

# THE ADVANCED MEDICATION REVIEW

PCNE WORKING SYMPOSIUM ON  
MEDICATION REVIEW 2009  
WORKSHOP 3

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# Aim of the workshop

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- To define an advanced medication review
- To develop a flowchart for an advanced medication review plus the fundamentals for an interview guideline

# Questions

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- ▣ What purpose has an advanced medication review?
- ▣ What are core elements of an advanced medication review?
- ▣ What drug related problems can be detected and should therefore be checked during an advanced medication review? and
- ▣ What data do we need to detect these problems?  
(or better the other way round?)
- ▣ Do we need instruments for the detection of DRP like MAI, Beers, and can they be implemented in an interview guideline?

# Generic definition

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- Medication review is an evaluation of patient's drugs with the aim of optimizing the outcome of drug therapy.  
(by detecting, solving and preventing DRP)

# Advanced medication review

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- Why is it done (aim)
- What is done (core elements)
  - ▣ Interview guideline
- Data needed
- Who does it, who else is involved
- On whom is it done

???????

**What is the purpose of an advanced medication review?**

**Compare: A Guide to Medication Review 2008**

# Types of medication review (1)

	Address issues relating to	Patient present	All Rx drugs	Plus OTC	Review of medicines and or condition
<b>Type 1 Prescription review</b>	<b>Technical issues relating to the prescription</b>	<b>No</b>	<b>Possibly</b>	<b>No</b>	<b>Medicines</b>
<b>Type 2 Concordance and compliance review (MUR)</b>	<b>Patient's medicine-taking behavior</b>	<b>Usually</b>	<b>Yes</b>	<b>Yes</b>	<b>Medicines use</b>
<b>Type 3 Clinical medication review</b>	<b>Optimize patient's drug therapy and drug use in the context of their clinical condition</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Medication regimen, use of medicines and clinical condition</b>

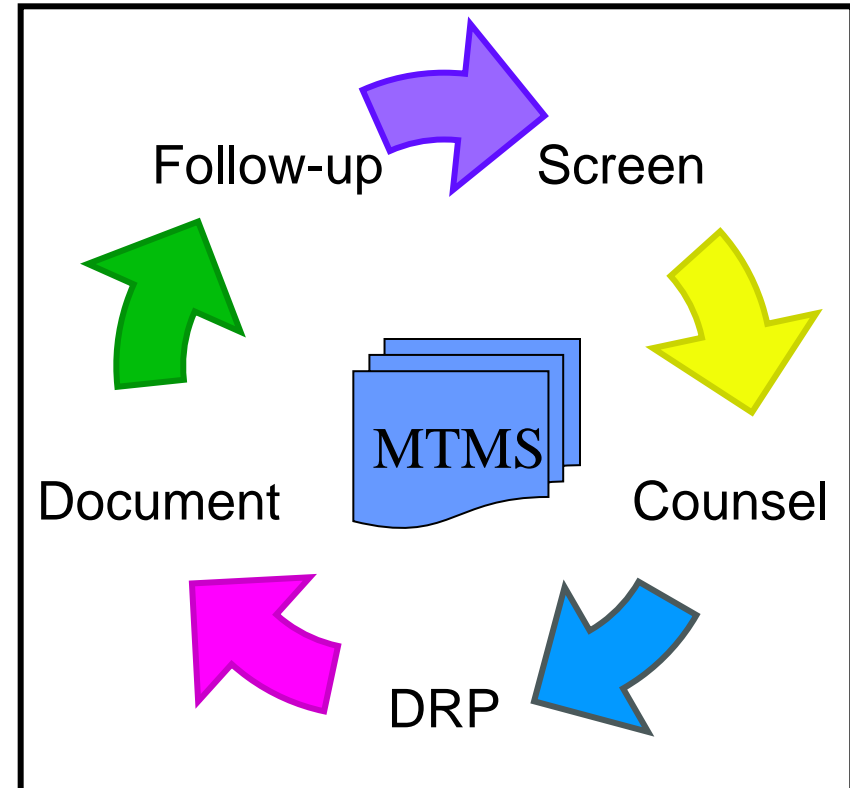
# What are core elements of a clinical medication review?



