Computerized physician order entry in the Geriatric Center : collection and analysis of prescribing errors made over a 5-month period

Hôpitaux de Toulouse

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INTRODUCTION

Following the full computerization of prescriptions in the Geriatric Center over the past two years, the pharmacists complete each day the prescriptions analysis of the 314 beds.
Computerization is able to reduce prescribing errors but on the other hand, it can also generate some risks.

The aim of this study was to collect, analyze and classify the prescribing errors detected in the Geriatric Center of Toulouse University Hospital (CHU), in order to take actions to reduce the number of errors.

We specially focused on the errors related to the use of the prescribing software.

MATERIALS AND METHODS

❑ **Sample :** The Geriatric Center of **Toulouse CHU** namely **314 beds** (**80 beds from acute care units**, **94 beds from skilled units** and **140 beds of long-term care**)
❑ **Study period : 5 months** (May to November 2011)

❑ **Prescribing errors collection and analysis of the errors types :**
o **Frequency** : **daily** by the Pharmacists dedicated to the Geriatric units namely 1,5 pharmacist and 2 residents
o **Tool** : prescribing software : Disporao©
o **The pharmaceutical analysis was carried out** after and according to the observations during rounds (each morning), the patient's medical history and the biological results
❑ **Daily communication of the pharmaceutical interventions suggested :**
o **Written :** by a comment via the prescription software
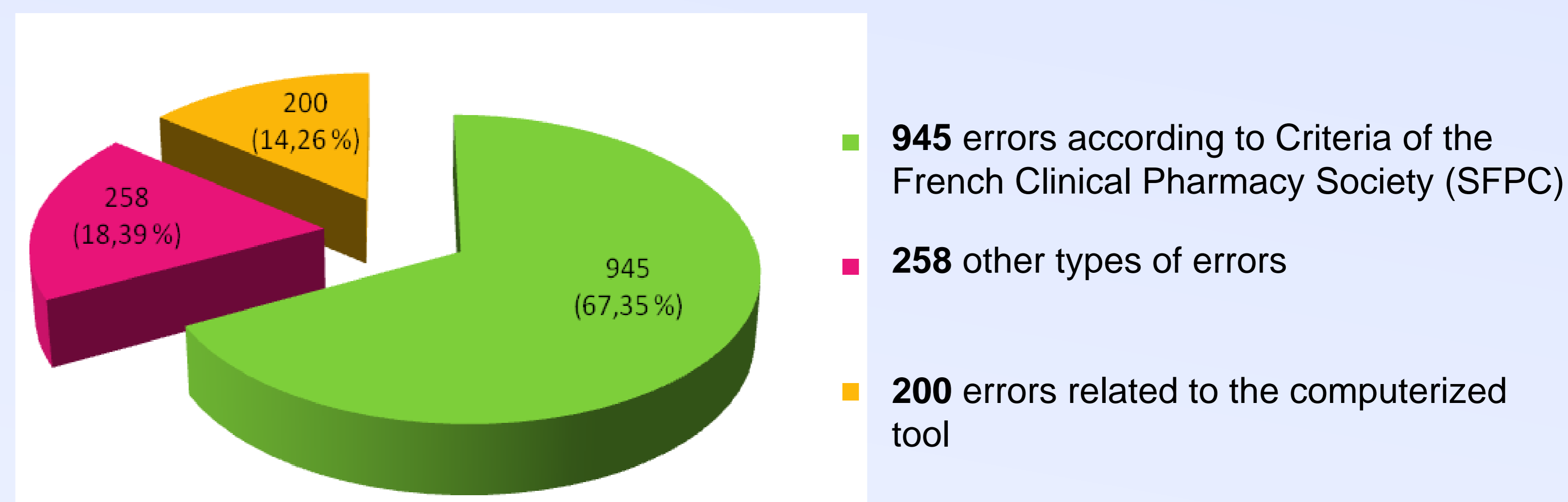o **Orally:** to the physicians
❑ **Analysis and coding of the errors with an Excel© spreadsheet which takes different criteria into account such as :**
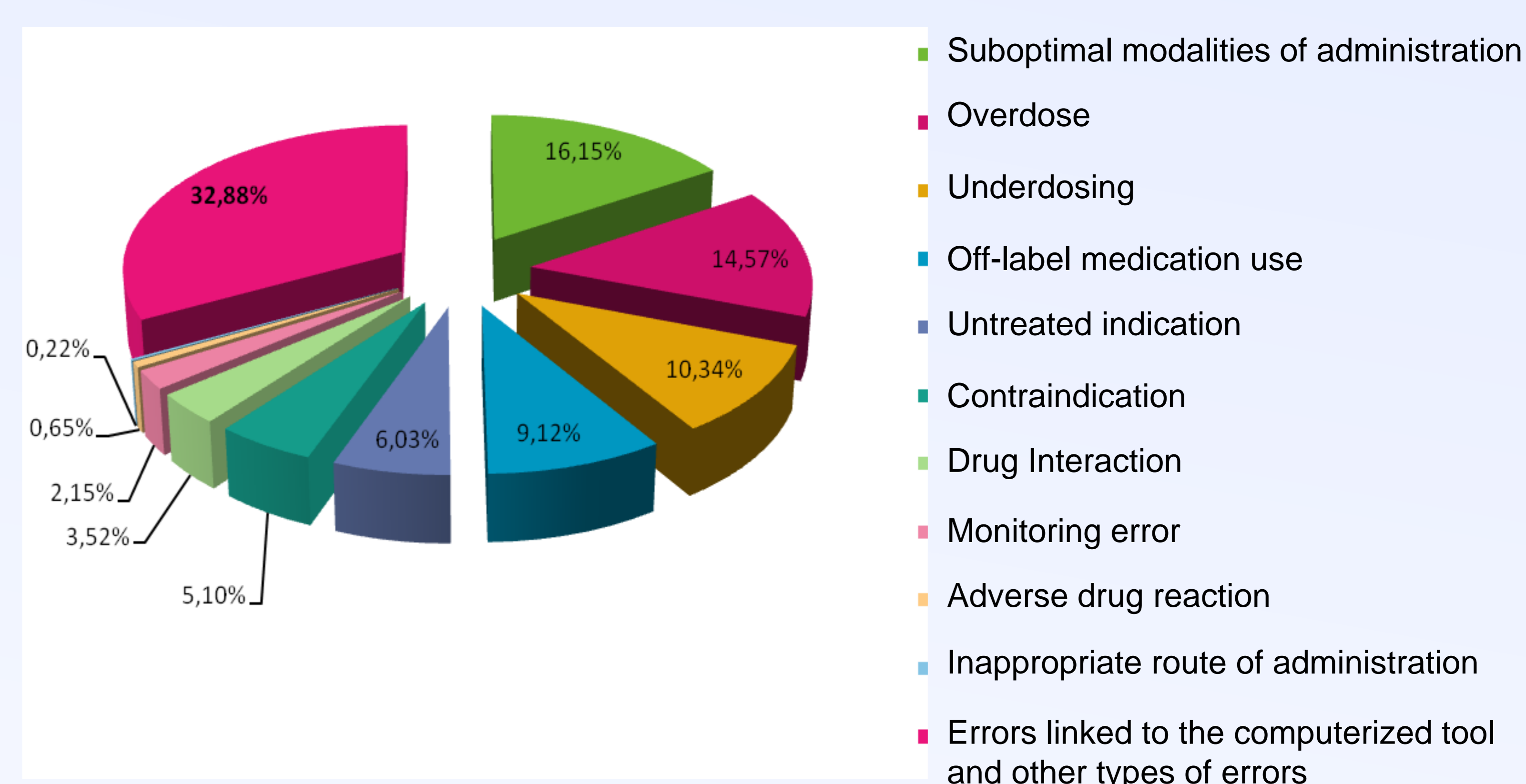o Patient's socio-demographic background, related drug(s), type of errors, pharmaceutical intervention, whether the error was seen before or after administration of the drug and seriousness criteria (effect on the patient)
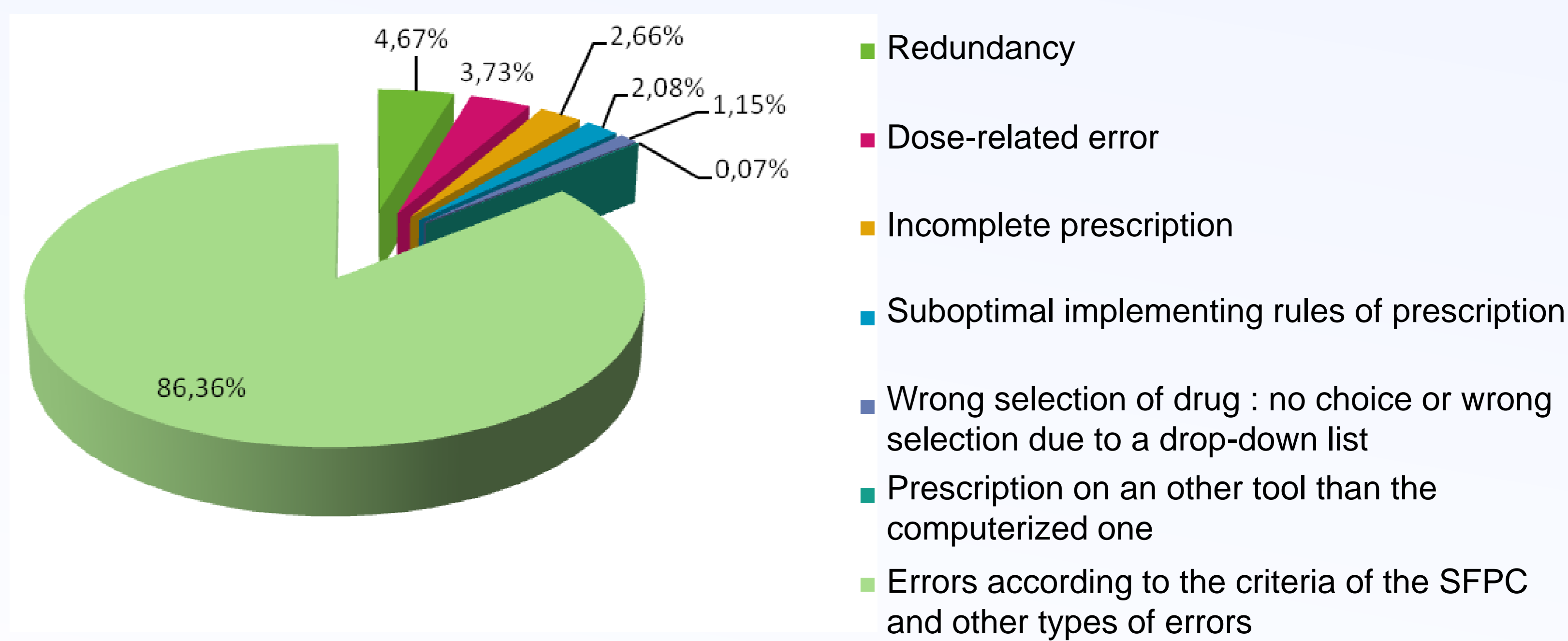
RESULTS

