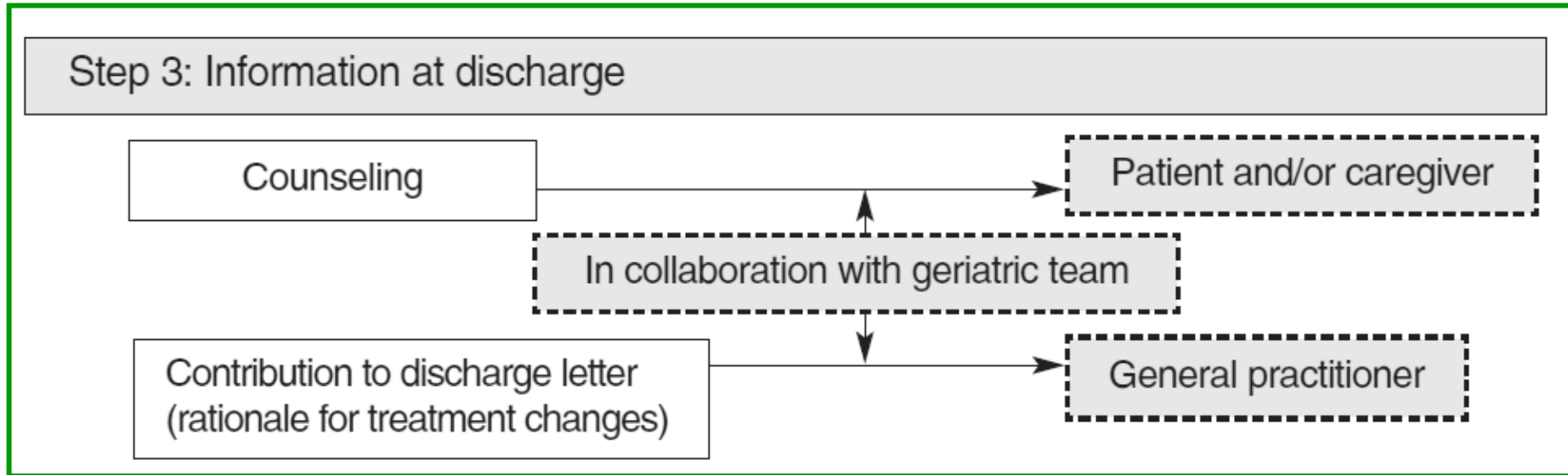- Prepare your answers to questions (HCP: helath care providers)

How do you work that out (3) ?
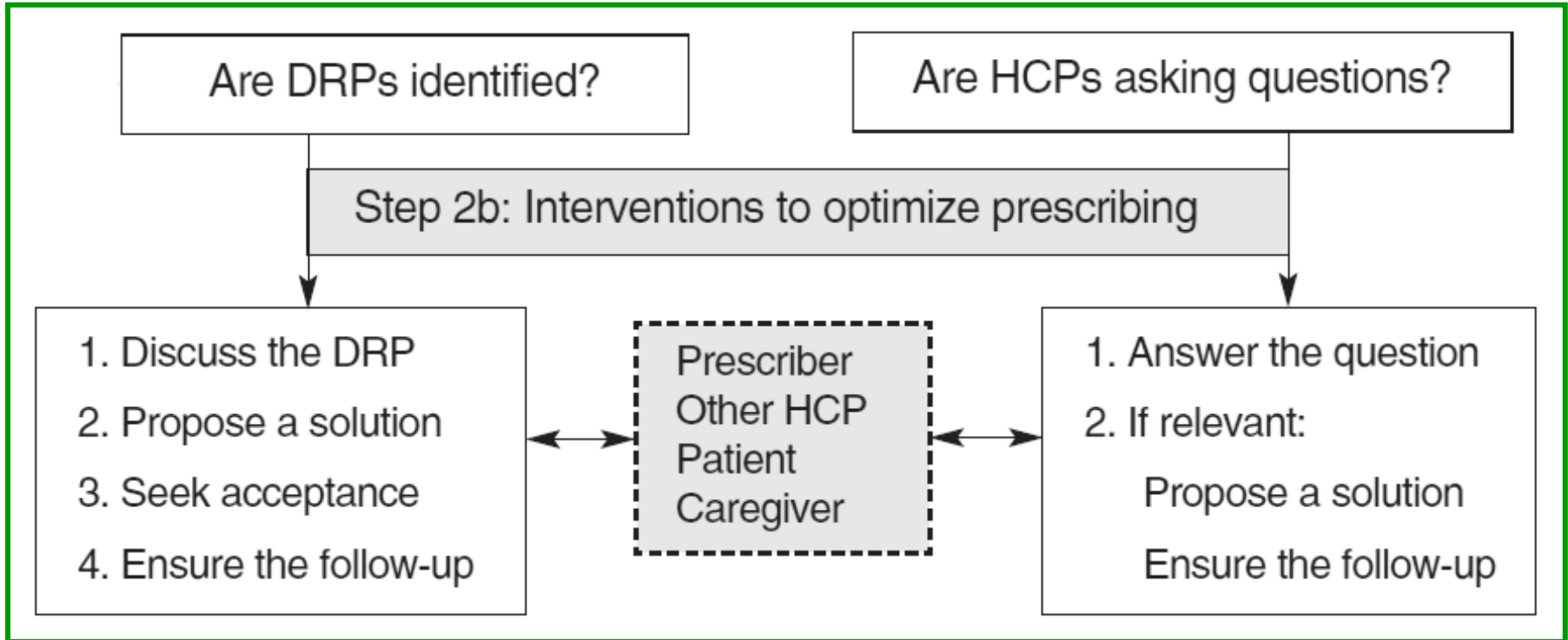
Spinewine *et al.* Annals of Pharmacotherapy (2006): 40:720-728

