4CPS-054 USE OF ANTIMICROBIAL AGENTS IN THE EMERGENCY DEPARTMENT IN A THIRD-LEVEL HOSPITAL

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Background Infectious diseases are one of the most frequent reasons for consultation in the Emergency Department (ED), as well as one of the main causes of mortality and admission in the hospital. According to recent studies, antimicrobials are the second most common type of medication prescribed in the ED, so it is important to optimise their use.

Purpose To describe and to analyse the prescription of antimicrobials prescribed empirically in the ED of a third-level hospital and to analyse if microbiological samples are collected in order to establish a targeted treatment.

Material and methods Cross-sectional study of all antimicrobial prescriptions of patients waiting in the ED for admission to hospital from February 2018 to March 2018. The following variables were collected: age, sex, type of infection and microbiological samples (yes/no). It was analysed if the patient after admission maintained the same empirical antimicrobial treatment and if it was correct according to the microbial sensibility data from the sample studied. Data were collected from electronic health records and electronic prescription systems.

Results Ninety-three patients were included, 68 male and 25 female (mean 70 years, SD 13.5 years). The main clinical infections treated were: non-pneumonic lower respiratory tract (41%), urinary tract (18%) intrabdominal (12%), pneumonia (7.5%), chronic obstructive pulmonary disease exacerbation (7.5%) and other type of infections (14%).

After admission, 34% of the patients maintained empirical antimicrobial treatment, 51% treatments were changed to another antimicrobial agent and 15% of patients were discharged from the hospital.

Microbiological samples were collected before treatment in 48% of patients. According to the laboratory sample results, the empirical antimicrobial was correct in 63% of patients.

Conclusion Less than 50% of patient samples were collected before treatment and more than 35% of the empirically prescribed treatments were inadequate according to the laboratory sample results.

In order to prescribe suitable antimicrobial treatments, it is important to take microbiological samples in advance to establish a targeted treatment that could be optimised by developing a multidisciplinary group (program for optimising the use of antimicrobials (PROA)) in the ED.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

4CPS-055 EFFICACY AND SAFETY OF ARTEMISININE DERIVATIVES IN THE TREATMENT OF MALARIA

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Background Malaria is a parasitic disease caused by the parasite *Plasmodium falciparum* that is transmitted through the

bite of infected *Anopheles* female mosquitoes. It is a deadly disease that requires diagnosis and urgent treatment. The treatment is based on the combination of artemisinin derivatives and another drug. In 2016, according to the latest global report of malaria, there were 216 million cases of malaria and 4 45 000 deaths due to malaria.

Purpose To evaluate the efficacy and safety of artemisinin derivatives in the treatment of malaria.

Material and methods We carried out a retrospective observational study in the use of piperazine 320 mg/dihydroartemisinin 40 mg and intravenous (IV) artesunate from August 2017 to August 2018 in a district hospital in the south of Spain. Artesunate IV treatment was used in patients with malaria, and the severity criteria was: decreased level of consciousness, convulsions, acute respiratory failure, bilirubin greater than 2.5 mg/dL, spontaneous bleeding, hypoglycaemia, metabolic acidosis, acute renal failure, haemoglobinuria, glycaemia <40 mg/dl metabolic acidosis, hyperlactacidemia, acute renal failure (serum creatinine >3 mg/dL), severe normocytic anaemia Hb <5 g/dL and parasitaemia >4%. Data collected: sex, age, origin country, prior consultation at the international vaccination centre and chemoprophylaxis against malaria, treatment with artesunate IV, initial parasitaemia (%), parasitaemia at 24 hours (%), parasitaemia at 48 hours (%), hospitalisation stay (days), adverse effects and readmission due to malaria recurrence. The data was obtained from the digital clinical history.

Results Patients: 32, 29 (90.6%) men. Average age: 35.4 years (18–48). Twenty-one (65.6%) patients came from Mali, five (15.6%) from Senegal, two (6.3%) from Gambia, two (6.3%) from Equatorial Guinea, one (3.1%) from Ivory Coast and one (3.1%) from Ghana. Six (18.8%) patients went for prior consultation in international vaccination but did not complete chemoprophylaxis. Five (15.6%) patients were treated with artesunate IV. Initial parasitaemia: 2.65%. After 24 hours of treatment, 11 (34.4%) patients presented parasitaemia. After 48 hours, no patient presented parasitaemia. 28.1% of the patients presented adverse effects. Five (55.6%) patients developed thrombocytopenia, three (33.3%) anaemia, two (22.2%) headache and one (11.1%) dizziness. Average hospital stay in patients with severity criteria: 4.2 days. Average hospital stay in patients without severity criteria: 2.3 days.

Conclusion Artemisinin derivatives are highly effective. They were effective in 100% of cases. Adverse effects were not serious and reversed after treatment was completed. No resistances to treatment were found in any cases.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

4CPS-056 MAPPING ANTIBIOTIC USE PATTERNS IN A SEPTIC ORTHOPAEDIC WARD

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Background The Septic Ward treats patients with bone-, joint- and prosthetic-joint infections. The treatment of these infections requires complex, long-term antibiotic therapies. Clinical pharmacy services were introduced in 2015. This included

revision of antimicrobial therapies and surveillance of antibiotic consumption.

