

Drug-related problems in Parkinson's disease identified and solved by community pharmacists

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Agenda

1. Some facts about Parkinson‘s Disease (PD)
2. Drug therapy of Parkinson‘s Disease
3. Patients‘ experience with disease and therapy
4. Pharmacists approach to care for PD patients
5. Study of pharmaceutical care for PD patients
6. Conclusions and recommendations

Epidemiology of Parkinson‘s Disease

Crude prevalence of PD has been reported to vary from 15 (per 100,000 population) in China to 657 in Argentina and from 100 to 250 in North America and Europe.

The prevalence and incidence of PD increase exponentially with age. Slightly higher in men than in women.

The mortality rate for PD increases in older patients.

The most common cause of death is pneumonia.

Lai, B.C.L, Tsui, J.K.C.: Epidemiology of Parkinson’s disease
BCMJ, Vol. 43, No. 3, April 2001, page(s) 133-137 Articles



Some facts about Parkinson‘s Disease (PD) I

“Parkinson‘s Disease disease is a progressive disorder of the nervous system that affects your movement and develops gradually“.

Early symptoms:

- slight tremor sometimes only in one hand
- face shows little or no expression
- slurred speech
- rigid muscles and slowed movement, impaired posture and balance
- changes in writing which may become difficult to read

Some facts about Parkinson‘s Disease (PD) II

Early symptoms / complications:

- cognitive problems (thinking problems, ”dementia“)
- depression and emotional changes
- sleep problems

- swallowing problems, increased saliva accumulation
- problems with controlling the bladder
- constipation

- Sometimes also: orthostatic hypotension, fatigue, pain and sexual and smell dysfunction,



Some facts about Parkinson‘s Disease (PD) II

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→ **Significant impact on patient‘s Quality of Life**

Parkinson‘s disease – multiple symptoms

Motoric symptoms	Vegetative symptoms	Psychopathologic symptoms
Brady-/Akinesia	Seborrhoea	Bradyphrenia (slow thinking)
Rigidity	Respiratory disorder	Apathy (emotionslessness)
Tremor	Orthostatic hypotention	Dementia
Instability	Delayed gastric emptying	Depression
Speech disorder	Obstipation	Exogenic psychosis (including Hallucination)
	Bladder dysfunction	Fear, anxiety, „Angst“
	Disorder of body temperature	
	Daytime tiredness	
	Sleeping disorders*	
	Hypersalivation*	
	Cold extremeties (fingers,	
	Smelling disorders	
	Visual disorders	







•Partly or completely due to Akinesia

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Lots of different medicines required to control symptoms!



Drug therapy of Parkinson‘s Disease

1. Increase the level of Dopamine in the brain

- Levodopa/Carbidopa (30 min. before a meal)
- COMT Inhibitors (Entacapone - adjunct therapy)
- MAO-B Inhibitors (Selegiline, Rasagiline)
- Glutamate antagonist (Amantadine)

2. Control the symptoms of the disease

- Anticholinergics
- Apomorphine



Most common PD drug related problems

- Wearing off (the medicine and its effect)
- Involuntary movements/dyskinesiasd (also related to progress of disease)

- Impulsive and compulsive behaviour
- Hallucinations or delusions

And many others depending on the medicine taken
(Erythema, dark urine, constipation or diarrhoea, belly pain and nausea, dizziness, fatigue, dry mouth, sweating….)

Drug related problems with Levodopa

The „Wearing-Off“ problem:

- Decreasing effect 2-3 hrs. after administration
- Impact on motoric as well as non-motoric symptoms





Drug therapy of Parkinson‘s Disease

1. Increase the level of Dopamine in the brain

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- COMT Inhibitors (Entacapone, Tolcapone,
- MAO-B Inhibitors (Selegeline, Rasagiline)
- Glutamate antagonist (Amantadine)

2. Additonal control of symptoms

- Anticholinergics
- Apomorphine

Main challenge currently: To slow down the progress of the disease.
High risk of drug-related problems



Designing a study to identify and solve drug-related problems of patients with PD by community pharmacists

1st step: Analysis of an internet platform with entries of PD patients

2nd step: Analysis of the compliance of German neurologists with Guidelines for the treatment of Parkinson‘s disease