- Make proposals, not orders or pure criticisms
- Discuss viva voce as much as possible
- Be assertive but cautious
- Accept responsibility and ensure the follow-up

How do you work that out (4)?

Step 3: Information at discharge

Counseling → Patient and/or caregiver

In collaboration with geriatric team

Contribution to discharge letter (rationale for treatment changes) → General practitioner

Spinewine *et al.* Annals of Pharmacotherapy (2006): 40:720-728

- Think about the <u>patient</u> leaving the hospital…
(after all, this is our common goal [doctors, nurses, patients, family…])
- Proper discharge is critical for chronic diseases (hence the example here for geriatrics)
- The pharmacist must write in the medical dossier (may be not at the beginning of the project, but do not delay too much…)

General Interests

- With demonstration at several points of view:

  - **Clinical**
    - $\uparrow$ effficacy of medicines
    - $\downarrow$ iatrogenic events (ADEs), morbidity, mortality)

  - **Économic**
    - $\downarrow$ direct costs (drugs)
    - $\downarrow$ indirect costs (adverse effects, hospital length of stay, …)

  - **Patient satisfaction**

Bond, Pharmacotherapy 1999-2003 – Spinewine, Louvain Medical 2003 - Glen et coll., Pharmacotherapy 2003

Interest for the Doctors

- Treatment continuity

- Support to the prescription and follow-up

- Answering to questions
 - e.g., drug interactions, untoward effects, dosage individualization, …
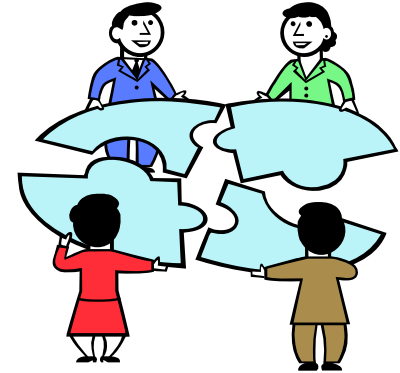
→ Support for what concerns drugs

→ Training and gain of time

Interest for the nursing team

- ## Support for the proper administration to the patient

  - iv: dilution, compatibility, stability

  - Morning, noon time, evening ?

  - Cut, mix drugs ?

  - Administration via oral/nasal gastric tubes ?

