A Matter of Attention

Inconsistencies between prescriptions and drug intake in elderly multimorbid patients in primary care

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Bundesministerium
für Bildung
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Budapest, 17.10.2008

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Topics

- Study: cross sectional study in 20 GPs to detect inappropriate medications in elderly multimorbid patients

- Research question: prevalence of inconsistencies between drug prescription and intake

- Material and methods

- Results:
  - prescriptions not filled in (non-adherence)
  - additional medications of the patient (OTC etc.)
  - differences in dosage / dosing intervals

- Further results (may be discussed):
  - adjustment of dosage in renal impairment
  - (risk of) interaction
  - inappropriate medications in the elderly ('Beers list')

- Discussion and conclusions

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Multimorbidity, age, and polypharmacy

- Increasing age, multimorbidity and polypharmacy ► increasing risk of inappropriate prescriptions [1-3]

- Inappropriate prescriptions ► predictor for (preventable?) adverse drug events (ADE),particularly in the elderly [4-6]

[1] Glaeske G, Janhsen K (2007) GEK-Arzneimittel-Report 2007

[2] Steinman MA, et al. (2006) J Am Geriatr Soc 54(10):1516-23

[3] Fialová D, et al. (2005) JAMA 293(11):1348-58

[4] Field TS, et al. (2004) J Am Geriatr Soc 52(8):1349-54

[5] Kuijpers MAJ, et al. & The OLDY (Old people Drugs & dYsregulations) study group (2007) Br J Clin Pharmacol 65(1):130-3

[6] Leendertse AJ, et al. (2008) Arch Int Med 168(17): 1890-6

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Setting and design

Cross-sectional study in 20 family practices (convenience sample)

Family practices: List of the 50 'most expensive' patients ≥ age 65 ≥3 diagn. ≥5 medic. capable for inter-view	**Institute:** randomi-zed sample 15 pat./ pract.	**Family pract. :** inclusion of 10 consec. patients after *in-formed consent*	**GPs:** Documentation of current medication (and indication!), sociodemographic data, diagnoses and comorbidity
			Institute: - structured telephone interview with the patients (drug identificaton code)

Methods: Comparisons

GP documentation –> Patient interview:

- prescriptions only found in GP documentation (exactly // same agent [ATC])
- Dosage in prescription *higher* than taken
- Dosage in prescription *lower* than taken
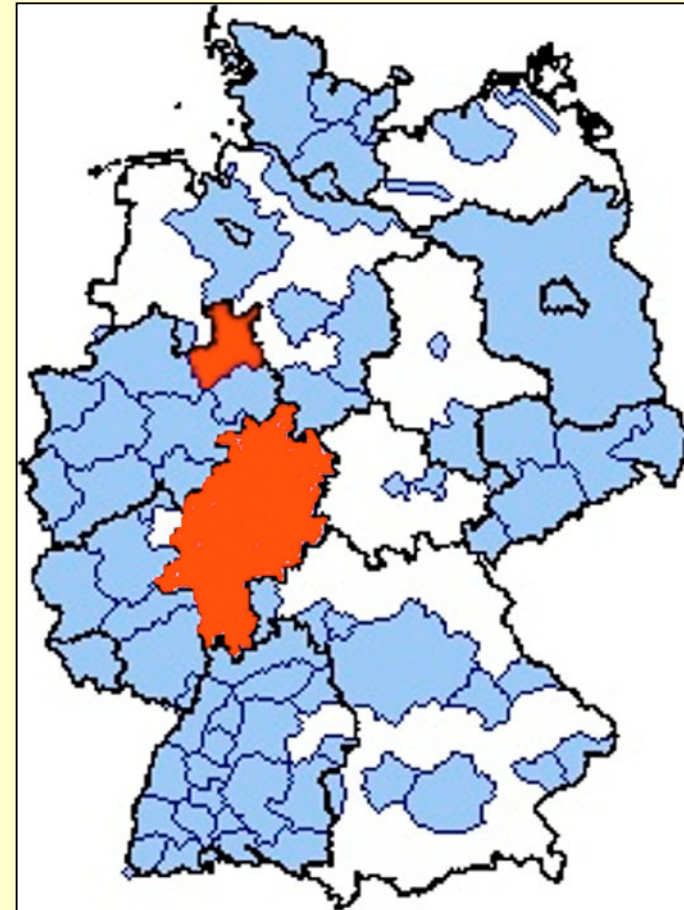- Differences in intake scheme