Purpose The aim of the study was to analyse antibiotic use and microbiological data in the ward between 2010 and 2017.

Material and methods Data was collected on systemic antibiotics dispensed from the pharmacy's database. Both WHO defined daily dose (DDD) and prescribed daily dose (PDD) methods were used to analyse the antibiotic consumption, standardised to 100 patient days. PDDs were defined according to therapeutic guidelines and revised by infectologists. Microbiological data were collected from the Microbiology Department's database.

Results The cost of antibiotics accounts for 65% of all pharmaceutical expenses between 2010 and 2017. Twenty-eight antibacterial agents were used in 2017, 30 in 2013 and 2010. In 2017, 11 agents were responsible for the DU90% segment of the consumption. Most extensively used agents were amoxicillin-clavulanic-acid, cefuroxime and ciprofloxacin. There was a significant difference between the results of DDD-PDD analyses. The utilisation of clindamycin (14.48 DDD/100 patient days in 2013 vs. 2.99 in 2017 – the same in PDDs) and ceftriaxone (3.61 vs. 0.31 DDD/100 patient days – the same in PDDs) decreased notably, while the use of narrow-spectrum beta-lactams increased in the past 3 years (from 2.93 to 7.84 DDD/100 patient days – 1.12 vs. 4.13 PDD/100 patient days), which was an initial goal of the pharmacists' interventions. Microbiological data showed an increased rate of multiresistant pathogens, especially Vancomycin-resistant *E. faecium* (0 in 2010, two in 2013 and 14 in 2017), resulting in increased consumption of reserve antibiotics such as linezolid (no use until 2015, 0.23 DDD/100 patient days in 2017) and tigecycline (no use until 2013, 0.28 DDD/100 patient days in 2017).

Conclusion Monitoring the use of antibiotics and comparing results with microbiological data provides a range of local resistance conditions, which are fundamental to antimicrobial guideline development. The data highlights desirable trends and critical points, allowing pharmacists to feedback to prescribers and emphasise the value of their interventions. Interpretation of results must account for the fact that the generally accepted DDD method can be incorrect due to differences in antibiotic dosing.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

4CPS-057

HOW WELL IS THE TARGET CONCENTRATION OF VANCOMYCIN ACHIEVED IN INTENSIVE CARE UNIT PATIENTS?

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Background The recommended serum trough concentration of vancomycin is 15–20 mg/L.¹ Concentrations outside this interval increase the risk of adverse effects, therapeutic failure and resistance development. To achieve the target trough concentration more rapidly, it is recommended to start with a loading dose of 25–30 mg/kg in critically ill patients. Thereafter,

the continuous dosing regimen is 1000 mg every 8th or 12th hour, but under severe infections a dose of 15–20 mg/kg every 8–12 hours can be considered.

Purpose To determine to what extent trough concentrations of vancomycin are within the recommended range, in patients in intensive care units (ICUs).

Material and methods A retrospective observational study was performed at Uppsala University Hospital, Sweden. Data on vancomycin dose regimen, treatment duration, serum concentration, type of infection and demographic information were extracted from two electronic medical record systems: MetaVision and Cosmic. One-hundred and sixty-four patients treated with intravenous vancomycin at any of the four ICUs: Central Intensive Care Unit (CICU), Thorax Intensive Care Unit (TICU), Burn Injury Intensive Care Unit (BIICU) and Neurologic Intensive Care Unit (NICU) were included.

Results In total, 922 vancomycin concentrations were registered in 185 treatment episodes in 164 patients. More than half (54.7%) of all the trough concentrations were outside of target range, 21.8% were subtherapeutic and 32.9% supratherapeutic. A trend was seen that patients in the CICU and TICU more frequently had supratherapeutic concentrations and patients treated in the BIICU and NICU more often had subtherapeutic concentrations. Out of the 185 treatment episodes, 147 were initiated at an ICU and 61.2% of these started with a loading dose. A majority of cases (74%) had >1 trough concentration outside of target range and 55% of these non-therapeutic concentrations led to a change in dose regimen.

Conclusion More than half of the measured vancomycin concentrations were outside the recommended target range. Dosing and monitoring of vancomycin in patients treated in an ICU should be improved.

REFERENCE AND/OR ACKNOWLEDGEMENTS

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4CPS-058

AVOID SIMULTANEOUS PRESCRIPTION BETWEEN LINEZOLID AND VORICONAZOLE: PHARMACOKINETIC STUDY

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Background Taking linezolid (LIN) and voriconazole (VCZ) at the same time is common in routine clinical practice. Voriconazole is eliminated by hepatic metabolism mainly by CYP2C19 isoform and less by CYP3A4 and CYP2C9. Linezolid is 65% metabolised in two metabolites and the main metabolite is independent of cytochrome P450-isoenzymes.

Purpose The aim of the study was to analyse the potential interaction between LIN and VCZ in patients diagnosed with fungal and active bacterial infection who require both anti-infective drugs simultaneously.

Material and methods Single-centre retrospective observational study was carried out in patients under simultaneous treatment with LIN and VCZ between March 2009 and December 2015. VCZ serum baseline concentrations before treatment