3rd step: Developing a check list for community pharmacists

4th step: Implementing the check list to identify drug-related problems in PD patients by community pharmacists



Step 1: Analysis of an internet platform → check list (step 3)

PD patients' internet platform entries (n=160):

- 283 drug-related problems identified
- 153 Adverse Drug Reactions

Check list for Levodopa (N04BA02) (selected examples)		
P-Code	Problem	Solution
C1	Wrong application time of medicine: (together with a meal)	• Correct application 30 min prior or 60-90 min after a meal • Not together with protein-rich food (e.g. fish, meat, cheese)
s	Nausea/Emesis	• Doperidon (Motilium®) • Application together with cookies or other carbs
	Overdose/cardinal symptoms: nightmares, hallucinations, Hyperkinesia	• Inform physician if: • Initial dose > 2 x 100mg/d • Maximum dose > 1000mg/day (side effects depend on dose)



Step 2: Analysis of the compliance of German neurologists with Guidelines for the treatment of Parkinson‘s disease

German neurologists (n=320):

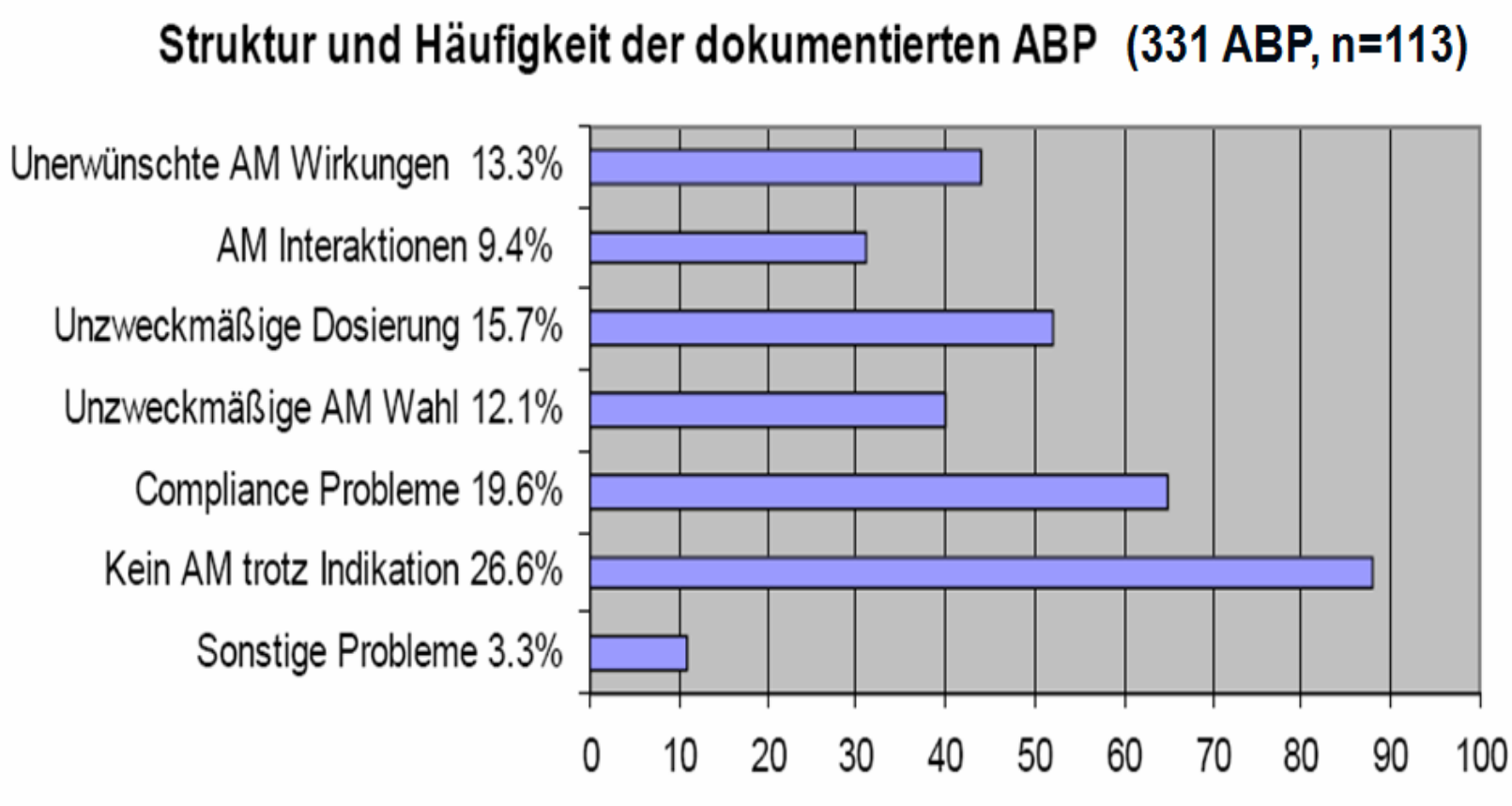
•60% were in compliance with guidelines for the treatment of Parkinsons‘s Disease without motoric complications

