Material and methods From June until December 2020, a clinical pharmacist (CP) provided CPS, which included medication reviews and subsequent ward round participations (A: haemato-oncology, 11 beds; B: HSCT unit, 10 beds). The CP and an independent expert panel consisting of two clinical pharmacists and two paediatric haemato-oncologists assessed the PI for clinical significance.[1] Economic benefit was estimated retrospectively by drug therapy cost reductions and avoided follow-up costs based on prevention and management of adverse drug reactions (ADR).[2]

Results During 32 ward rounds, 230 DRP were addressed in 36 children (median age 7 (0.4–17) years). The acceptance rate for PI was 73.5%. The most common DRP concerned need for drug monitoring, need for information/therapy discussion and drug–drug interactions; the most common PI were drug-monitoring, drug-information and dose adjustments. The CP assessed 66% of PI as very significant or significant and correlation with the expert rating was significant ($p \leq 0.0001$). Costs of CPS were € 7200. PI led to estimated drug therapy cost reductions of € 5500. Prevention of 11 and identification of 24 ADR led to estimated avoided follow-up costs of € 14 300–€ 27 500 and € 31 200, respectively.

Conclusion and relevance This evaluation showed that CPS for a tertiary care centre specialising in paediatric haemato-oncology is capable of identifying and preventing DRP by clinically significant PI. The estimated economic benefit of CPS was at least six-fold higher than its costs. Based on the results, CPS were expanded in our hospital.

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Conflict of interest No conflict of interest

4CPS-209 BENEFIT OF MEDICATION REVIEWS BY A RENAL PHARMACIST IN THE SETTING OF A COMPUTERISED PHYSICIAN ORDER ENTRY SYSTEM

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Background and importance A 'renal pharmacist consultant service' (RPCS) reviewing patients with renal impairment (RI) for drug-related problems (DRP) can foster patient safety.[1] However, the benefit of this service in the new setting of a computerised physician order entry (CPOE) system with a clinical decision support system (CDSS) is unknown.

Aim and objectives The aim of the study was to evaluate a RPCS on wards with CPOE-CDSS, its need in general and its effectiveness on prescription changes and thereby on patient safety.

Material and methods Over a period of 3 months (February–April 2021), patients with $eGFR_{absolute}$/KreaCl <60 mL/min of one surgical and one orthopedic ward at a German University Hospital received a medication review for DRP by a renal pharmacist for all medication presented in the CPOE-CDSS Meona during weekdays. Written consultations explaining DRP and recommending interventions to solve them (eg, dose or drug adaptation) were presented to physicians directly in the drug chart tab of the CPOE-system. The prescription changes were retrospectively evaluated. Ethical approval was obtained from the ethics committee at LMU Munich (registration number 21–0743).

Results During 53 working days, 712 (30.5%) of 2331 screened patients were included with an $eGFR_{absolute}$/KreaCl <60 mL/min and a pharmacist-led medication review was performed for all medication presented in the CPOE-system (Meona). In 79/712 (11.1%) patients one or more DRP were detected (median 1 DRP (1–3) per patient) and written recommendations were shared via Meona. In total, 104 DRP were identified, mostly caused by 'dosage too high' (n=55; 52.9%), 'dosage regime wrong' (n=13; 12.5%) and 'contraindication' (n=9; 8.7%). Acceptance rate of recommendations was 74.0% (n=77/104). In 9 cases (8.7%) the recommendation was consciously retained after discussion because of lack of alternatives, in 11 (10.6%) the prescription remained unchanged for unknown reasons and in 7 (6.7%) the result was unknown due to discharge.

Conclusion and relevance The pharmacist-led medication reviews identified DRP in patients with RI even in the setting of prescribing in a CPOE-CDSS. A RPCS in this setting successfully increased appropriate prescribing by physicians and thus improved patient safety.

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4CPS-210 IMPACT OF THE ANTIBIOTIC THERAPY USED DURING THE SARS-COV-2 PANDEMIC ON THE INCIDENCE OF *CLOSTRIDIOIDES DIFFICILE* INFECTION

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Background and importance Suspicion of bacterial coinfection in patients with SARS-CoV-2 pneumonia has led to an increased consumption of antibiotics used in the treatment of community-acquired pneumonia (CAP). One of the best-known risk factors for *Clostridioides difficile* infection (CDI) development is antibiotic treatment but there are inconsistent findings regarding which groups of antibiotics are most strongly associated.

Aim and objectives We aimed to compare the risk of developing CDI during hospitalisation in the internal medicine division to changes in antibiotics consumption in the pre-pandemic and COVID-19 pandemic period.

Material and methods Single centre retrospective cohort study was conducted in a secondary hospital (900 beds). Hospitalised patients in the 2019 and 2020 periods who presented hospital-acquired diarrhoea with simultaneous *C. difficile* toxin determination were included. We selected patients admitted to internal medicine units to compare the incidence of CDI with

the change in the antibiotic consumption profile between both periods.