Patient interview –> GP documentation:

- Drugs presented only by the patient
- Use of drugs 'to be taken as needed'

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Results I

- **17/21** practices did participate

- **169* patients:**
  - **male**   **49.7 %**
  - **age (median)**   **74y**
  - **drugs / pat. (median)**   **8 (5-16)**
  - **(long term) diagnoses**   **11 (4-33)**
  - **CIRS (median)**   **10 (1-26)**

* data reviewed, compared to the abstract!

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Results II: Prescription vs. actual intake (total)

- Differences in GP documentation vs. patient interview:
  151/169 Patients (89.3 %)
  Per patient: median 3 (0 to 13 differences)

- Differences in patient interview vs. GP documentation:
  119/160 Patients (74.4 %)
  Per patient: median 2 (0 bis 26 differences)

- **At least one mismatch: in 96.1 % (!) of the patients**

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Results III: Prescription vs. actual intake

Prescriptions *only* found in GP documentation, *not* in patient interview: n=240 prescr. (70.0 % pat.)

Prescriptions higher dosed by the GP: n=105 prescr. (46.3 % pat.)

Prescriptions lower dosed by the GP: n=103 prescr. (41.3 % pat.)

550 mg Pregabalin

150 mg Pregabalin

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Results IV: Prescription vs. actual intake (II)

Differences in the *usage scheme* (may be relevant e.g. corticoids in asthma): n=127 prescr. (43.2% pat.)

Medications (drug use) *only mentioned by the patient*: n=306 drugs (72.5% pat.)

Interview_reg

Pat_ID: 0905

Handelsname:	Dosierung				Verordner	ATC	Vergleich
Allopurinol 300	0,5	0	0	0	HA	M04AA01	
Chloraldurat	0	0	0	1	HA	N05CC01	
Ezetrol	1	0	0	0	HA	C10AX09	
Foradil	1	0	1	0	FA	R03AC13	1
Formotop	1	0	0	0	HA	R03AC13	
Lisinopril 5 mg	0	0	1	0	HA	C09AA03	
Marcumar	0	0	0	0	HA	B01AA04	1
Molsidomin 8 mg	0	0	1	0	HA	C01DX12	
Oxazepam 50 mg	0	0	0	0	HA	N05BA04	
Pentalon 80 mg	1	0	0	0	HA	C01DA05	
Spiriva	1	0	1	0	FA	R03BB04	
Torem 10 mg	1	0	0	0	HA	C03CA04	

Medikamente_reg

Pat_ID: 0905

Handelsname:	Dosierung				ATC	Vergleich
Allopurinol AL 100	1	0	0	0	M04AA01	2
Calcium D3	1	0	0	0	A12AX01	
Chloraldurat rot	0	0	0	1	N05CC01	
Ezetrol 10mg	0	0	1	0	C10AX09	
Frormotop 12 UG	1	0	1	0	R03AC13	
Lisi Puven 5 mg	0,5	0	0	0	C09AA03	4
Molsidomin 8 ret	0	0	1	0	C01DX12	
Oxazepam 10 mg	0	0	0	1	N05BA04	2
Pentalong 80 mg	1	0	1	0	C01DA05	3
Sortis 40 mg	0	0	0,5	0	C10AA05	2

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Frequency by agents (ATC groups):

