

MISUSE OF ANTIBIOTICS RESERVED FOR THE HOSPITAL SETTINGS IN OUTPATIENTS: A PROSPECTIVE CLINICAL AUDIT IN A UNIVERSITY HOSPITAL IN THE SOUTH OF FRANCE.

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INTRODUCTION

Some infections could be rapidly managed in the ambulatory care including bone and joint infections, soft-tissue ... [1-3]. In this case, the antibiotics that are usually reserved for the exclusive use in hospitals for severe infections may be delivered to the outpatient.

The importance of the quality of antibiotic treatment has been widely highlighted the last decade according to the current crisis of bacterial resistance and the lack of new therapies [4].

Measuring quality of antimicrobial drug use was reported in many studies [5] In these studies, the definition of the proper use of antimicrobial drugs are mainly based the relevance of antibiotic prescribing on antibiotic sensitivity, respect the guidelines.

OBJECTIVES

The objective of this study was to evaluate the relevance of outpatient antibiotic prescribing by measuring of the appropriateness of national antibiotic prescription guideline and the respect to antibiotic resistance.

This study was the preliminary step of a multidisciplinary team project to ameliorate antibiotic use.

METHODS

We performed a 30-days real-time audit of outpatient antibiotic prescription in the four university hospital centers with 4,000-bed in Marseille, France. We did a complete analysis of pharmaceutical data, the medical history of each patient requested systematically from clinicians, results of microbiological testing and antibiotic resistance. We performed the systematic analysis in 3 steps:

- 1 Data survey (prescription date, the antibiotic prescribed, the clinical context (type of infection, previous treatment, and microbiological results...)
- 2 Analysis of appropriateness (SPILF, ANSM)
- 3 Assessment of these treatments (according to adapted criteria already published (Scheme 1) [6])

In cases of ambiguous prescriptions of antibiotics usually reserved for exclusive use in hospitals for severe infections in an outpatient setting, a practitioner from the infectious disease specialist team performed a second analysis

CONCLUSION

The study conducted here, showed that 60 % of the antibiotic prescriptions on the study period were initially unnecessary, inappropriate. This significant rate has been related to a small proportion of IDS advice in the cases patient studied. The penetration of IDS in this particular monitoring care could promote the quality of antibiotic use.

Whatever our choices we note that these corrective measures have to be instituted progressively and each one has to be evaluated singly to note the impact of each measure.

RESULTATS

Analysis of the appropriateness of prescriptions of antibiotics reserved for hospital settings in outpatients showed that only 21 cases (40%) were considered appropriate prescriptions, 28 cases (52%) were considered inappropriate and 4 (8%) unnecessary prescriptions according to French Infectious Diseases Society and ANSM guidelines.