Microbiological diagnosis consisted of simultaneous detection of glutamate dehydrogenase and toxins and enzyme immunoassay test. Positive results were confirmed by PCR.

Statistical treatment: to compare the CDI incidence between the two periods the rate ratio was calculated. Antibiotic consumption comparison was performed using independent samples Z-test.

Results

Parameter	2019 (pre-pandemic period)	2020 (pandemic period)	*P value*
Total/mean (patient-days)	74.012/10.16	72.742/9.2	
Age (years) gender (male%)	8146.5%	7948.5%	
Incidence CDI/10 000 patient-days	6.35	2.47	*RR= 0.39, p<0.001*
Antibiotic consumption DDD/ 100 patient-days			
Ceftriaxone	11.68	21.75	*p<0.01*
Amoxicillin/ clavulanic	14.96	10.44	*p<0.01*
Quinolones	13.67	9.07	*p<0.01*
Carbapenems	4.39	4.48	*p=0.4*
Piperacilin/ tazobactam	5.13	4.71	*p<0.01*

Conclusion and relevance Changes in antimicrobial use related to the outbreak suggest that clinicians overprescribed first-line CAP-focused antibiotics.

CDI incidence reduction was related to a marked decreased use of quinolones and amoxicillin/clavulanic despite the fact that consumption of third-generation cephalosporins has doubled.

Another implemented protocol such as more comprehensive cleaning and hand-washing hygiene could have contributed to the marked CDI decrease.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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4CPS-211 REDUCTION OF FLUSHING VOLUME AND INCOMPATIBILITIES BY A CLINICAL PHARMACIST IN A PAEDIATRIC INTENSIVE CARE UNIT

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Background and importance Incompatibilities of drugs administered via the same Y-site can have serious consequences. Therefore, incompatible drugs should be administered through different infusion lines. If separate administration is not possible, flushing should be performed between drug administrations. However, children in critical care units have a high risk for fluid overload which is associated with a higher morbidity. Consequently, unnecessary fluids should be avoided [1].

Aim and objectives The aim of our study was to evaluate the intervention to reduce flushing volume without increasing incompatibilities in a paediatric intensive care unit (PICU).

Material and methods We performed an intervention study in our 13-bed PICU in Kassel to determine the flushing volume (S1P0 January–July 2020; S1P1: October 2020–August 2021). Patients with ≥2 IV drugs, stay >24 hours, and age 0–18 years were included. As part of this study two 4-week bedside observations were conducted to survey compatibility of coadministered drugs (S2P0 July 2020; S2P1 October 2020). As an intervention, patient-specific compatibility and flushing charts were created by a clinical pharmacist. The Mann–Whitney U test was used for quantitative variables and the χ^2 test for categorial variables. The analyses were performed using R version 4.1.1.

Results 170 patients (85 patients per period) were included in the intervention study. 23 (S2P0) and 24 (S2P1) patients with 504 (S2P0) and 523 (S2P1) drug combinations were part of the bedside observation. The median of the flushing volume was significantly reduced from 0.68 mL/kg/day (Q25/Q75 0.31/1.33) to 0.35 mL/kg/day (Q25/Q75 0.08/0.74); p<0.001). Also, the number of daily flushing processes decreased (S1P0 median (Q25/Q75) 2.60 (1.33/3.40), S1P1 median (Q25/Q75) 1.44 (0.67/2.33); p<0.001). Furthermore, the observational study demonstrated a 51% reduction in the number of administered incompatible combinations (S2P0: 8.93%, S2P1: 4.39%, χ^2= 7.46; p=0.002). Combinations without literature data were administered in both periods, and again the number could be reduced (S2P0: 8.13%, S2P1: 3.82%, χ^2=8.96, p=0.003).

Conclusion and relevance Our results show that incompatibilities are very common in PICU and that relevant compatibility data, especially for children, are still lacking. A pharmaceutical intervention can not only help to reduce flushing volume but can also reduce incompatibilities.

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4CPS-213 A COMPARATIVE RISK ANALYSIS COMPARING THE CONVENTIONAL AND FULLY AUTOMATED MANAGEMENT OF CLINICAL TRIALS IN AN ONCOLOGY PHARMACY

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Background and importance A software module (APOTECA-trial) was introduced in clinical practice to manage clinical trials and investigational drugs, thereby minimising manual activities and ensuring maximum traceability (1). APOTECA-trial was developed in accordance with the Good Clinical Practice (GCP) guidelines, in particular with regard to subject safety, outcome reliability, characteristics of electronic systems/data, and quality management with a risk-based approach.

Aim and objectives The objective of this study was to assess the risk associated with the pharmacy-based management of