



DIFFERENCES BETWEEN DRUG RELATED PROBLEMS IN AGED AND MIDDLE-AGED PATIENTS: ANALYSIS OF PHARMACISTS MEDICATION ORDER REVIEW DURING 8 YEARS.

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CONFLICT OF INTEREST DISCLOSURE

I have no potential conflict of interest to report

DRUG RELATED PROBLEMS

« An event or circumstance involving drug therapy that actually or potentially interferes with a desired health outcome. »

❖ Increase with age due to:

- ✓ Age-related physiological and pathophysiological changes in organ function (pharmacodynamics and pharmacokinetics of drugs)
- ✓ Comorbidities
- ✓ Polypharmacy

❖ The pharmacist works in collaboration with physicians to identify DRP during the medication review process.

van Mil JWF, Westerlund LOT, Hersberger KE, Schaefer MA. Drug-related problem classification systems. *Ann Pharmacother.* mai 2004;38(5):859-67

Lazarou J, Pomeranz BH, Corey PN. Incidence of adverse drug reactions in hospitalized patients: a meta-analysis of prospective studies. *JAMA.* 15 avr 1998;279(15):1200-5

OBJECTIVE

To analyze the association between DRPs during daily medication order and patients aged ≥ 75 years old in a large French university hospital (Hospices Civils de Lyon – HCL).

METHODS – Act-IP[©]

- ❖ Observatory of pharmaceutical interventions (PI)
- ❖ Allows classification of DRPs and PI during daily medication order review
- ❖ Physician's acceptance of the PI can also be documented
- ❖ All DRPs and their related PI of the Hospices Civils de Lyon (8 hospitals) were collected in the Act-IP[©]

Allenet B et al. Validation of an instrument for the documentation of clinical pharmacists' interventions. Pharm World Sci, 2006;28:181–188

Bedouch P et al. [The French Society of Clinical Pharmacy website for the documentation and analysis of pharmacist's interventions: purpose, instructions and perspectives]. J Pharm Clin, 2007;26:40–44

METHODS – Our Study

- ❖ **Design** : Retrospective analysis

- ❖ **Population** : All DRPs documented in patients aged 18 years and older and hospitalised at the Hospices Civils de Lyon between beginning of 2008 to end of 2015. Specific DRPs related to antineoplastic drugs were removed.

- ❖ **Statistical analyses** :
 - Descriptive analyses
 - Chi-squared test and logistic regression analysis to determine the association between DRPs and age.
 - Excel 2010 and SPSS v19

RESULTS – Descriptive

Characteristics of the 56241 DRPs documented :

- Type of patients concerned
- Type of DRPs
- Type of drugs involved

	< 75 y	≥ 75 y	p-value
POPULATION			
n	37170	19071	
Sex (F)	31,6%	58%	p<0,01
DRP that occurred in a geriatric unit	8,4%	41,2%	p<0,01
DRUG RELATED PROBLEMS			
NON-CONFORMITY TO GUIDELINES			
UNTREATED INDICATION	5,5%	4,8%	p<0,01
SUBTHERAPEUTIC DOSAGE	4,8%	4,7%	p=0,563
SUPRATHERAPEUTIC DOSAGE	19%	22,4%	p<0,01
DRUG WITHOUT INDICATION	12,2%	11,2%	p=0,01
DRUG INTERACTION	10,6%	8,1%	p<0,01
SIDE EFFECT	3,8%	7,4%	p<0,01
IMPROPER ADMINISTRATION	21,3%	19,3%	p<0,01
FAILURE TO RECEIVE DRUG	3,6%	0,4%	p<0,01
DRUG MONITORING	5,1%	2,7%	p<0,01