  - Information / training about drugs
    (why, how, how often, …)
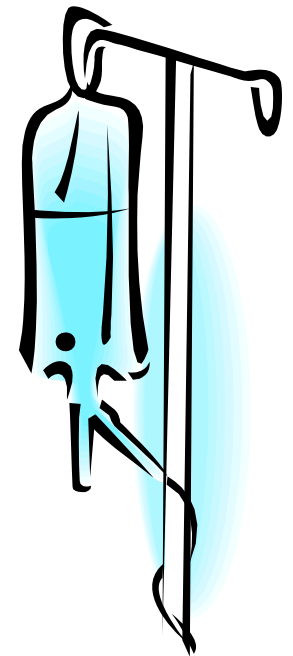
How do you demonstrate the interests (1) ?

- **You <u>must</u> register all your activities…**

  – for your-self (self-improvement)

  – for the patient (retrieving "old" but critical information

  – for the doctors (constructing a data base of applied knowledge)

  – for the Medical Direction (for your-self and for the hospital)

How do you demonstrate the interests (2) ?

- **You <u>must</u> have access and write in the Medical file (Pharmaceutical consultation)**
  - for your-self (quality of your advice)
  - for the patient (retrieving "old" but critical information)
  - for the doctors (who can see your opinions and gain confidence in what you do)
  - for the Medical Direction (to build up cases and statistics)

Building up an "intervention record" file (1)

CLINICAL PHARMACY INTERVENTION FORM

Pharmacist: Date: / /   Hospital ward: Intervention N°:

Patient: Age: M/F

Drugs involved (generic name): _____ _____ _____ _____

DESCRIPTION of the problem and the intervention : (*+references*)

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- Objective, basic information is essential for data retrieval
- Do not forget the references… if you wish to be convincin

Building up an "intervention record" file (2)
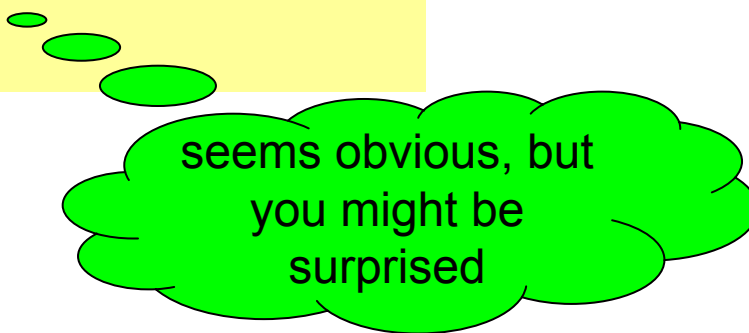
Moment when the problem is identified :
☐Drug history ☐Administration ☐Discharge
☐Prescription ☐Follow-up

Initiator of intervention :
☐Pharmacist ☐ Permanent physician ☐ Resident
☐Nurse ☐Patient ☐Other :…

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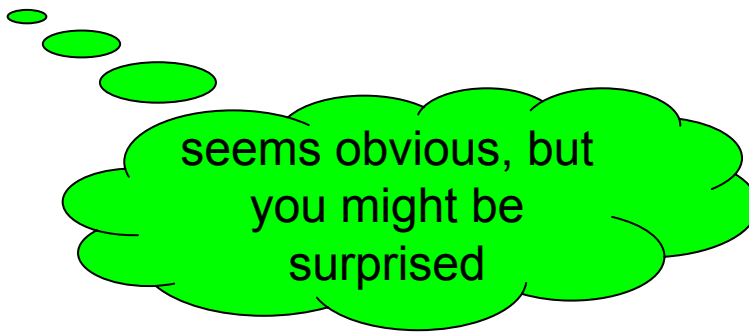
- When did it happen ?
- Who has done what

seems obvious, but you might be surprised

Building up an "intervention record" file (3)

REASON OF INTERVENTION

☐ 1. No valid indication ☐ /
   redundancy ☐ /
   duration too long ☐

☐ 2. Untreated indication /
   duration too short ☐

☐ 3. Less costly alternative

☐ 4. Active substance not a first choice

☐ 5. Inappropriate administration
   way/formulation ☐

☐ 6. CI absolute ☐ /relative ☐

☐ 7. Unit dose or daily dose too high/low ☐

☐ 8. Inappropriate administration
   technique/manipulation

☐ 9. Inappropriate administration moment

☐ 10. Adverse effect

☐ 11. Drug interaction

☐ 12. Inappropriate monitoring/follow-up

- This first part relates directly to drugs
- Each item is important and correspond to a specific situation
- Only one item can be chosen (they are exclusive of each other)
- Sub-items should only be filled if information is available

seems obvious, but you might be surprised

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Building up an "intervention record" file (4)

REASON OF INTERVENTION

☐ 13. Patient's bad compliance

☐ 14. Purely educative question

☐ 15. Administrative problem

☐ 16. Other: ...

