

university hospital. Patients 0–35 days old treated with gentamicin and with plasma concentrations (Cp) were reviewed. The descriptive analysis was performed with the SPSSV.24 programme.

**Results** 47 patients with a median age of 3 days (0–33) were studied, 33 male. 26 (55.3%) were <1 week old. 34 (72.3%) were admitted for neonatal sepsis and 7 (14.9%) for urinary infection. Gentamicin was used in combination with ampicillin in 45 cases (95.7%) and empirically in 34 (72.3%). The initially prescribed dose was 4 mg/kg/day in 36 (77%) and 5 mg/kg/day in 8 (17%), with no differences in weeks of life. Cp were extracted with a median of 2 days (1–4) after the start, the median peak was 7.5 mg/L (3.5–21.6) and 29 (62%) had a peak <8 mg/L. The trough was <0.2 mg/L in 26 patients and of those that were quantified, the median was 0.4 mg/L (0.2–1.3), and was higher than 1 mg/L in only one case. It was recommended to increase the dose in 26 (55.3%) and reduce it in 4 (8.5%) patients, with 90% acceptance. A second Cp determination was requested in 16 (34%) cases with a median peak of 9 mg/L (6–12) and trough levels always <0.5 mg/L. It was recommended to increase the dose in 5 cases with an acceptance of 94%.

**Conclusion and relevance** The dose prescribed was lower than recommended in neonates >1 week old. Cp allowed detection and correction of deviations from the recommended peak or trough levels in 64% of cases, mainly due to low peak levels, with high acceptance of TDM. Plasma determination and TDM of gentamicin continues to be an essential tool to achieve the recommended PK/PD profile.

## REFERENCES AND/OR ACKNOWLEDGEMENTS

**Conflict of interest** No conflict of interest

### 4CPS-240 THERAPEUTIC MONITORING OF VANCOMYCIN IN A COHORT OF PAEDIATRIC PATIENTS

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**Background and importance** The practice of routine monitoring and adjusting serum vancomycin drug concentrations is relevant to lessen the potential for nephrotoxicity and ototoxicity and to achieve therapeutic concentrations. However, therapeutic monitoring in paediatric patients is not widely known. **Aim and objectives** To describe the clinical and pharmacokinetic parameters in a cohort of paediatric patients treated with vancomycin and to analyse the achievement of the pharmacokinetic objectives after monitoring of vancomycin serum concentrations (SC) and dosage adjustment performed by the hospital pharmacy department.

**Material and methods** A retrospective study of paediatric patients treated with intravenous vancomycin from 2019 to 2020 was conducted. Variables collected were: sex, age, weight, diagnosis, bacterial isolation, infusion type, initial dosage and dose after two adjustments. Pharmacokinetic parameters were: volume of distribution (Vd), total clearance (Cl), elimination half-life ( $t_{1/2}$ ) and 24 hour area under the curve (AUC). Data were expressed as median (range) values.

The goals for vancomycin SC were 15–20 mg/dL trough levels (for intermittent infusion) or 20–25 mg/dL steady state concentrations (for continuous infusion)

**Results** 32 patients were studied, 62% males, with a median age of 51 months (2 months–16 years) and median weight of 16.5 (5–53) kg. Diagnoses were: catheter related bloodstream infection (n=7), surgical infection (n=7), meningitis (n=3), pneumonia (n=3), osteomyelitis (n=2) and other (n=10). Microorganisms were isolated in 66% of patients: *Staphylococcus epidermidis* (n=12), *Streptococcus* spp (n=3), *Enterococcus* spp (n=2), *Staphylococcus aureus* (n=1) and other (n=3). 78% of patients were treated initially with intermittent infusion and 22% with continuous infusion. After monitoring, 38% changed from intermittent to continuous infusion.

Median initial dose was 51 (34–80) mg/kg/day, and median doses after the first and second adjustments were 65.5 (40–95) and 68.6 (47–87) mg/kg/day, respectively. Median Vd, Cl,  $t_{1/2}$  and AUC were 0.82 (0.77–0.91) L/kg, 0.15 (0.06–0.85) L/hour/kg, 3.46 (0.63–15.10) hours and 408 (57.57–958.90) mg×hour/L. 9% of patients did not require dosage adjustment. In the remainder (91%): 45% obtained optimal SC after the first monitoring, 28% after the second monitoring, 20% after subsequent monitoring and 7% discontinued due to another isolation.

**Conclusion and relevance** Vancomycin was used as target therapy in most cases. The wide use of vancomycin continuous infusion as well as the high doses given were remarkable. Most patients needed dosage adjustments to achieve therapeutic SC and it was possible after the first two pharmacokinetic adjustments.

## REFERENCES AND/OR ACKNOWLEDGEMENTS

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### 4CPS-241 IMPACT OF ANTIBIOTIC PRESCRIBING IN AN EMERGENCY DEPARTMENT ON HOSPITAL STAYS, READMISSION AND MORTALITY

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**Background and importance** Antibiotics are widely prescribed in the emergency department (ED). Around 30–60% of antibiotic prescriptions in the ED are inappropriate; this fact is associated with an increase in length of hospital stay and is a public health problem. In this context, the ED becomes a key point for antibiotic optimisation.

**Aim and objectives** The objectives of the study were to determine the frequency and type of inappropriate prescriptions of antibiotic therapy (AT) in the ED and to assess the impact in terms of increase in hospital stay, readmissions and 30 day mortality after the event.