Guideline

Evaluation parameter

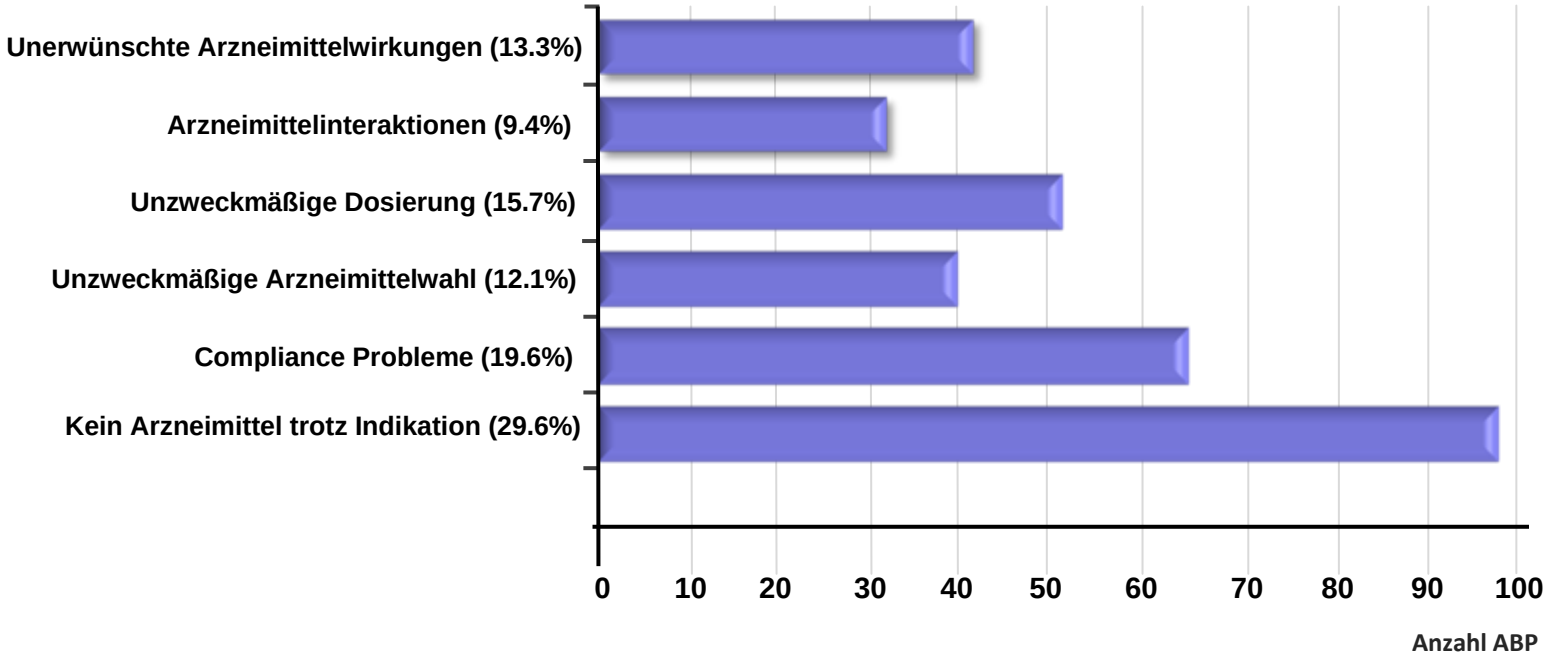
		increased functional impairment without motoric complications
	H&Y I (stage II)	**H&Y II-V (stage III)**
<70 years	Dopamine (Mono therapy)	Dopamine (Mono- or combination therapy)
	Parameter 1: % Dopamine without Levodopa	**Parameter 2: % Dopamine**
	n=64	n=127
≥70 years	Levodopa (Mono therapy)	Levodopa (Mono therapy)
	Parameter 3: % Levodopa without Dopamine	**Parameter 4: % Levodopa without Dopamine**
	n=18	n=111

