

INAPPROPRIATE PRESCRIBING

MAPPING THE CHARACTERISTICS OF EVALUATION TOOLS

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Pharmaceutical Care



Appropriate prescribing should..

- Maximise efficacy and safety
- Minimise cost
- Respect patient's preferences

Appropriate prescribing ?

Rational prescribing

- The process whereby prescribing decisions are made
- Follows guidelines



need **not** be appropriate !

Appropriate prescribing

- Rational prescribing + tailored to patients needs and characteristic



Objectives

Identify tools to evaluate or improve inappropriate prescribing in adults by an extensive literature search and to summarise their characteristics.

Method

- Literature search in Pubmed/MEDLINE
- Search term «inappropriate prescri*»
- Limits:
 - articles in English or German language
 - Published between 1991 and 2011
- Inclusion criteria:
 - Development or description of instruments, computerised support systems, adaptations and updates of already published instruments.
- Exclusion criteria:
 - Instruments regarding specific drug classes, recommendations of pharmacists, studies to validate existing instruments, computerised support systems based on already published instruments.

Results : 41 tools !

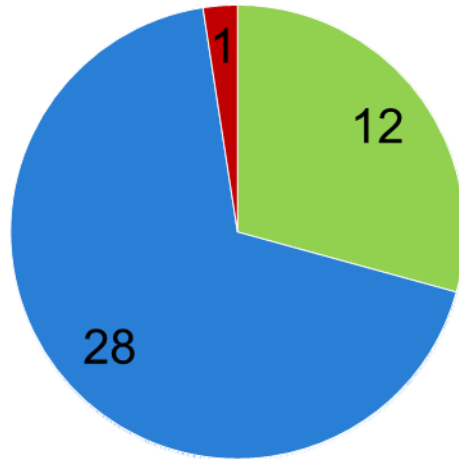
- American Medical Directors Association Top 10 Particularly Dangerous Drug Interactions; 2011
- Assessing Care of Vulnerable Elders (ACOVE); 2007
- **Beers Criteria**; 1991, 1997, 2003
- Beers-Liste; 2007
- Center of Medicare and Medicaid Services (CMS): List of unnecessary Medication Use in Residents of long Term Care Facilities; 2006 (assessed online 2011)
- High Risk Medications for Elderly (DAE-A); 2008 (ass. 2011)
- **Laroche Criteria**; 2007
- Lechevallier Criteria; 2005
- Lindblad List of Clinical important Drug-Disease Interactions; 2006
- Maio Criteria; 2010
- Malones List of Drug-Drug Interactions; 2004
- Matsumura Alert System for Inappropriate Prescriptions; 2009
- **McLeod Criteria**; 1997
- Norwegian General Practice (NORGEP) Criteria; 2009
- Rancourt Criteria to assess Quality of prescribing; 2004
- Sloane List of inappropriate prescribed Medicines; 2002
- **START**; 2007
- **STOPP**; 2008
- Terell Computerised Decision Support System to reduce potentially inappropriate Prescribing; 2009
- The Improving Prescribing in the Elderly Tool (IPET); 2000
- **The PRISCUS List**; 2010
- Winit-Watjana Criteria; 2008
- Zhan Criteria; 2001
- Barenholtz-Levy self-administered Medication-Risk Questionnaire; 2003
- Cantrill Indicators of Prescribing Appropriateness; 1998
- Hamdy Criteria for Medication Review Profile; 1995
- Lipton's Instrument to assess the Appropriateness of Physician Prescribing Practices; 1992
- Medication Appropriateness Index (**MAI**); 1992
- Owens Steps to achieving optimal Pharmacotherapy; 1994
- Pharmacist Management of Drug-Related Problems (PMDRP); 1997
- Roberston's Flow Charts to identify and resolve Drug Therapy Problems; 1996
- Tool to Improve Medications in the Elderly via Review (**TIMER**); 2009
- Australian Prescribing Indicators; 2008
- Brown Model for Improving Medication Use in Home Health Care Patients; 1998
- Kaiser Permanente Model Screening Criteria; 1995
- Kaiser Permanente Colorado Criteria; 2007
- Medication Management Outcomes Monitor; 2006
- MOXXI-III evidence-based System to reduce Prescription Errors; 2005 (ass. 2011)
- New South Wales Advisory Group Indicators for Quality Use of Medicines; 2011
- Obornes Prescribing Indicators; 1997
- The Geriatric Medication Algorithm; 1994

Classification

	Misprescribing											
	Overprescribing	Drug choice	Dosage	Duration of Therapy	Duplication	Drug-Disease interactions	Drug-Drug interactions	Drug-Food interactions	Underprescribing	Cost effectiveness	Compliance	Alternative therapies
<u>American Medical Directors Association Top 10 Particularly Dangerous Drug Interactions³⁴</u>												
<p>This tool provides a list of America's top 10 dangerous drug interactions in long term care. For each interaction all active principles and brand names are listed. Additional information about impact, mechanism of interactions, alternatives to patient management, monitoring, precautions and references were provided. The list is based on considerations of drug-drug interactions with clinical significance and a potential to cause harm, the frequency of these interactions occur, and the frequency with which these drugs are prescribed in nursing homes.</p> <p>Patient characteristics: Patients with a need for long term care Development method : Expert consensus Level of medication review: Simple medication review</p>												

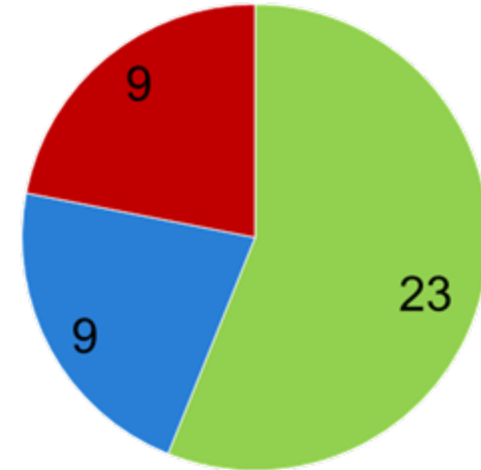
America's top 10 particularly dangerous drug interactions in long term care.
 (Accessed 07.04.2011, at <http://www.amda.com/tools/clinical/m3/topten.cfm> .

