REFERENCES AND/OR ACKNOWLEDGEMENTS
Conflict of Interest No conflict of interest.

3PC-045 RETROSPECTIVE STUDY OVER 6 YEARS OF THE TREND IN FUNGAL CONTAMINATION OF CONTROLLED ATMOSPHERE AREAS WITHIN A CELL THERAPY UNIT

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Background and Importance Moulds are aerobic eukaryotic organisms naturally present in the environment. According to regulations, no mould should be present in a controlled-atmosphere zone (ZAC).

According to the literature, fungal spores can reach significant quantities, up to several 10, 000's of particles/m^3 of ambient air. The highest concentrations are found during the summer-autumn period in Europe. *Cladosporium spp* is the predominant species in most studies, with concentrations of over 4,000 CFU/m^3 of ambient air.

The trend in outdoor air contamination is well known, but few articles deal with the trend in fungal contamination in ZACs.

Aim and Objectives The primary objective of this study was to determine whether there is a seasonal trend in contamination in ZACs. The secondary objectives were to determine the most frequent moulds and the effect of factors such as air conditioning, hygrometry and temperature on fungal contamination in ZACs.

Material and Methods Based on microbiological surveillance register of the ZACs at the Saint-Ismier cell therapy and engineering unit, we collected the contaminated samples without counting the number of CFUs contained in this contamination. When available, identification was provided. The variables of temperature, hygrometry and air conditioning were collected using centralised technical management software for equipment and premises. All the data collected was recorded manually in a Microsoft Excel spreadsheet, with data double-checked at the time of collection. Statistical tests were performed on this table.

Results The results of the trend analysis showed a significant difference between fungal contamination frequencies in ZACs depending on the season. Autumn and summer are the seasons with the highest risk of fungal contamination. The main species in our study were *Cladosporium, spp and Penicillium, spp*.

Conclusion and Relevance These results show that the evolution of fungal contamination in ZACs reflects that of external environment. Indeed, although ZAC air treatment systems are capable of filtering large quantities of fungal spores, factors such as personnel, materials and consumables are potential vectors for microbial transfer.

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3PC-046 RISK OF PERSONNEL EXPOSURE TO HAZARDOUS DRUGS IN ROBOTIC COMPOUNDING

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Background and Importance Continuous occupational exposure to hazardous drugs (HD) poses significant risks to healthcare personnel. Robotic compounding systems have been introduced in pharmacies to enhance patient and staff safety. These systems operate within enclosed ISO Class 5 environments with negative pressure, which effectively minimising personnel exposure to HD during critical operations. However, there is a concern that surfaces in the compounding area may get contaminated, potentially exposing hospital personnel to these hazardous substances.

Aim and Objectives The primary objective of this study was to evaluate the risk of occupational exposure to HD when utilising robotic compounding systems for the preparation of antineoplastic sterile medications. Specifically, we aim to assess the levels of HDs present on the surfaces of ready-to-use preparations and on the gloves worn by personnel involved in the compounding process.

Material and Methods This study was conducted over a period of 3 days during routine production at KIRO Oncology (Kiro Grifols, Mondragon, Spain). Each day, we collected wipe samples from the surfaces of 20 HD preparations and from the gloves of the operator engaged in the compounding process using Cytoxlab sampling kits (CYTOXLab, Geneva, Switzerland). Our analysis included the detection and quantification of 25 anticancer molecules commonly used in hospital pharmacies.

Results Throughout the study, 19 different drugs were compounded by the robot, including 5-fluorouracil, bevacizumab, carboplatin, cisplatin, cyclophosphamide, docetaxel, doxorubicin, eribulin, etoposide, gemcitabine, irinotecan, nivolumab, oxaliplatin, paclitaxel, panitumumab, pembrolizumab, pemetrexed, trastuzumab, and vinorelbine. We observed only a negligible amount of gemcitabine, which fell below the quantification limit (<0.005 ng/cm^2), on the surfaces of two out of the 20 bags and on two of the operator's gloves.

Conclusion and Relevance The results of this study demonstrate that levels of HD surface contamination in robotic compounding are exceedingly low and, in most cases, undetectable. Occupational exposure to HD remains consistently below 0.1 ng/cm^2, a threshold deemed 'safe' according to certain studies. This finding assures the safety of the compounding personnel and other hospital staff members involved in cancer treatment.

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3PC-047 PAEDIATRIC IV ANTIFUNGAL ADMIXTURES: CENTRALISATION'S ECONOMIC CONSEQUENCES

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Background and Importance Most intravenous admixtures (IVA) are prepared on the wards just before their administration to the patient, discarding the spare volume left in vials afterwards. This wasted volume is especially significant in injectables used in paediatrics. To avoid this, hospital pharmacy Central Intravenous Additive Services (CIVAS) centralise the preparation of IVAs, reducing waste and saving costs.