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- This second part relates to the patient
- Also, only one answer is possible
- It is important to consider these apart from the drug-related reasons for intervention

Building up an "intervention record" file (5)

INTERVENTION

- ☐ a. Discontinue drug/weaning ☐
- ☐ b. Add/restart a new drug ☐
- ☐ c. Switch to other drug
- ☐ d. Change route of administration/ formulation ☐
- ☐ e. Change in dosage/frequency ☐
- ☐ f. Change modalities/ moment of adm.☐
- ☐ g. Optimise follow-up/monitoring, ask for specialist's opinion ☐

- ☐ h. Advice, educate the patient
- ☐ i. Inform/educate other health care professionals
- ☐ j. Clarify treatment at discharge ☐
- ☐ k. Other: ...

- Block a-g relates to drugs problems
- Block h-k relates to patient's problems
- only one choice is possible and MUST be stated (with sub-item if information is available
- Be accurate !

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Building up an "intervention record" file (6)

<u>Intervention to</u> :
☐ Permanent physician ☐Resident
☐Nurse ☐Patient ☐Other :…

<u>Transmission of intervention :</u>
☐Oral   ☐Written   ☐Other:…

<u>Acceptation of intervention</u>
☐Accepted   ☐Rejected
☐Partly accepted,   ☐Non applicable
and/or without modification done

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- Very important items
- Will help you a lot for
  - justifying your activities
  - know who your clients are
  - whether you are sucessful or not (self evaluation)

Building up an "intervention record" file (7)

<u>Qualitative impact</u>
☐Rising treatment efficacy
☐Prevention of toxicity/AE
☐Negative Impact (toxicity...)
☐Non applicable

→

- This is where you rally will be judged

- Fill up this in collaboration with a clinician first

<u>Economic impact</u>
☐Diminution length of stay   ...d
☐Diminution costs   ...€
☐Rising costs   ...€

→

- This is attractive but sometimes difficult to fill up in a meaningful way (Pharmacoeconomy is not "saving on drugs") t

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Building up an "intervention record" file (8)

<u>Importance of intervention</u>
<u>(to fill by external evaluator)</u>
☐Major   ☐Moderate   ☐Minor
☐Negative impact
☐Non applicable

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- Final point …
- Essential if you wish to be "part of the team" and a respected partner

An example of a compilation of the type of interventions over a long period

Characteristics of interventions

Most common types of interventions	Nb interventions (%)
- Discontinue medicine	262 (22.2)
- Educate/inform healthcare professional	214 (18.2)
- Add a new drug	198 (16.8)
- Change dose	147 (12.5)
- Switch to other drug	95 (8.1)