	< 75 y	≥ 75 y	p-value
DRUGS INVOLVED (ATC CLASSIFICATION)			
ANALGESICS	13,7%	12,4%	p<0,01
ANTIBIOTICS	8,7%	9,3%	p=0,011
PSYCHOLEPTICS	12,7%	8,5%	p<0,01
ANTITHROMBOTIC AGENTS	4,1%	7,8%	p<0,01
DRUGS FOR ACID RELATED DISORDERS	7,6%	5%	p<0,01
PSYCHOANALEPTICS	3,3%	4,5%	p<0,01
MINERAL SUPPLEMENTS	2,2%	3,8%	p<0,01
AGENTS ACTING ON THE RENIN-ANGIOTENSIN SYSTEM	2,2%	3,7%	p<0,01
CARDIAC THERAPY	1,1%	3,7%	p<0,01
DRUGS FOR CONSTIPATION	2,3%	3,2%	p<0,01
ANTIEPILEPTICS	3,4%	1,3%	p<0,01
BLOOD SUBSTITUTES AND PERFUSION SOLUTIONS	2,3%	1,5%	p<0,01

RESULTS – Association

Association between top DRP/Drugs and patients aged $\geq 75y$

PROBLEMS	ATC CLASSIFICATION	$\geq 75y$ (vs $<75y$)	p-value
		Unadjusted OR [CI95%]	
SUPRATHERAPEUTIC DOSAGE	BENZODIAZEPINE RELATED DRUGS	3.17 [2.83-3.55]	p<0,01
SUPRATHERAPEUTIC DOSAGE	ANILIDES	1.53 [1.41-1.67]	p<0,01
DRUG WITHOUT INDICATION	OTHER CARDIAC PREPARATIONS	6.82 [5.327-8.74]	p<0,01
UNTREATED INDICATION	VITAMIN D AND ANALOGUES	8.85 [6.57-11.93]	p<0,01
DRUG WITHOUT INDICATION	PROTON PUMP INHIBITORS	0.47 [0.39-0.57]	p<0,01
DRUG WITHOUT INDICATION	BENZODIAZEPINE DERIVATIVES	0.19 [0.13-0.27]	p<0,01
SIDE EFFECT	VITAMIN K ANTOGONISTS	8.06 [5.84-11.13]	p<0,01
SUPRATHERAPEUTIC DOSAGE	BENZODIAZEPINE DERIVATIVES	0.22 [0.16-0.31]	p<0,01
NON-CONFORMITY TO GUIDELINES	HEPARIN GROUP	3.44 [2.75-4.30]	p<0,01
SUPRATHERAPEUTIC DOSAGE	FLUOROQUINOLONES	2.88 [2.35-3.55]	p<0,01
DRUG WITHOUT INDICATION	THIRD-GENERATION CEPHALOSPORINS	11.754 [7.60-18.17]	p<0,01
SUPRATHERAPEUTIC DOSAGE	PREPARATIONS INHIBITING URIC ACID PRODUCTION	3.85 [2.97-4.99]	p<0,01
SUPRATHERAPEUTIC DOSAGE	ACE INHIBITORS, PLAIN	5.06 [3.71-6.91]	p<0,01
NON-CONFORMITY TO GUIDELINES	PROTON PUMP INHIBITORS	0.62 [0.51-0.76]	p<0,01
SIDE EFFECT	PLATELET AGGREGATION INHIBITORS EXCLUDING HEPARIN	5.96 [4.2-8.45]	p<0,01
NON-CONFORMITY TO GUIDELINES	ALPHA-ADRENORECEPTOR ANTAGONISTS	4.97 [3.59-6.88]	p<0,01
IMPROPER ADMINISTRATION	ANILIDES	1.33 [1.19-1.48]	p<0,01
NON-CONFORMITY TO GUIDELINES	DIHYDROPYRIDINE DERIVATIVES	3.58 [2.68-4.78]	p<0,01

CONCLUSION

- ❖ Identify main DRP among patient aged ≥ 75 y in our hospital
- ❖ It highlights some directions that could be taken to improve their prevention :
 - Specific training to medical team and pharmaceutical
 - Targeted information on safe drug use
 - Closer collaboration between physicians and pharmacists

THANK YOU FOR YOUR ATTENTION



Hospices Civils de Lyon
Lyon University Hospital