**INTRODUCTION**

Drugs side effects are a complex problem in very elderly polypharmacological and "fragile" patients in nursing homes. Interactions with multiple pathologies is a major concern in order to reduce the number of hospitalizations and the number of iatrogenic events (bad indication, non-compliance with the contra-indications, excessive dosage or excessive prolonged treatment).

Better pharmacists improve the quality of care. Clinical or epidemiological studies rarely include very elderly populations, so the aim of this study is to analyze the medical management of resident of three nursing homes in Loire-Atlantique, France.

**METHODS**

Quality of care of drug treatment of 300 residents in three nursing homes in Loire-Atlantique according seven quality criteria (Ref “French Good Pratice is in nursing homes” and French National Authority for Health (HAS)):

- Number of lines of drug use prescription,
- How the medication is taken accuracy of dosing, duration of treatment, optimizing efficacy / safety, compliance with the marketing notification,
- Treatment adaptation to the patient profile (age and diseases)
- Use-over of certain drugs:
- Under-use of certain drug classes (whose effectiveness is demonstrated yet in terms of quality of life and / or morbidity and mortality)
- Misuse of drugs with iatrogenic risk,
- Drug interactions.

**RESULTS**

<table>
<thead>
<tr>
<th>Nursing home 1</th>
<th>Nursing home 2</th>
<th>Nursing home 3</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of residents per nursing home</td>
<td>18</td>
<td>75</td>
<td>77</td>
</tr>
<tr>
<td>Number of drug prescriptions</td>
<td>26</td>
<td>51</td>
<td>71</td>
</tr>
<tr>
<td>Age average (years)</td>
<td>91</td>
<td>87</td>
<td>87</td>
</tr>
<tr>
<td>Maximum</td>
<td>91</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Minimum</td>
<td>68</td>
<td>68</td>
<td>68</td>
</tr>
<tr>
<td>Average number of lines per drug prescription</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 1: Nursing home profile, number of drugs per patient

**DISCUSSION**

Patients in nursing homes are very old, their average age is 87 years in the three studied nursing homes, with 77% of women and 23% men. Those patients are polypharmacological with an average of 5 lines per prescription. There is a significant difference (a factor of two) between the nursing homes. We can assume that the number of lines required depends in part on prescribing habits of physicians and recommendations given by the coordinating physicians (Table 1).

The guidelines on making the requirements are not always precise enough to ensure a good quality of administration to the patient by the caregivers (Figure 1).

Each nursing home must provide guidelines to caregivers on medication administration (including a list of medications that can be crushed or opened).

Very elderly patients with multiple pathologies are more susceptible to iatrogenic effects of drugs (including anticholinergic effects) (Figures 2 and 3). One consequence is the physiological changes of the drug in the aged organism: Impaired elimination of drugs decreases with advancing age and contribute to increase the pharmacological effect and therefore the dose-dependent risks (Table 2).

Among the elderly, there is changes in the pharmacokinetics such as reduced renal function (drug dosage in renal elimination must be adapted to the glomerular filtration rate), hematocrits are increased and hypertension in most polypharmacological (potential risk of overdose of drugs strongly related to plasma protein), muscular deterioration and loss (and the volume distribution charged for / human mass, so hypotensive drugs tend to be administered and a rise in the probability of the blood-brain barrier greater sensitivity to drugs acting on the central nervous system, particularly relatives greater). However, it does not seem so far to have obvious clinical transitions of a lesser hepatic metabolism of drugs that may be due to age.

Cancer pharmacodynamics, aging of the gut (especially the loss of commensal microflora), may cause increased sensitivity to certain drugs (lipid or coumadins block), and bone fragility may monitoring particularly the risk of hypercoagulation or factors to certain drugs (bleeding risk). Some drugs become inappropriate in the very elderly, and others should have their dosage adjusted.

These adaptations are not always done in practice (Figures 2 and 3) and the prescription requires regular medical adaptation (diagnostic reassessment and prioritization of diseases and treatments in reported efficacy / safety and individual benefit / risk, clinical and biological certain treatments) (Table 2), and in any intervention event (substitution, concomitant heart failure, infectious disease or new disease).

These incremental acute episodes (and their consequences such as death rate) explain that even medication for a long time may cause an acute drug. The prescriptions should have the reflex “iatrogenic” to aminoglycosides, a fall, delirium... and check that the symptoms presented by the patient are not side effects of a drug or a combination drugs with a drug interaction (Figure 4).

**CONCLUSION**

A medication epidemiology should be systematically considered in any alteration of patient general condition (falls, loss of independence or delirium). Many quality criteria concerning the proper use of a drug are not implemented despite recommendations of the HAS and “Best Practices Care” in nursing homes. Introgynia is a complex issue and it is essential to build trainings for practitioners to improve the appropriate use of medication in this population of patients.

The aim is to fill the gap between, firstly, recommended practices, and secondly, practices observed.

**REFERENCES**