chromatography coupled to a high-resolution mass spectrometer (LC-HRMS) for the analysis of plastic additives. An innovative setup, based on post-column infusion (PCI) using 2% ammonium hydroxide in methanol, was considered to boost the signal intensity of the analytes. This method enables the screening and identification of 30 known substances due to the use of retention time, exact mass (including isotopic pattern) and MS/MS spectra.

Results A comparison was made between prepackaged industrially purified WFI (IP-WFI) and a pharmaceutical-grade distilled water (PGD-WFI). A butylhydroxytoluene (BHT) derivative compound, 3-(3,5-di-tert-butyl-4-hydroxy-phenyl)propanoic acid, and bisphenol A were identified close to 2 ppm and 30 ppb, respectively, in IP-WFI compared to PGD-WFI. This suggests that IP-WFI, once purified and packaged, is stored in warehouses, which allows these additives to leach and concentrate over time. Conversely, PGD-WFI is carried out on site and is used directly for its intended purpose. In addition, both compounds possess ED phenol moieties, making them potential xenoestrogens.

Conclusion and relevance In conclusion, PGD-WFI possesses approximately five times less of these additives than IP-WFI. These plastic additives could lead to latent health issues in patients after continuous administration of parenteral treatments. Due to a lack of toxicology information for this BHT derivative, more studies are required for ED assessment.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Conflict of interest No conflict of interest

3PC-025 ABSTRACT WITHDRAWN

3PC-026 QUANTITATIVE AND QUALITATIVE EVALUATION OF MRNA VACCINES AFTER STERILE FILTRATION

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Background and importance The importance of mRNA-based vaccines increased rapidly due to the COVID-19 pandemic. However, little is known on the challenges linked to handling shortages and extended stability of these new types of substance. Since vaccine remnants have to be discarded according to the Summary of Product Characteristics, we hypothesise that sterile filtration after pooling is suitable to save vaccine material for clinical application.

Aim and objectives The aim of this pilot study was to compare quality parameters of remnants derived from ready-to-use mRNA vaccine solutions before and after sterile filtration. Therefore, we pooled mRNA vaccine solution remnants from Corminaty vials (BioNTech/Pfizer) and compared particle size, distribution and quantity of the lipoplexes. In addition, quantity and/or quality of the mRNA was determined.

Material and methods Measurements of invisible particulates in the range 1–50 µm were performed by light obscuration according to the European Pharmacopoeia (10th edn). The size of lipoplexes was measured with nanoparticle tracking analysis (NTA) to determine hydrodynamic diameter and particle concentration. Dynamic light scattering was employed complementarily to the NTA technique to focus on particle size from 0.3 nm to 10 µm. The concentration, purity and integrity of the mRNA was analysed by ultraviolet (UV) spectrophotometry and capillary electrophoresis after mRNA purification.

Results After pooling the remnants of the vials we found a substantial increase of particulates >1 µm when compared to fresh vaccine samples. This effect was likely due to contamination of the examined probes with particles from ambient air. As expected, all these particulates were eliminated by sterile filtration. Size distribution and concentration of the lipoplexes were comparable between unfiltered and filtered samples. With respect to the mRNA, we identified the fragment of interest in all examined samples. Sterile filtration did not change the concentration, purity and integrity of the mRNA.
Conclusion and relevance Our results indicate that sterile filtration of mRNA-based vaccines eliminates particle contamination from the vaccine solution while the concentration of lipoplex nanoparticles was not altered. Moreover, neither the quantity nor quality of the mRNA was affected by the filtration process. The results of our pilot study provide the first data on the stability of mRNA vaccines and help to fill knowledge gap when dealing with these substances in hospital pharmacy.