Patient characteristics



■ all age groups ■ elderly ■ long term care

Approach



■ Explicit ■ Implicit ■ Explicit/implicit

Developed by consensus techniques

- Delphi technique (14)
- Nominal group technique (2)
- RAND appropriateness method (1)
- «Expert consensus» (12)

Explicit

vs.

implicit

- Criterion-based
- Usually developed from review, expert opinions and consensus techniques
- Generally used as rigid standards
- Do not address individual differences among patients
- Are often drug-orientated and/or disease-orientated
- Can be applied with little or no clinical judgement
- Easier to obtain reliable and valid measures than with implicit tools
- Need to be updated regularly !
- Country-specific (guidelines, standards, ..)

- Judgement-based
- Have often a lack of consensus-based structure
- Can account for patient's preferences
- Consider patient's entire drug regimen
- Rely user knowledge
- Time consuming

PRISCUS List

	Misprescribing											
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<u>The PRISCUS List</u> ⁵⁵												
<p>The PRISCUS List is based on different already published tools^{36,38,44,45,52,53} and literature search. It consists of 83 potentially inappropriate medications in a total of 18 medication classes and is meant for use in the German market. For each medication main concerns are listed which describe possible therapeutic alternatives and precautions to be taken when these medications are used. For some of the included medications, dosage recommendations are listed.</p> <p>Patient characteristics: Age ≥ 65 years Development method: Delphi technique Based on: Beer Criteria 1997³⁸/2003³⁶, McLeod Criteria,⁴⁵ Laroche Criteria,⁴⁴ STOPP,⁵³ START⁵² Level of medication review: Simple medication review</p>												

PRISCUS List

TABLE

Potentially inappropriate medications for elderly patients (short version) (see also the Summaries of Product Characteristics)

Medication	Main concerns (selected)	Possible therapeutic alternatives	Precautions to be taken when these medications are used
Analgesics, anti-inflammatory drugs			
NSAID – indometacin – acemetacin* – ketoprofen* – piroxicam – meloxicam* – phenylbutazone – etoricoxib	– very high risk of gastrointestinal hemorrhage, ulceration, or perforation, which may be fatal – indometacin: central nervous disturbances – phenylbutazone: blood dyscrasia – etoricoxib: cardiovascular contraindications	– paracetamol – (weak) opioids (tramadol, codeine) – weak NSAID (e.g., ibuprofen)	– use in combination with protective agents, e.g., PPI – follow-up for gastrointestinal manifestations (gastritis, ulcer, hemorrhage) – monitoring of renal function – monitoring of cardiovascular function (blood pressure, signs of congestive heart failure) – dosing recommendation: shortest possible duration of therapy – phenylbutazone: monitoring of blood counts as well
Opioid analgesics – pethidine	– elevated risk of delirium and falls	– paracetamol – other opioids (with a lower risk of delirium, e.g., tilidine/naloxone, morphine, oxycodone, buprenorphine, hydromorphone) – weak NSAID (e.g., ibuprofen)	– clinical follow-up (central nervous function, tendency to fall, cardiovascular function) – monitoring of renal function – dosing recommendation: low initial dose, shortest possible duration of treatment

MAI Klassifizierung

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<u>Medication Appropriateness Index (MAI)⁶²</u>												
<p>MAI consists of ten questions to assess medication appropriateness. The questions include the following aspects: Indication of drug, dosage, direction, drug-drug interactions, drug-disease interactions, duplication, duration and cost effectiveness of drug therapy. The questions are answered using a three-point Likert scale.</p> <p>Patient characteristics: All age groups Development method : Expert consensus Level of medication review: Advanced medication review</p>												

Medication Appropriateness Index (MAI)

Table 1. Medication Appropriateness Index*

To assess the appropriateness of the drug, please answer the following questions and circle the applicable score:				
1. Is there an indication for the drug? Comments:	1 Indicated	2	3 Not Indicated	9 DK†
2. Is the medication effective for the condition? Comments:	1 Effective	2	3 Ineffective	9 DK
3. Is the dosage correct? Comments:	1 Correct	2	3 Incorrect	9 DK
4. Are the directions correct? Comments:	1 Correct	2	3 Incorrect	9 DK
5. Are the directions practical? Comments:	1 Practical	2	3 Impractical	9 DK
6. Are there clinically significant drug–drug interactions? Comments:	1 Insignificant	2	3 Significant	9 DK
7. Are there clinically significant drug–disease/condition interactions? Comments:	1 Insignificant	2	3 Significant	9 DK
8. Is there unnecessary duplication with other drug(s)? Comments:	1 Necessary	2	3 Unnecessary	9 DK
9. Is the duration of therapy acceptable? Comments:	1 Acceptable	2	3 Unacceptable	9 DK
10. Is this drug the least expensive alternative compared to others of equal utility? Comments:	1 Least expensive	2	3 Most expensive	9 DK

*Complete instructions in the use of the scale are available upon request.

†Don't know.

Conclusions

None of the tools identified covers all the dimensions of appropriate prescribing.

Mapping the characteristics emphasizes strengths, limitations and usability. Such an overview is valuable for future developments of improved instruments.