Scheme 1. Evaluation of the quality of antibiotic treatment criteria

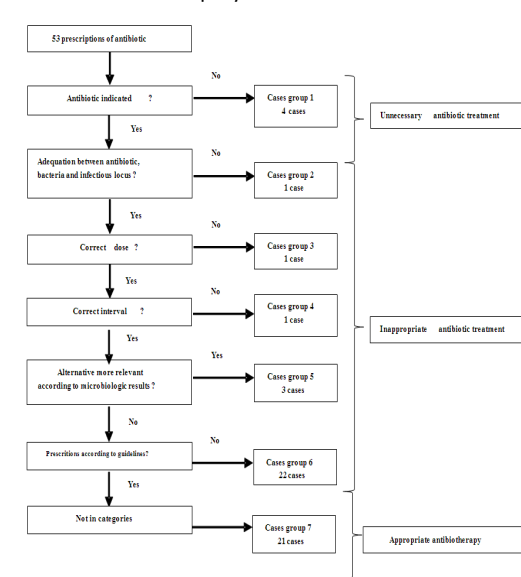


Table 1. Microbiological data compiled with infectious context

Microbiological data – infectious agent	Total number of cases (%)	Type of infection concerned, number of cases (%)
<i>Pseudomonas aeruginosa</i> *	12 (23%)	Bone and joint infection 3 (6%), lower respiratory tract infection 4 (8%), urinary tract infection 2 (4%) wound infection 3 (6%)
<i>Staphylococcus</i> sp	11 (21%)	Bone and joint infection 3 (6%), lower respiratory tract infection 2(4%), sepsis 2 (4%), skin and soft tissue infection 1 (2%), infective endocarditis 1 (2%), intravascular catheter-related bloodstream infection 1(2%), fever 1 (2%)
<i>Klebsiella</i> sp*	4 (8%)	Bone and joint infections 3 (6%), urinary tract infection 1 (2%)
Anaerobic bacteria	3 (6%)	Intra-abdominal infection
<i>Clostridium difficile</i>	2 (4%)	<i>Clostridium difficile</i> -associated disease
<i>Streptococcus</i> sp	2 (4%)	Maternal infection 1 (2%), skin and soft tissue infection 1 (2%),
<i>Escherichia coli</i>	1 (2%)	Skin and soft tissue infection
<i>Enterococcus</i> sp	1 (2%)	Urinary tract infection
Gram negative bacteria (without precision)	1 (2%)	Urinary tract infection
Sterile culture	7 (13%)	Febrile neutropenia 2(4%), bone and joint infection 2(4%) skin and soft tissue infection 2(4%), intravascular catheter-related bloodstream infection 1(2%)
Prophylactic setting – no microbiological data	11 (21%)	Antibiotic lock for prevention of bloodstream infection 6 (12%), febrile neutropenia 2 (4%), intravascular catheter-related bloodstream infection 1 (2%), fever 1 (2%), intra-abdominal infection

Table 2. Types of infection for the 53 prescriptions of antibiotics reserved for use in hospital settings in outpatients –mean durations of each treatment.

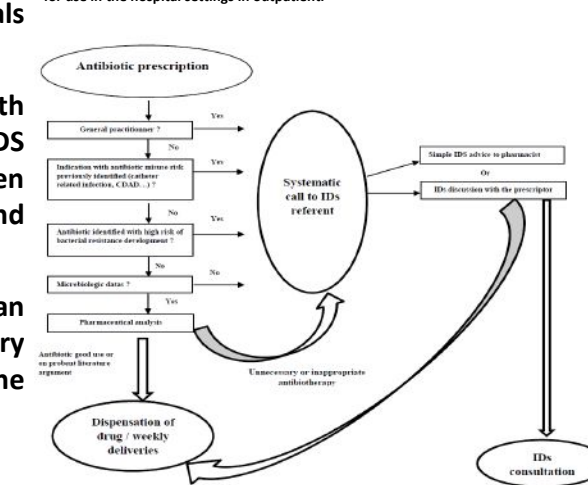
Types of infections	Total number of cases (%)	Mean duration ± SD	95% confidence Interval
Bone and joint infection	10 (19%)	72 days (±78.6 days)	
Lower respiratory tract infection	6 (11%)	9.3 days (±4.4 days)	
Antimicrobial catheter lock solution	6 (11%)	91.7 days (±53.8 days)	
Urinary tract infection	5 (9%)	9.2 days (±1.8 days)	
Skin and soft tissue infection	4 (8%)	10 days (±5.4 days)	
Intra-abdominal infection	4 (8%)	12.5 days (±2.9 days)	
Febrile neutropenia	4 (8%)	12.3 days (±4.9 days)	
Intravascular catheter-related bloodstream infection	3 (6%)	41.6 days (±43.7 days)	
Wound infection	3 (6%)	20 days (±8.7 days)	
Bloodstream infection	2 (4%)	48.5 days (±58.7 days)	
<i>Clostridium difficile</i> colitis	2 (4%)	15 days (±0 days)	
Fever of unknown origin	2 (4%)	15.5 days (±7.8 days)	
Infective endocarditis	1 (2%)	90	

Here we report a complete prospective analysis of 53 prescriptions of antibiotics usually reserved for exclusive use in hospitals for severe infections in outpatient settings.

In order to analyze the impact of IDS on the quality of antibiotic use we compared the appropriateness of prescriptions with and without IDS intervention according same criteria. We observed a small number of prescriptions with advice from an IDS (13 cases) that were usually considered an appropriate antibiotherapy (77%). This is one of the important differences between prescriptions of antibiotics usually reserved for exclusive use in hospitals for severe infections in outpatient settings with and without advice from an IDS (p<0.001).

This study has some limitations due to the short time of inclusion and small sample; nevertheless, it is the first study of an analysis of prescriptions of antibiotics reserved for use in hospital settings in outpatients using prospective multidisciplinary analysis. We could recommend a real-time analysis algorithm (Figure 2) with an infectious disease specialist to improve the quality of outpatient prescriptions of antibiotics reserved for exclusive use in hospitals

Scheme2. Types of infection of the 53 prescription of antibiotics reserved for use in the hospital settings in outpatient.



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