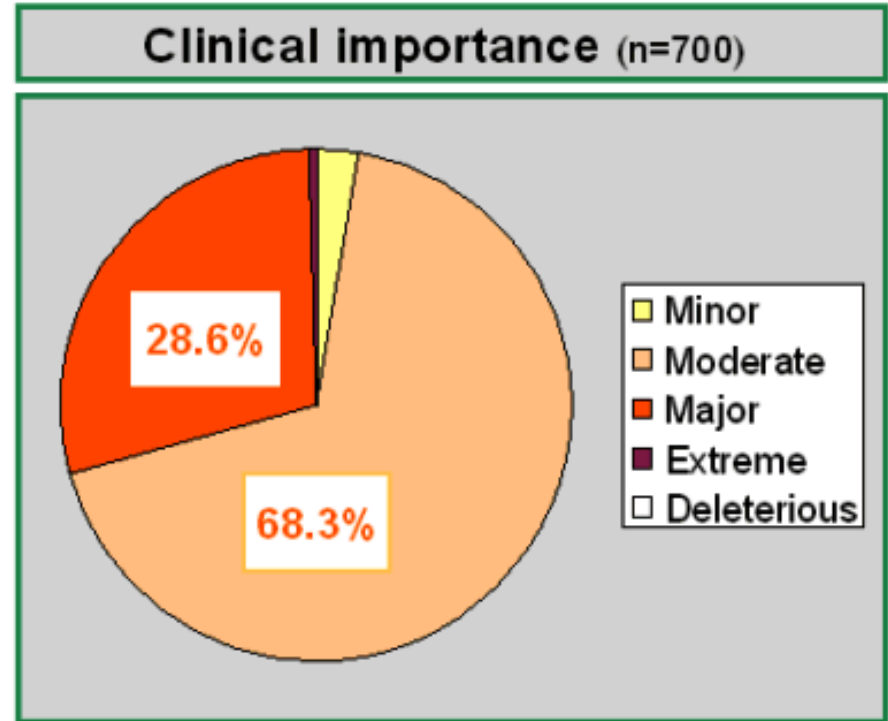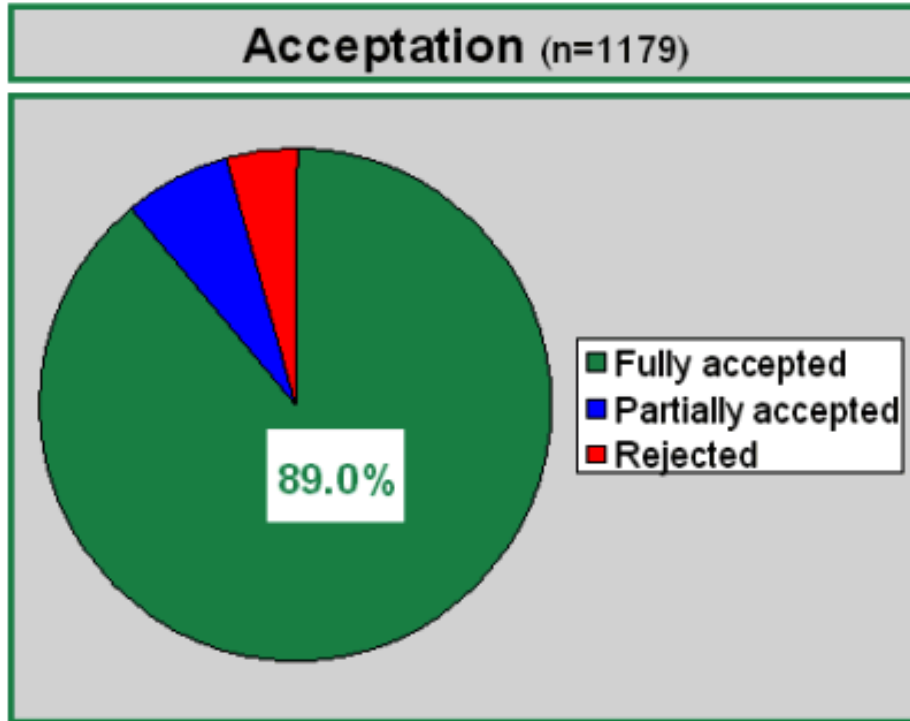| Drugs most commonly involved (ATC 2nd level)	Nb interventions (%)
- Psycholeptics (N05) [a]	106 (9.0)
- Antithrombotics (B01)	103 (8.7)
- Psychoanaleptics (N06) [b]	102 (8.7)
- Analgesics (N02)	78 (6.6)
- Drugs for obstructive airway diseases (R03)	72 (6.1)

Abbreviations: ATC: Anatomical-Therapeutic-Chemical classification system
[a] Psycholeptics include antipsychotics, anxiolytics, hypnotic and sedatives
[b] Psychoanaleptics include antidepressants and drugs for dementia

http://www.farm.ucl.ac.be/cfcl

An example of a compilation of the type of interventions over a long period

Acceptation (n=1179)

89.0%

- ■ Fully accepted
- ■ Partially accepted
- ■ Rejected

Clinical importance (n=700)

28.6%

68.3%

- □ Minor
- □ Moderate
- ■ Major
- ■ Extreme
- □ Deleterious

http://www.farm.ucl.ac.be/cfcl

An example of the importance of interventions

Table 3. Examples of Interventions Initiated by the Clinical Pharmacist

Interventions of moderate clinical importance

Drug-related problem: zopiclone was started the day after admission for insomnia; 2 weeks later, the patient was about to be discharged and was sleeping well, but was at risk of falling.