Drugs differently taken by the patient (>2 %; n=357/1467)	ATC	%		Differences in prescription (>2 %; n=589/1471)	ATC	%
Minerals	A12	12		Diuretics	C03	8,6
Nutritionals	A99	6,7		Antidiabetics	A10	7,1
Sympathomimetics etc.	R03	6,7		ACE-Inhibit.	C09	7
Antiphlogist./NSAR	M01	5,2		Betablockers	C07	6,8
Cardiacs (incl. Antiarr.)	C01	4,3		Sympathomimetica etc.	R03	6,6
Analgetics	N02	4		Lipid lowering drugs	C10	6,1
Diuretics	C03	3,7		Antacida	A02	5,5
Psycholeptica	N05	3,7		Cardiacs (incl. Antiarr.)	C01	4,6
Antidiabetics	A10	3,4		Analgetics	N02	4,6
Antidepressants	N06	3,4		Gout	M04	3,9
Ophthalmica	S01	3,4		Minerals	A12	3,8
Urologics	G04	3,1		Antithrombot.agents	B01	3,8
Vitamins	A11	2,8		Antidepressants	N06	3,4
Antacida	A02	2,4		Antiphlogist./NSAR	M01	2,9
Ca-Antagonisten	C08	2,4		Ca-Antagonists	C08	2,7
Antithrombot. agents	B01	2,1		Psycholeptica	N05	2
Sum		70		Sum		79
Others		31		Others		21

Results V: Prescription vs. actual intake (III)

An urgent problem: 'Drugs to be taken as needed'...

(these are only the 'drugs as needed' - not the regular medication he receives...)

This is a patient 78 y of age. Will he know appropriately *when to use* nifedipine, nitro, and particularly the benzodiazepine (Tavor)?

Besides: Is the GP conscious that the patient has two benzodiazepines at his hand at the same time?

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Limitations of our study

- **Rather small, convenience sample (on practice level)**

- **Reporting bias in the patient interview** :
  - exceptional situation: the University Hospital Frankfurt calls up
  - medications not available at the moment,
  - misunderstanding during the interview (insuline is not yet a pill..)

- **Time lag:** mean lag between documentation and interview was 31 days, (in single cases up to 102 days)

- **Cognitive fitness could not be tested**

- **Physicians' difficulties to determine the 'actual medication'**

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Further results

The study was intended to determine inappropriate medications in the elderly in different respects. In the meantime we can present additional findings.

- **Inappropriate dosages in renal impairment** were found in 23 % of the patients.

- In 25% of the patients, a **clinical relevant risk of drug interaction** was found.

- 39.1 % of the patients got a prescription, which is **'potentially inappropriate in the elderly'** (Beers list).

- We found relevant contraindications against at least one prescribed drug in 14.8 % of the patients.

- **-> A lot of drug safety problems of polypharmacy in the elderly**

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Conclusions

- **A starting point in any strategy to improve the safety of polypharmacy in the elderly consists in knowing exactly, what the patient actually takes**. Main impediments are
    - Deficits in documentation,
    - Prescriptions by other physicians, and
    - The patient's own decisions
- Regularly, a **medication reconciliation** should take place.

- We need further knowledge about **crucial problems in the polypharmacy in the elderly** - targeted on individual conditions.