Step 4: Implementing the check list to identify drug-related problems in PD patients by community pharmacists



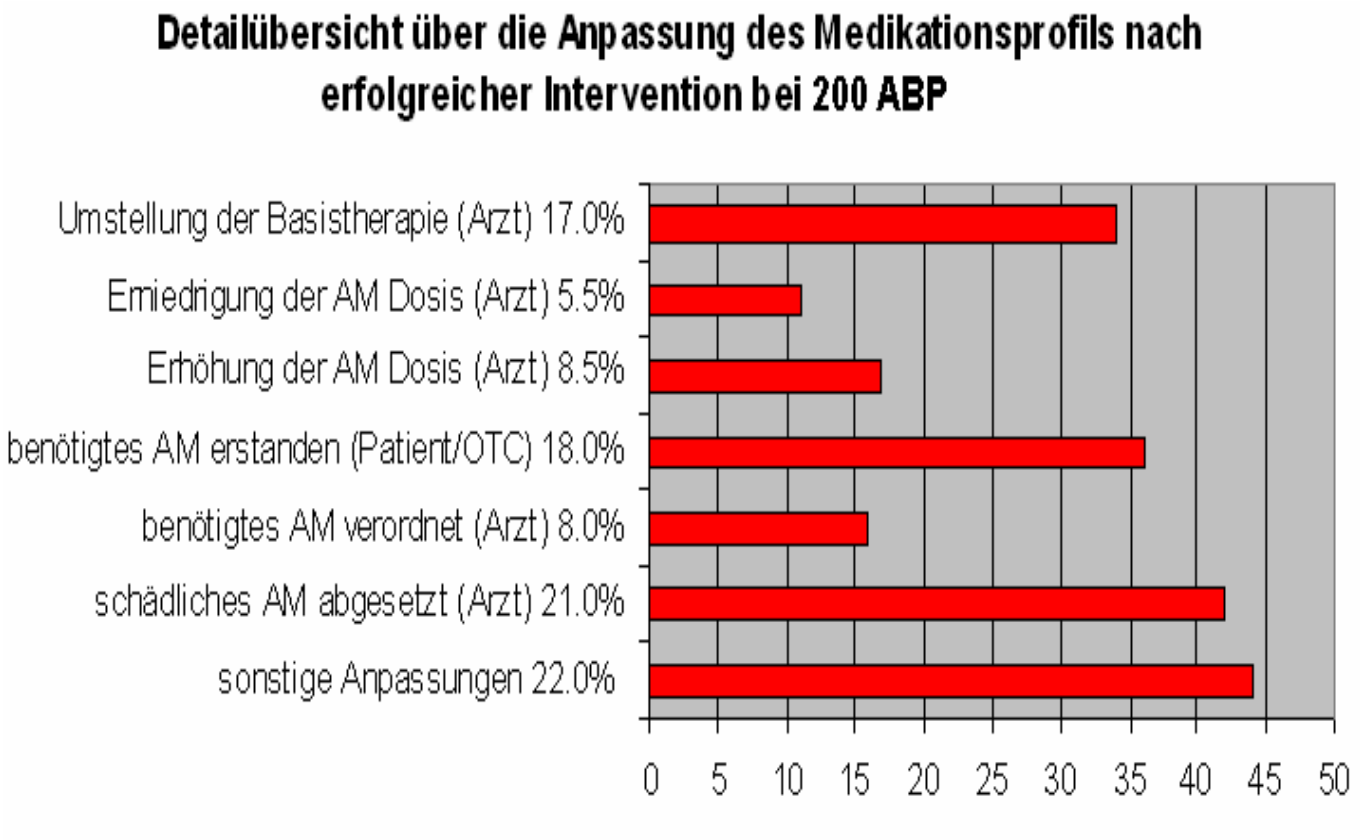
Step 4: Implementing the check list to identify drug-related problems in PD patients by community pharmacists