QUANTITATIVE ANALYSIS

ACUTE CARE UNITS
o **60** errors per **1000** patient-days
o **0,5** error per stay
o **90** errors per **1000** prescriptions

SKILLED UNITS
o **35** errors per **1000** patient-days
o **0,9** error per stay
o **70** errors per **1000** prescriptions

LONG-TERM CARE UNITS
o **211** errors found over 5 months
o **90** errors **per 1000** prescriptions

PRIZE LIST OF ERRORS

Distribution of errors according to the ATC classification
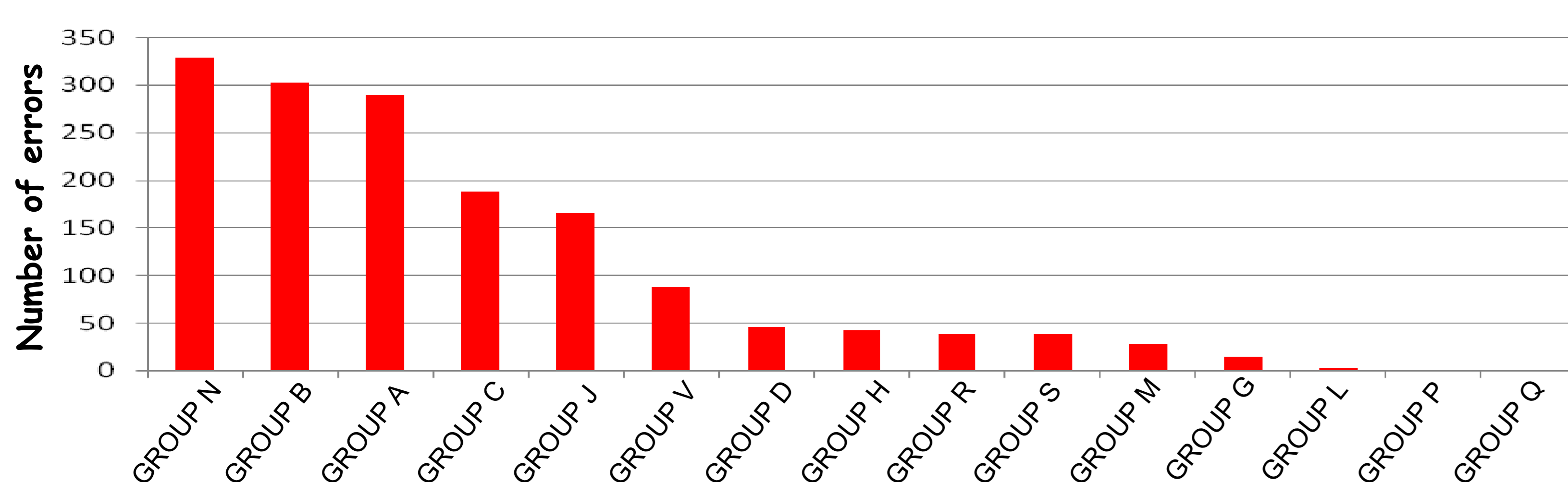
❑ **All types of errors = 1393**
o **5 therapeutic classes mostly involved according to the ATC classification**
• Group N : **Nervous system** (**21%** of the errors)
• Group B : **Blood and blood forming organs** (**19%** of the errors)
• Group A : **Alimentary tract and metabolism** (**18%** of the errors)
• Group C : **Cardiovascular system** (**19%** of the errors)
• Group J : **Antibiotic for systemic use** (**10%** of the errors)

PATIENTS AFFECTED BY ERROR

o **Patients affected by errors : 58.67%, n = 817**
o **Error intercepted before administration : 41.35% , n = 576**

DISTRIBUTION OF THE TYPES OF ERRORS

Total of errors over 5 months = 1393
(that is 0,9 error per bed and per stay)

■ **945** errors according to Criteria of the French Clinical Pharmacy Society (SFPC)
■ **258** other types of errors
■ **200** errors related to the computerized tool

Classification according to the criteria of the SFPC (n_1 = 945)

■ Suboptimal modalities of administration
■ Overdose
■ Underdosing
■ Off-label medication use
■ Untreated indication
■ Contraindication
■ Drug Interaction
■ Monitoring error
■ Adverse drug reaction
■ Inappropriate route of administration
■ Errors linked to the computerized tool and other types of errors

Errors related to the computerized tool (n_2 = 200)

■ Redundancy
■ Dose-related error
■ Incomplete prescription
■ Suboptimal implementing rules of prescription
■ Wrong selection of drug : no choice or wrong selection due to a drop-down list
■ Prescription on an other tool than the computerized one
■ Errors according to the criteria of the SFPC and other types of errors

Other types of errors (n_3 = 258)

■ Inappropriate duration of treatment
■ Field of the elderly
■ Suboptimal therapeutic strategy
■ Misuse
■ Redundancy
■ Drug substitution
■ Problem concerning the purchase or the listing of a drug
■ Errors according to the criteria of the FCPS and linked to the computerized tool

DISCUSSION-CONCLUSION

There are lots of prescribing errors but most of them are avoidable. They generally lead to a longer hospital stay.
Detecting prescription errors constitutes an effective way of preventing therapeutical accidents. Although computerized physician order entry is a way of securing the channels of therapeutic care of the patient, they also generates comments and limitations. The prescription tool determines the type and frequency of errors. All these errors justify that a pharmacist analyzes all the prescriptions, as s/he has a rounded knowledge of the patient beyond the medical prescription.
The booming certification of various softwares dedicated to help hospital prescription writing according to the High Authority for Health contributes to this step towards securing care and will hopefully leads to a decrease in adverse events.