Intervention: discontinue zopiclone and explain the rationale to the patient (treatment must be short term, no need for it at home, and risk of adverse effects, including falls).

Drug-related problem: 2 antihistamines (hydroxyzine and cetirizine) prescribed by general practitioner for pruritus; both prescriptions rewritten in the hospital.

Intervention: duplication of treatment; little benefit, but increased risks of adverse effects. Discontinue hydroxyzine (more anticholinergic and sedative effects than with cetirizine) and monitor for symptoms of pruritus.

Interventions of major clinical importance

Drug-related problem: nausea reported; digoxin dose increased 3 days prior.

Intervention: check electrocardiogram and digoxin blood level; discontinue or decrease dose if intoxication confirmed (note: intoxication was confirmed).

Drug-related problem: patient with diabetes and peripheral arterial disease; no cardiovascular prophylaxis and no contraindication.

Intervention: start aspirin 100 mg/day.

Spinewine *et al.* Annals of Pharmacotherapy (2006): 40:720-728

A systematic reporting in Belgium
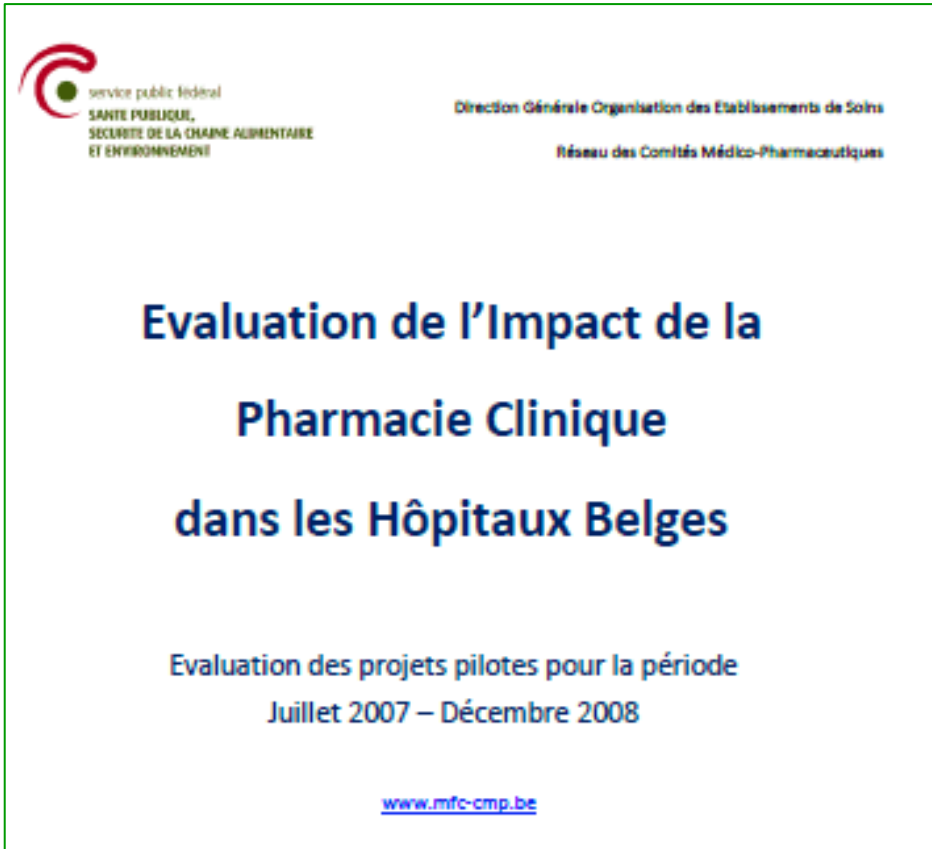
- Full report of the impact of Clinical Pharmacy in Belgian Hospitals

- available from this web site (in French)