

PHARMACEUTICAL INTERVENTIONS IMPACT ON GRAM POSITIVE INFECTIONS TREATMENT OPTIMIZATION

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OBJECTIVES

To evaluate the impact of pharmaceutical interventions (PI) on gram-positive infection treatment effectiveness, safety and efficiency in adult in-patients.

METHODS

During 4 months (November 2011-March 2012), all hospitalization episodes (patient on the same gram positive antibiotic treatment) of adult in-patients who were on **vancomycin, linezolid or daptomycin** for **≥ 24 hours** were evaluated, except for prophylaxis indication. **Statistical analysis:** Categorical variables were expressed as frequency and percentage (%); normal quantitative variables as mean and 95% confidence interval (95%CI); non-normal quantitative variables as median and interquartile range (IQR). SPSS v.17.0 was used.

Variables related to:	
Patient	Sex , age. Penicillin allergy or intolerance Hospitalization unit (HU) (medical vs surgical). Type of setting-acquired infection(hospital vs community) and diagnosis. Length of stay
Treatment	Duration, drug and fulfillment of <i>drug therapeutics committee (DTC)-established use criteria</i> , considering: treatment of choice (vancomycin) and alternative treatments (linezolid and daptomycin).
Pharmaceutical intervention (PI)	Number and type (effectiveness, safety or efficiency) Pharmacotherapeutic chain process (prescription validation vs during follow-up). Drug. PI type: medication discontinuation, therapeutic alternative suggestion (TAS), medication initiation, dose individualization (DI), therapeutic/clinic drug monitoring (TCDM) and PI acceptance.

RESULTS

Patients: 148 [(59% male; mean age 67 years (95%CI: 63-68); penicillin allergy/intolerance: 10%] received **174 treatments**. 76% patients were on medical HU; community-acquired infections (85%). Median duration of hospital stay: 16 days (IQR :9-27).

Diagnosis: bacteremia (23%), **infection of skin and soft tissues** (21%), **pneumonia** (20%).

Treatment: Median duration was **7 days** (IQR :3-11). The most prescribed antibiotic was **vancomycin** (68%) [linezolid (28%), daptomycin (3%)]. **74%** (128) of treatments **fulfilled DTC-established criteria**; linezolid and vancomycin didn't fulfill criteria in 35/49 (71%) and 9/118 (8%) prescriptions.

PI: During **initial** prescription validation, PI were **security-type on 44%** (93% in vancomycin), **effectiveness-type on 24%** (94% in vancomycin) and **efficiency-type on 32%** (83% in linezolid). **After the PI, 84%** (146) treatments **fulfilled DTC-established criteria, decreasing the percentage of non-fulfillment of linezolid to 23/49 (47%)**.

PI (N=251)	38% PI during initial prescription validation (N=96)	62% PI during follow-up (N=155)
PI/treatment -Median (IQR)-	1 (1-2)	2 (1-3)
Acceptance (%)	79%	87%
Type (%)	39% DI - 34% TCDM - 16% more efficient TAS - 11% Others	48% DI - 42% TCDM - 10% Others
PI: pharmaceutical interventions; IQR: interquartile range TAS: therapeutic alternative suggestion; DI: dose individualization; TCDM: therapeutic/clinic drug monitoring.		

DISCUSSION

Pharmaceutical interventions in patients with gram-positive infections, increase treatment efficiency and pursue an improvement on the effectiveness and safety throughout the antibiotic treatment, reflecting the need for treatment continued follow-up to adapt it to the patient's clinical course.

CONCLUSIONS

During **initial** gram-positive infections patients prescription **validation, one or more pharmaceutical interventions** are performed, mainly **security and effectiveness-type (vancomycin)** and **efficiency-type (linezolid)**. **Fulfillment of drug therapeutics committee (DTC)-established use criteria is increased in up to 24% by pharmacist intervention.**