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3PC-027 DIGITALISATION SUPPORT SYSTEM FOR INTRAVENOUS MIXTURES ELABORATION IN A BIOLOGICAL SAFETY CABINET

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Background and importance We have been working with a system robot that integrates electronic prescription in our hospital pharmacy for the automated preparation of intravenous mixtures. However, some of the preparations are not candidates for robotic processing. Manual preparations should provide similar traceability and security.
Aim and objectives To describe the implementation of a digital support system (DSS) for the manual preparation in a biological safety cabinet (BSC) of intravenous mixtures.
Material and methods Retrospective descriptive study of the digitalisation of the manual preparation of intravenous mixtures in a BSC (December 2020–February 2021). Implementation phase activities comprised: (1) entering the drug density data, (2) updating drugs handling in the software and (3) staff training. The material needed (weight scale with integrated camera, screen, keyboard, code reader and printer) was situated in a BSC for cytostatic preparations.

It was decided to use the system in the following cases: (1) syringe preparations, (2) vials that are non-compatible for robot handling due to their format, (3) lyophilised powder drugs and (4) non-scheduled or emergency treatments. Verification of the precision obtained in the dosage was performed by gravimetric control based on the density of the drug. Although the pharmacopoeia allows a deviation of ±10% in dosage, we limited it to the same tolerance already used in the robot system, namely ±4%.
Results Ninety drug presentations have been configured in the DSS. In the first 3 months, 1477 preparations were elaborated (22.8%), with a mean error in drug dosage of 1.51% (SD 1.41). To meet the dosage criteria, 65 preparations were rectified. DSS traces the entire process by taking pictures of the components, by recording the elaboration, and by barcode verification or data-matrix of the final container and drug used.
Conclusion and relevance The drug density database can be applied to any system employing gravimetric dosing control. DSS represents a useful complementary tool whenever the use of a robot system is limited, providing traceability and security for the process of manual preparation of intravenous mixtures as a substantial improvement in the quality of the circuit.

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3PC-028 PHARMACEUTICAL INTERVENTIONS IN PAEDIATRIC PARENTERAL NUTRITION

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Background and importance Parenteral nutrition is needed for preterm and ill babies in the neonatal intensive care unit (NICU), neonatal medicine unit (NMU) and paediatric intensive care unit (PICU). In our centre, each parenteral nutrition (PN) prescription is analysed by a pharmacist before compounding. In cases of prescribing errors, the pharmacist alerts the prescribers and performs a pharmaceutical intervention (PI).
Aim and objectives We have implemented a tool for the routine reporting of PI for sterile preparation units for PN, 'ACTIP Nutrition'. This tool is an adaptation of the French Society of *Clinical Pharmacy* (SFPC) hospital pharmacists' reporting tool for recording the PI. This work allowed us to validate the tool ACTIP Nutrition and evaluate the rate of avoidable errors with an electronic prescriptions software package.
Material and methods The study was carried out in the sterile preparation unit over 2 months. The prescriptions of PN were analysed according to the usual practice. Each detected PI was scored according to 'ACTIP Nutrition' and recorded in the national database of PI, ACTIP.
Results A total of 627 prescriptions were analysed of which 37% required pharmaceutical intervention. 17% of the orders required two or more interventions. The intervention rate was 41% for the NICU, 31% for the NMU and 18% for the PICU. The top three interventions performed were underdosing of vitamins and trace elements (n=71), instability due to phosphate (n=45), and wrong choice of ingredient in the mix (n=27). The majority of PIs performed were dosage adjustments (56%).

Electronic prescribing software could eliminate 15% of errors (eg, transcription), and if a thesaurus or guidelines are incorporated into the software then an additional 14% of errors could be avoided. The PI rate would drop from 37% to 23%.
Conclusion and relevance Pharmaceutical analysis is a crucial process for limiting errors in paediatric parenteral nutrition. The ACTIP Nutrition tool allows PIs to be entered into the ACTIP database and harmonises practice between pharmacists to promote the role of the pharmacist. The American Society for Parenteral and Enteral Nutrition (ASPEN) recommends electronic prescriptions to secure patient care. In our centre, almost 30% of errors were avoidable with the use of prescriptions software. Unfortunately, our study took place over a