# Possible core elements

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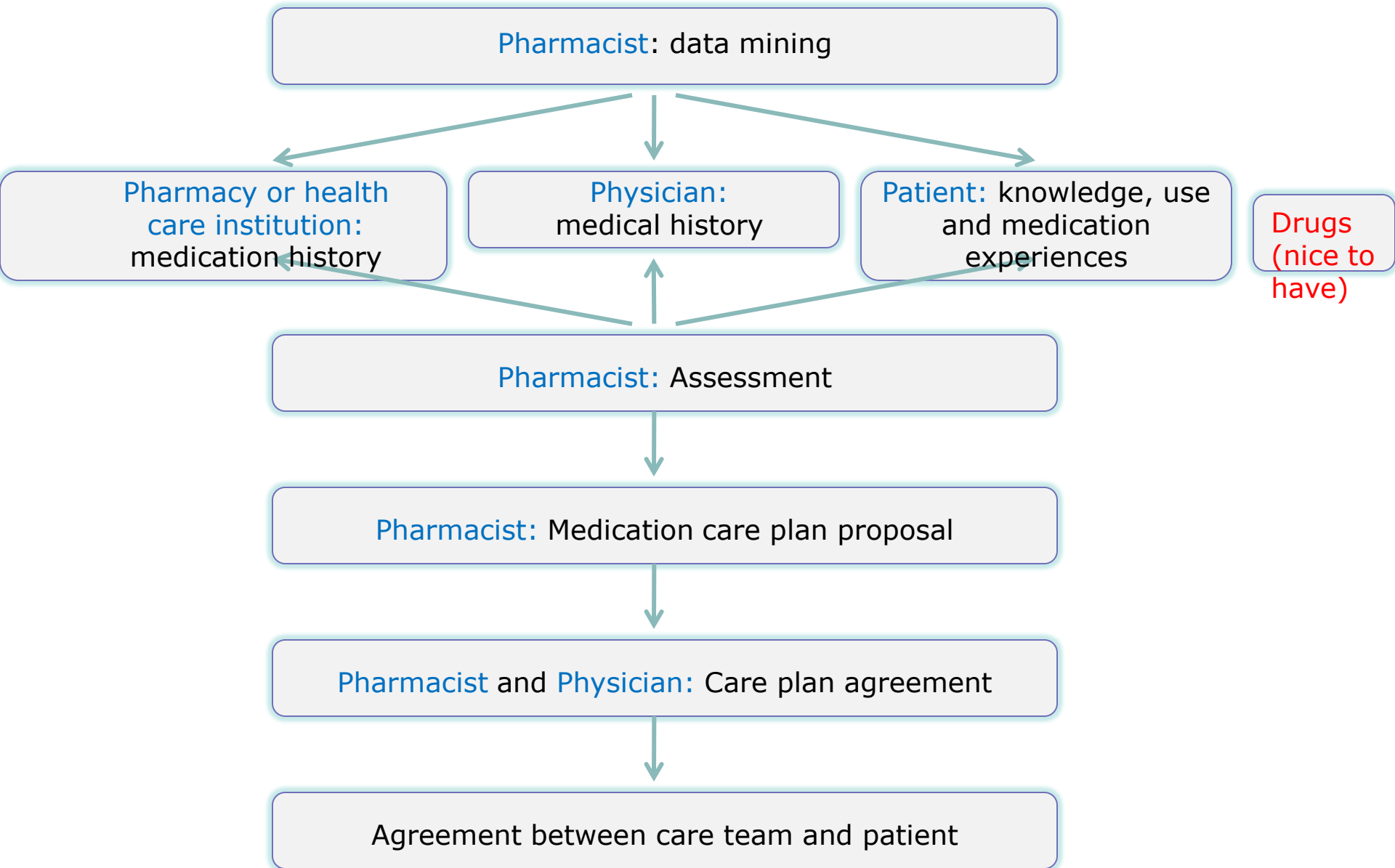
- Medication therapy review
- A personal medication record
- A medication action plan
- Intervention and referral
- Documentation and follow-up



# Advanced medication review

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- ▣ Data collection
- ▣ Assessment
- ▣ A written report: Medication care plan proposal
- ▣ Care plan agreement between physician and pharmacists
- ▣ Agreement with patient



# Data needed

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Type	Drugs	Medical history	Medication history including dispensing data	Patient
Clinical medication review	✓	✓	✓	✓

Medical history: diagnosis and symptoms, prescribed medication, clinical observation and laboratory data (has to be defined)

# Advanced medication review

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- Who does it: pharmacists performs the review in collaboration with the physician and if needed with other health care service providers
- On whom is it done: Patients in need of care

# Data collection forms

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- Patient interview form
  - ▣ HAS TO BE DEVELOPED

# New checklist of categories

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The aim is to

- Safety
  - Effectiveness
  - Efficiency
  - Feasibility
- 
- We need a new list to check these items

# What methods do we need for MR

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- Explicit?
  - Implicit?
  - Combination of both?
  - Indicators?
- 
- What DRP should/can be detected?