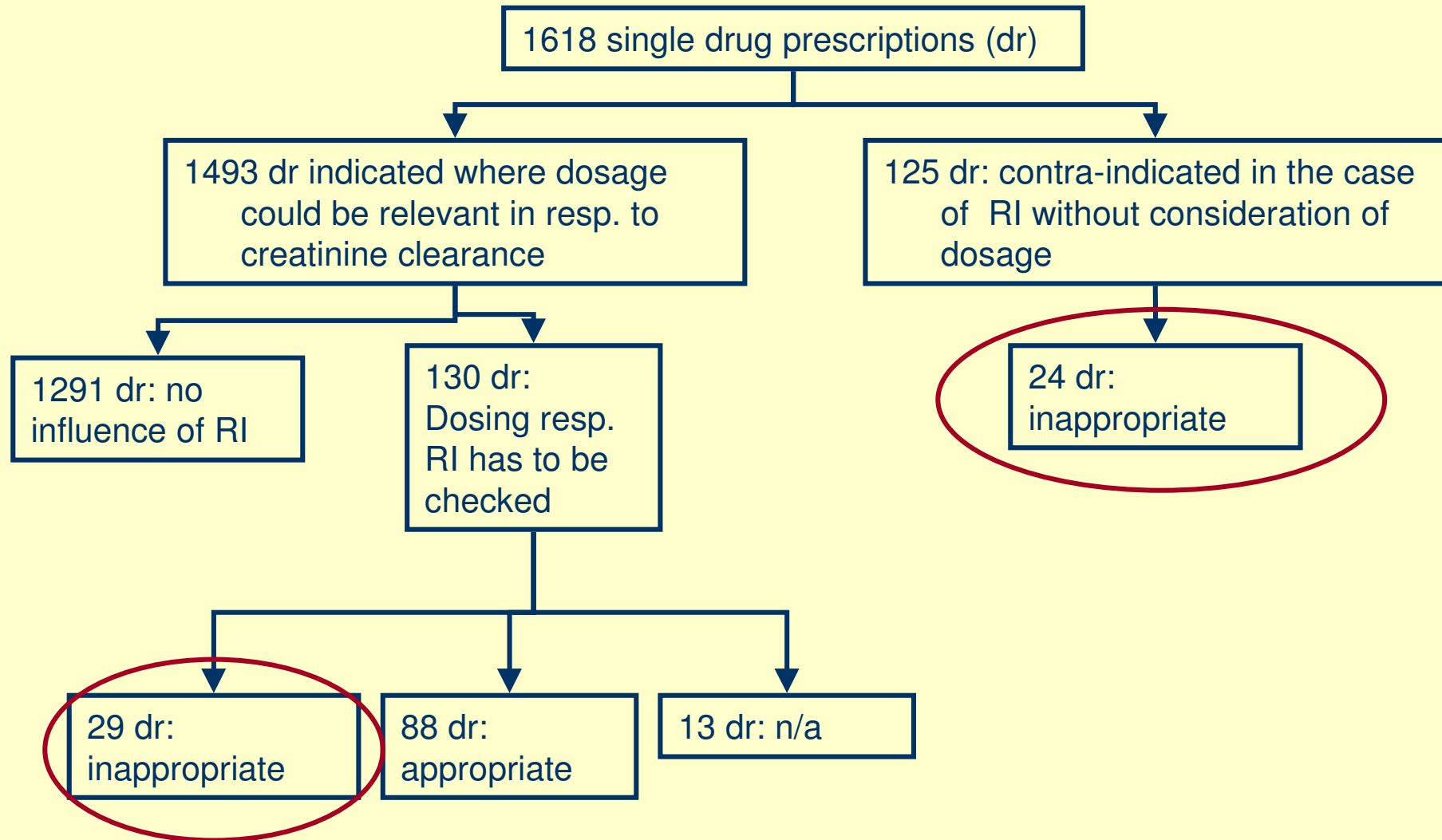**Institut für Allgemein-medizin**
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Thank you!