Struktur und Häufigkeit der dokumentierten ABP (331 ABP, n=113)



Schröder S, Martus P, Odin P, Schaefer M. Int J Clin Pharm 2011 33(4):674-82

Interventions to solve drug-related problems





Overall results of the study

215 drug – related problems (65%) were solved or avoided during the project duration of 8 months of Implementing a structured medication review in 32 pharmacies

- Improvement of the subjective health status
- Improvement of the health-related Quality of Life
- Improvement of the quality of drug use (acc. to Beers‘ list)
- Identification of 4 patients without Parkinson‘s Disease

Schröder S, Schaefer M et al. International journal of clinical pharmacy 2011



Conclusions

- The indepth analysis of patient reports allows the development of a check list for the most urgent problems of the therapy of PD from a patient‘s perspective without being biased by an interviewer

- This check list is a valuable instrument for pharmacists to identify and solve drug related-problems of patients with Parkinson‘s Disease.

- The results of this study prove that the approach taken is suitable for the everyday routine in community pharmacies.



Published papers about this study:

PHARMACOEPIDEMIOLOGY AND DRUG SAFETY 2007; 16: 1161–1166
Published online 8 May 2007 in Wiley InterScience (www.interscience.wiley.com) DOI: 10.1002/pds.1415

ORIGINAL REPORT

Drug related problems with Antiparkinsonian agents: consumer Internet reports versus published data†

Sabrina Schröder[1]*, York Francis Zöllner[2‡] and Marion Schaefer[1]

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[2]*Solvay Pharmaceuticals GmbH, Hannover, Germany*

Neuropsychiatric Disease and Treatment Dovepress

ORIGINAL RESEARCH

Do neurologists in Germany adhere to the national Parkinson's disease guideline?

Sabrina Schröder[1]
Daniel Kuessner[2]
Guy Arnold[3]
York Zöllner[4]
Eddie Jones[5]
Marion Schaefer[1]

Int J Clin Pharm (2011) 33:674–682
DOI 10.1007/s11096-011-9526-x

RESEARCH ARTICLE

Drug-related problems in Parkinson's disease: the role of community pharmacists in primary care

Sabrina Schröder · Peter Martus · Per Odin · Marion Schaefer

Int J Clin Pharm (2012) 34:746–756
DOI 10.1007/s11096-012-9672-9

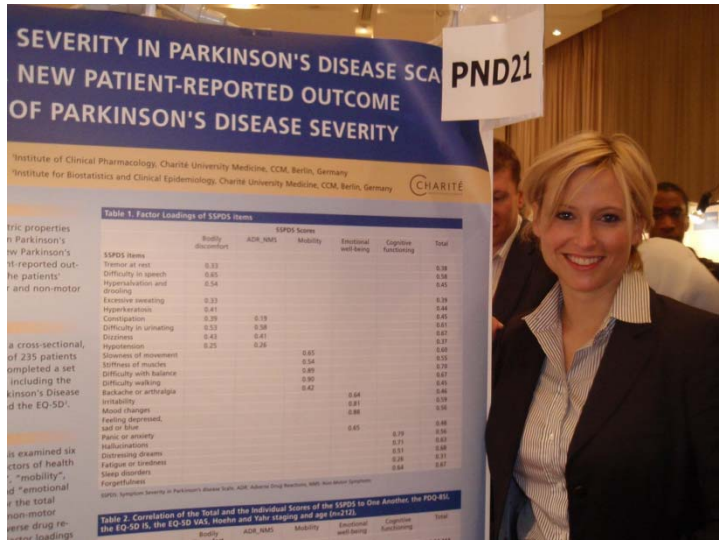
RESEARCH ARTICLE

Impact of community pharmaceutical care on patient health and quality of drug treatment in Parkinson's disease

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Thank you very much fo your attention!

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