# Medication appropriateness

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- Explicit criteria
  - ▣ Standardized guidelines
  - ▣ Focus on a single drug or drug class
  - ▣ Designed to be applicable to medication orders/prescriptions with minimal clinical data
  - ▣ Can be incorporated into computerized systems
- Implicit criteria
  - ▣ Use clinical knowledge and judgment to assess prescribing appropriateness

# Some Methods, more details

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- Using implicit criteria (e.g. MAI, Cipolle-Strand, Dader)
  - Hanlon JT, Schmader KE, Samsa GP, Weinberger M, Uttech KM, Lewis IK, Cohen HJ, Feussner JR. A method for assessing drug therapy appropriateness. *J Clin.Epidemiol.* 1992;45(10):1045-51
  - Strand LM. et al., Drug-related problems: their structure and function. *DICP.* 1990;24:1093-1097
  - Faus-Dader MJ. El programa Dadér. *Pharm Care Esp* 2000;2:73-74
- Using explicit criteria (e.g. Beers)
  - Beers MH, Ouslander JH, Rollinger I, Reuben DB, Brooks J, Beck JB. Explicit criteria for determining inappropriate medication use in nursing home residents. UCLA Division of Geriatric Medicine. *Arch.Intern.Med.* 1991;151(9):1825-32
- Using implicit and explicit criteria (e.g. McLeod)
  - McLeod PJ, Huang AR, Tamblyn RM, Gayton DC. Defining inappropriate practices in prescribing for elderly people: a national consensus panel. *CMAJ* 1997;156:385-391.

# Instruments/tools

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- Computer driven
  - ▣ Criteria and quality depends on
    - Software
    - Drug database quality
    - Patient database quality
  - ▣ Suitable for retrospective, but especially prospective MR

# Adaptations

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- All standardized methods need to be adapted to:
  - ▣ Era / time
  - ▣ Setting / nationality / culture
  - ▣ Available drug sets
- Many European examples:
  - ▣ Beers adapted for Poland, Germany, the Netherlands, Portugal
  - ▣ MAI adapted for Denmark, Belgium, Netherlands

# Beers criteria

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- ❑ Explicit criteria for appropriateness, compiled with an expert panel
- ❑ List of medications that are generally considered inappropriate *when given to elderly people*
- ❑ Frequently adapted to country and time (2003, last time in USA)
- ❑ Frequently used for research purposes on larger databases
- ❑ Some judgments depend on diagnosis or conditions

**About 80 drugs or drug-groups including:**

- Long acting Benzodiazepines
- Pentazocine
- Amitriptylline
- All barbiturates (except for epilepsy)
- Ticlopedine
- Cimetidine
- Estrogens

# McLeod (1)

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- List of inappropriate prescribing for elderly people
- Based on expert consensus developed through
  - ▣ Extensive literature review
  - ▣ Questionnaire evaluation using Delphi technique
- Ranking of clinical importance of risks and suggestion of alternative therapies

McLeod PJ, Huang AR, Tamblyn RM, Gayton DC. Defining inappropriate practices in prescribing for elderly people: a national consensus panel. *CMAJ*. 1997;156:385-391.

# McLeod (2)

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- Mixed explicit and implicit system
- Canadian method for detecting PIPs (potentially Inappropriate Medication)
  - ▣ drugs generally contraindicated for elderly people because of an unacceptable risk–benefit ratio
  - ▣ prescription of drugs that can cause drug–drug interactions
  - ▣ prescription of drugs that can cause drug–disease interactions
- Requires information about diagnosis
- Based on expert consensus developed through
  - ▣ Extensive literature review
  - ▣ Questionnaire evaluation using Delphi technique
- Ranking of clinical importance of risks and suggestion of alternative therapies

# MAI – Medication appropriateness index (1)

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- Designed to measure ten components of prescribing
- Support from explicit definitions and instructions for use
  - ▣ Combination of explicit criteria with implicit judgment
- Designed to be applied to the medical record by a clinician, usually a pharmacist
- Not designed to include the needs of the individual patients

*Samsa GP, et al. A summated score for the medication appropriateness index: development and assessment of clinimetric properties including content validity. J Clin Epidemiol. 1994;47:891-896.*



# MAI – Medication appropriateness index (2)

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- ▣ Indication
- ▣ Effectiveness
- ▣ Dosage
- ▣ Direction
- ▣ Drug-drug interactions
- ▣ Drug-disease interactions
- ▣ Direction practicality
- ▣ Duplication
- ▣ Duration
- ▣ Medical expense

For each criterion:

- Operational definitions
- Explicit instructions
- Examples

## MAI – Medication appropriateness index (3)

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- ❑ 3-point scale to rank as “appropriate”, “marginally appropriate” or “inappropriate”
- ❑ Weighting scheme permits a score for each drug and also an overall patient score
- ❑ Developed for use in outpatient elderly clinics
  - ▣ Medical data easily accessible
- ❑ Modifications exist for different settings, e.g.
  - ▣ Ambulatory older persons
  - ▣ Community pharmacy

Fitzgerald LS, et al. Reliability of a modified medication appropriateness index in ambulatory older persons. *Ann Pharmacother.* 1997;31:543-548.