**Special acknowledgement
to Tatjana Blazejewski (data
handling / query management)
and Agnes Fink (interviews)**

Drug interactions

87 interaction risks ('red flags') detected by AiD*Klinik*®

6 interactions classified moderate or minor

81 major interactions

13:no clinical relevance regarding the individual clinical data of the patient

49: clinically relevant

19: assessment not possible

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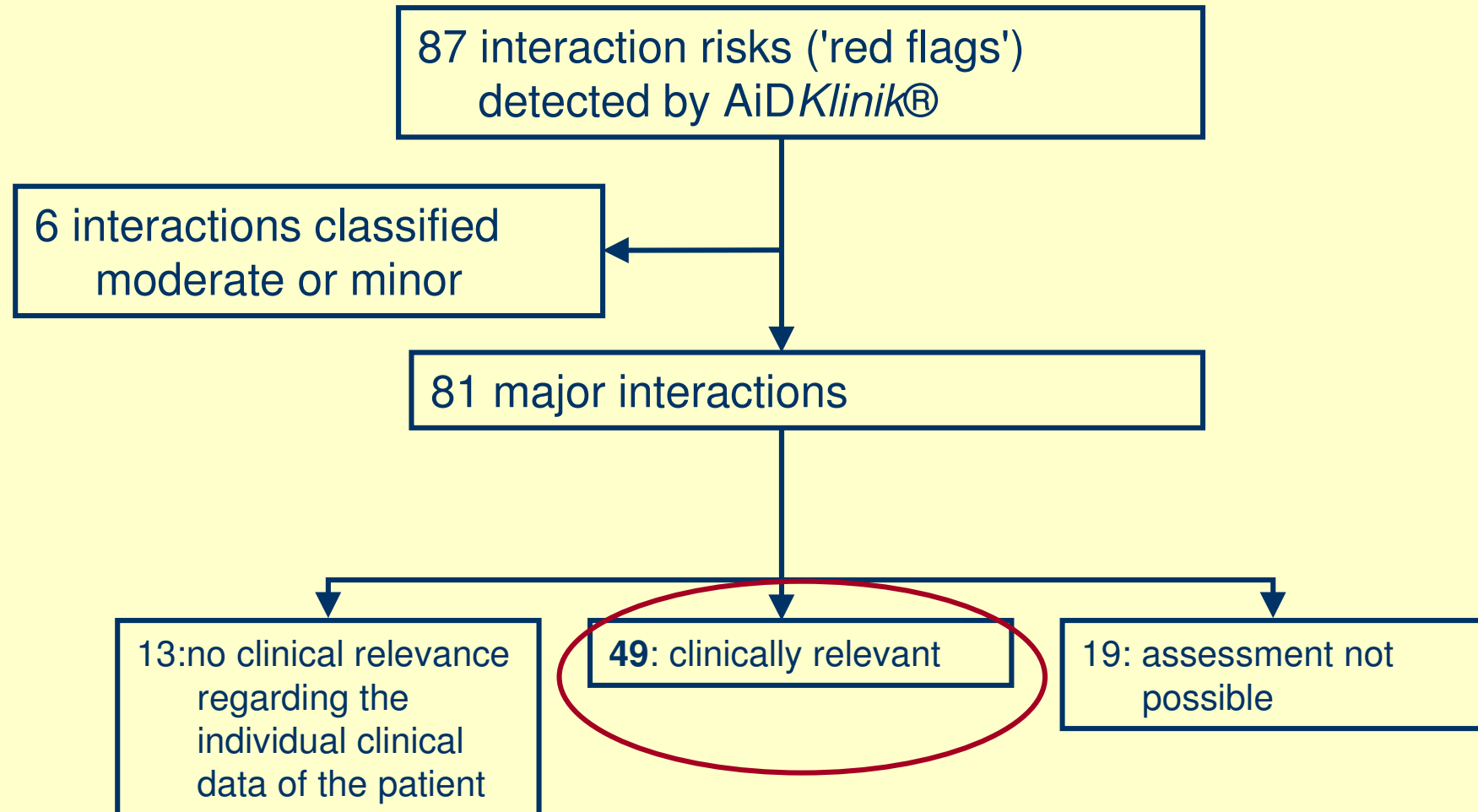
Beers-criteria (Beers 1997 & Fick 2003)

192/1471 drugs automatically detected (ATC-Codes)

50 diagnosis-*in*dependent

142 diagnosis-dependent

23 dr: criteria not applicable (Dosage, indication, galenic)

27 dr: criteria applicable

14 dr: criteria not applicable (Dosage, indication, severity)

128 dr: criteria applicable

16 dr: inappropriate

11 dr: clinically not relevant

74 dr: inappropriate

54 dr: clinically not relevant

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