**Material and methods** This was a descriptive, observational, retrospective, multidisciplinary study authorised by the hospital research commission. A cross sectional serial point prevalence study of all antibiotic prescriptions for patients under observation in the ED between January and March 2020 was conducted. The appropriateness of the prescription was evaluated by specialists from emergency medicine and clinical pharmacists, according to the centre's infection guidelines (CIG). Demographic variables, comorbidity and site of infection were checked with the electronic medical record (HPCIS V.3.8).

SPSSV.23 software was used for data analysis with centralisation and frequency measurements for descriptive data and the  $\chi^2$  test for inference.

**Results** A total of 192 AT were administered to a total of 168 patients (52% men), mean age 65 (SD 20) years and 68.5% had a Charlson index  $\geq 2$ . The three main site of infection were respiratory (53%), urinary (19%) and intra-abdominal (12%). 39.6% of the antibiotic prescriptions were assessed as inappropriate. Inappropriateness was classified and distributed as:

- Unnecessary, no signs of infection: 3.3% of AT prescriptions
- Not active for the expected aetiology: 9.8%
- Appropriate, but wrongly dosed: 4%
- Appropriate, but not recommended according to the CIG: 22.8%.

The indication with the highest degree of inappropriateness was urinary infections, with 19 of 31 AT prescriptions being inappropriate. Inappropriate prescription was not found to be a factor related to an increase in hospital stay (OR 1.39; 95% CI 0.77 to 2.50;  $p=0.269$ ), readmissions (OR 0.751; 95% CI 0.35 to 1.59;  $p=0.455$ ) or mortality (OR 1.40; 95% CI 0.87 to 22.86;  $p=0.809$ ).

**Conclusion and relevance** In general, CIG were followed because almost two-thirds of AT were appropriate. Furthermore, inappropriate AT prescriptions did not lead to an increase in hospital stays, or readmissions or mortality. The inappropriateness of the AT results may be considered for the development of antibiotic optimisation strategies.

#### REFERENCES AND/OR ACKNOWLEDGEMENTS

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#### 4CPS-242 ACUTE RESPIRATORY INFECTIONS: AN ANALYSIS OF HOSPITAL ANTIBIOTHERAPY PRESCRIPTION QUALITY FOR THE PAEDIATRIC POPULATION

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**Background and importance** In the paediatric population, a potentially high use of antibiotics has been verified. The inappropriate use of these drugs leads to a progressive increase in resistance rates, which is a major public health problem worldwide.

**Aim and objectives** The objective of the study was to analyse the rationale for antibiotic prescriptions in acute respiratory infections in the paediatric hospital area.

**Material and methods** A 1 year retrospective observational study was conducted (from November 2016 to October 2017) of episodes of hospital admission for acute respiratory infection in paediatric patients. An expert committee was set up to analyse the rationale for antimicrobial therapy, according to five criteria: indication, choice of drug, dosage, frequency of administration and duration of treatment.

**Results** 319 children were included in the study, aged (median, range) 2.3 years (1 month–14 years); 178 (55.8%) were male.

72% were diagnosed with acute bronchitis and the rest had community acquired pneumonia. Antibiotics were prescribed in 41% of bronchitis and 92% of pneumonia cases. 408 antibiotic prescriptions were evaluated, the most being broad spectrum antibiotics (27% azithromycin and 26% amoxicillin). 44.3% of patients had a correct antibiotic prescription. Rationality of antibiotic prescription was: 80.6% indication, 81.1% choice of drug, 76.2% dosage, 99.7% frequency of administration and 55.1% duration of treatment. The worst criterion was duration of treatment in patients with community acquired pneumonia, which was incorrect in 62.5% (75.8% for excess of days).

**Conclusion and relevance** The study data showed a wide margin of improvement in the hospital prescription of antibiotics in paediatric patients. The duration of treatment was the criterion with the least degree of adequacy, being incorrect in almost half of the prescriptions. There is a clear need for urgent action, such as implementing optimisation programmes for the use of antimicrobials in paediatric services, to put a stop to the indiscriminate use of these drugs and improve clinical outcomes of patients with infections, minimise adverse effects associated with the use of antimicrobials as well as microbial resistance, and guarantee the use of cost effective treatments.

#### REFERENCES AND/OR ACKNOWLEDGEMENTS

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#### 4CPS-243 HEALTHCARE ASSOCIATED CLOSTRIDIODES DIFFICILE INFECTION IN SURGICAL AND MEDICAL PATIENTS

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**Background and importance** *Clostridioides difficile* (*C. difficile*) infection (CDI) is one of the most common healthcare associated (HA) infections in contemporary medicine. The risk factors (RFs) for HA CDI in medical and surgical patients are poorly investigated in countries with a limited resource healthcare system.

**Aim and objectives** To investigate differences in patient characteristics and RFs associated with HA CDI in surgical and medical patients.

**Material and methods** A prospective cohort study was conducted including adult patients diagnosed with an initial episode of HA CDI from 2011 to 2017 in a 1200 bed teaching hospital. Patients hospitalised for any non-surgical illness, who developed initial HA CDI, were assigned to the medical group, whereas those who developed initial HA CDI after surgical procedures were in the surgical group. Data on the use of proton pump inhibitors (PPIs), chemotherapy and antibiotic usage were gathered by hospital pharmacists.

**Results** From 553 patients diagnosed with HA CDI, 268 (48.5%) and 285 (51.5%) were surgical and medical patients, respectively. Medical patients were significantly older than surgical patients ( $68.59 \pm 15.46$  vs  $64.91 \pm 14.86$  years,  $p=0.005$ ), and were treated significantly more frequently with PPIs (38.9% vs 19%,  $p<0.001$ ), fluoroquinolones (28.6% vs 9.9%,