Aim and Objectives To evaluate the economic impact of centralising injectable paediatric antifungal drugs in a tertiary hospital CIVAS from January to December 2021.

Material and Methods The cost incurred by the preparation of paediatric antifungals on the wards versus CIVAS was estimated. To do this, data were collected from the electronic prescribing system and the centralised preparation costs were calculated considering the number of vials, diluting agents, extra personnel time (0.90€/preparation) and clothing (0,11€ and 0,16€ in a non-hazardous cabin and hazardous cabin, respectively). Expenses on the ward were calculated based on what it would have cost were they not centralised. These calculations were based on the maximum ex-factory price plus VAT minus a national discount.

Results Three drugs were selected for centralisation, namely liposomal amphotericin B (LAB), micafungin and vorizonazol. Stock solutions were prepared for these drugs at a concentration of 1 mg/mL for LAB and micafungin, and 5 mg/mL for voriconazole, which were then used to prepare different patient specific IVAs. During the time period, a total of 2,423 paediatric antifungals were centralised, which comprised 863 LAB, 1531 micafungin, and only 29 voriconazol IVAs. Saving costs between the ward and the CIVAS were just above 26000€ for LAB, about 72000€ for micafungin, and 250€ for voriconazole, which accounted for a total of 96500€ approximately, considering personnel and clothing costs.

Conclusion and Relevance Centralising antifungal drugs into CIVAS in hospital pharmacies is an efficient measure to reduce waste and costs. This is especially important for highly prescribed paediatric IVAs such as LAB and micafungin, and less so for voriconazole which is far less commonly prescribed in paediatrics, being mainly prepared in CIVAS for safety reasons[1].

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4CPS-001 COMPARATIVE ANALYSIS OF TWO PHARMACOKINETIC PROGRAMS FOR LITHIUM ADJUSTMENT

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Background and Importance Therapeutic drug monitoring (TDM) is the clinical practice of measuring drugs to maintain a constant concentration in the patient's blood, thereby individualising dosage regimens. TDM is mainly used to monitor drugs with a narrow therapeutic range, drugs with high pharmacokinetic variability, and drugs with a high incidence of adverse effects.

The narrow therapeutic window of lithium (0.6 – 0.8 mmol/L) requires accurate monitoring of its serum concentrations to achieve a safe and effective therapy.

Aim and Objectives To compare two pharmacokinetic programmes and analyse the precision and accuracy of lithium serum concentration adjustment.

Material and Methods Retrospective observational study including admitted patients with at least one determination of serum lithium concentration between January and December 2020 at a secondary hospital.

Electronic medical records were used to obtain the following data: lithium dosage, serum lithium concentrations, date of blood analysis, serum creatinine, renal function (calculated using the Cockcroft-Gault equation), date of birth, sex and weight.

Serum lithium concentrations were estimated using two pharmacokinetic software programs: MwPharm++ and PKS.

Accuracy and precision were evaluated using Sheiner and Beal's prediction error theory. Accuracy was estimated with the mean prediction error (MPE) and precision with the mean absolute prediction error (MAPE) and the square root of the root mean square prediction error (RMSE). These results are accompanied by 95% confidence intervals.

The statistical significance was determined using a t-student test for comparing means.

Results A total of 79 plasma lithium levels from 18 patients were analysed, 55.6% were male, with a median age of 52.4 years [IQI: 41.7–55.4], and a median weight of 70.5 kg [IQI: 66.8–82.15]. Three patients (16.7%) had a creatinine clearance less than 60 ml/min, and 17 (94.4%) had multiple serum lithium determinations. The median number of determinations per patient were 3 IQI [2–4.5].

The following results were obtained:

Accuracy: MPE 0.02 (-0.025–0.065) and -0.02 (-0.064–0.024) for MwPharm++ and PKS, respectively.

Precision: MAPE 0.14 (0.11–0.18) and 0.12 (0.08–0.16), and RMSE 0.20 and 0.20 for MwPharm++ and PKS, respectively.

No statistically significant differences were found for MPE ($p=0.22$) or MAPE ($p=0.40$).

Conclusion and Relevance MwPharm++ and PKS showed satisfactory predictive capabilities, with no significant statistical differences. Both programs seem to be valid options, but larger studies are needed for confirmation.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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4CPS-002 PHARMACEUTICAL CARE IN POSTOPERATIVE PAIN MANAGEMENT AT ADMISSION AND DISCHARGE

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