Kassam R, Martin LG, Farris KB. Reliability of a modified medication appropriateness index in community pharmacies. *Ann Pharmacother.* 2003;37:40-46.

# MAI – Medication appropriateness index (4)

Specific instructions for index criterion direction

Question: Are the directions correct?

1	2	3	9
Correct		Incorrect	do not know

## Definition

Directions are defined as the instructions in the use of a medication by a patient. The question assesses the route of administration, relationship to food and liquid, the schedule and time of the day

## Instructions

The directions are incorrect when they specify the wrong route of administration, give wrong or no instructions regarding food and liquid (when they exist),.....

## Examples

Simvastatine 40 mg/day: Incorrect (must specify in the evenings)

# New screening tools using explicit criteria

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- **STOPP (Screening Tool of Older Persons' potentially inappropriate Prescriptions)** Gallagher P, O'Mahony D. Age Aging 2008;37:673-9
- **START (Screening Tool to alert doctors to the reight treatment.** Barry PJ, Gallagher P, Ryan C, O'Mahony D. Age Aging 2007;36:628-31

# Cipolle-Strand

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- ❑ Pharmacist focused. The pharmacist assumes responsibility for drug therapy outcomes
- ❑ Attempts to identify medication therapy problems and common causes
- ❑ Protected system, best used with consent of authors and University of Minnesota
- ❑ Results are being pooled
- ❑ Remuneration negotiated
- ❑ Also used in elsewhere (eg Australia)

# Drug-related problems – Cipolle-Strand

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- Categories and common causes
  - ▣ Unnecessary drug
  - ▣ Needs additional drug therapy
  - ▣ Ineffective drug
  - ▣ Dosage too low
  - ▣ Adverse drug reaction
  - ▣ Dosage too high
  - ▣ Noncompliance
  - ▣ Drug interactions
  - ▣ Need for monitoring

# Dadér method/ Dadér Program

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- Based on the Granada Consensus about pharmaceutical care in Spain
- Pharmacist focused
- Similar to Strand-Cipolle system, but for especially Spanish-language settings. Now 3rd revision
- Protected by the University of Granada, used often in South Americas too.
- Part of the concept of 'Drug-Therapy follow up' (called Pharmaceutical care elsewhere)

## **Dader negative outcomes:**

- **Untreated health problem**
- **Effects of unnecessary drug**
- **Non-quantitative in effectiveness (wrong drug)**
- **Quantitative ineffectiveness (dosage)**
- **Non qualitative unsafe (allergy)**
- **Quantitative unsafe (side effect)**

# Clinical indicators

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- Indicators of preventable drug-related morbidity (PDRM)
  - ▣ Strategy to reduce drug related morbidity and drug related admission
  - ▣ To identify patients at risk
- Development of 52 indicators for PDRM in the US<sup>1</sup>
  - ▣ Developed from a literature review
  - ▣ Validated using the Delphi technique
- Assessment of transferability to UK and generation of new indicators<sup>2</sup>

<sup>1</sup>MacKinnon NJ, Hepler CD. Preventable drug-related morbidity in older adults 1. Indicator development. *J Manag Care Pharm.* 2002;8:365-371.

<sup>2</sup>Morris CJ, Cantrill JA, Hepler CD, Noyce PR. Preventing drug-related morbidity--determining valid indicators. *Int J Qual Health Care.* 2002;14:183-198.



# Examples for clinical indicators<sup>1</sup>

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## Pattern of care:

Use of an ACE inhibitor without baseline monitoring of electrolytes, subsequent monitoring at 10-14 days and then every six months thereafter

Outcome: Hyperkalaemia

## Pattern of care:

In the absence of any contraindication, failing to prescribe aspirin in a patient with a history of myocardial infarction

Outcome: A second myocardial infarction

<sup>1</sup>Morris CJ, Cantrill JA, Hepler CD, Noyce PR. Preventing drug-related morbidity--determining valid indicators. *Int J Qual Health Care.* 2002;14:183-198