

Aim and objectives The aim of this study was to use the functional resonance analysis method (FRAM) to compare the HP's role in the medication process in three countries using the same electronic health record (EHR) software.

Material and methods To compare the medication process across countries, field study observations were carried out by the same observer in the USA, the Netherlands and Denmark in hospitals using the EPIC Systems for the EHRs. FRAM, a way to describe outcomes using the idea of resonance arising from the variability of everyday performance, was used to illustrate and analyse the medication process. The FRAM model highlights the connection between the workflows involved in the medication process, and maps out functions, represented by hexagons and the associated aspects of each function, as well as interconnections between them. The aspects used are input (I), output (O), precondition (P), resource (R), control (C) and time (T).

Results When studying the FRAM model describing the medication process, differences between countries became apparent. HPs in Denmark take part in monitoring, such as medication reconciliation and medication review, whereas HPs in the USA and the Netherlands take part in medication verification, review of medication orders made in the hospital setting by physicians as well as monitoring. In the USA and the Netherlands, monitoring includes antibiotic stewardship, therapeutic drug monitoring as well as pharmacogenomics. In Denmark, HPs act as a resource for the physician in the monitoring process, whereas for both the USA and the Netherlands, the HP is in charge of both medication verification and monitoring.

Conclusion and relevance By comparing the hospital pharmacist's role across countries, the potential for extended use of hospital pharmacists emerged.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Conflict of interest No conflict of interest

4CPS-367 IMPACT OF PHARMACEUTICAL CONSULTATION IMPLEMENTATION ON PHARMACEUTICAL INTERVENTIONS AND THE ROLE OF PHARMACISTS IN MULTIDISCIPLINARY TEAMS

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Background and importance Our hospital serves a population of 278 000, and we have, on average, 1500 monthly patient visits for drug dispensing. The pharmacists, working in this context, are responsible for activities such as analysing the patient's pharmacotherapeutic profile, prescribing drug dosages, identifying possible interactions between different drugs or natural products/foods, confirming the indication of the prescription and alerting to possible drug adverse effects. This process may originate more than one pharmaceutical intervention (PI). Since we implemented the pharmaceutical consultation (PC) in 2015, pharmacists have become specialists for specific pathologies (starting with hepatitis C) and are closely monitoring their patients. Currently, PCs have been expanded to HIV, oncology, neurology, biological drugs, among others. Although drug dispensation is still the main source of PIs, PCs plays an increasing crucial role.

Aim and objectives To characterise the PIs performed in the outpatient setting as an indicator of the PCs implemented.

Material and methods A retrospective analysis of PI data was conducted in the context of outpatient drug dispensation, from January 2017 to August 2020.

Results From January 2017 to August 2020, 3149 PIs were registered in 1453 patients. PIs have been growing annually as a result of PC implementation: 186 until 2017 (3 PC); 901 in 2018 (6 PC); 943 in 2019 (9 PC); and this year we have already done 2017. The infectious diseases specialty had the highest number of PIs (31%), followed by ophthalmology (26%), gastroenterology (17%), oncology (10%), biological drugs (7%), neurology (5%) and others (4%). Of all of the PIs, 61% were about compliance, 19% were about appointments and laboratory analysis, 4% related to missing medication prescriptions, 3% were about excessive duration of medications, notification of adverse drug reactions and drug interactions, 2% were related to changing the dose and 1% were due to therapeutic duplication and referral to the emergency department. From all PIs, 96% were accepted with modification (AwM—prescription/behaviour modified as suggested), 3% were accepted without modification (AoM—intervention accepted but with justified prescription/behaviour maintenance) and 1% were not accepted.

Conclusion and relevance As seen previously, the number of PIs has been increasing over time, which is in part justified by the implementation of PCs. Having 96% of PIs AwM clearly shows the pharmacist's impact, as part of the multidisciplinary team, in terms of patient compliance, quality of life and outcomes.

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4CPS-368 SYSTEMATIC REVIEW OF THE ASSOCIATION BETWEEN ANTICHOLINERGIC BURDEN AND XEROSTOMIA AND XEROPHTHALMIA

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Background and importance Xerostomia and xerophthalmia are described as common adverse effects of anticholinergic drugs. Recently, anticholinergic scales had been developed to measure the anticholinergic burden, the accumulative effect of anticholinergic drugs. It is not known whether anticholinergic burden could be correlated with xerostomia and/or xerophthalmia.

Aim and objectives The objective was to collect the evidence of the association between anticholinergic burden calculated by different anticholinergic scales or anticholinergic drug use and xerostomia and/or xerophthalmia.

Material and methods A literature search was performed in MEDLINE, EMBASE and CINHALL using terms such as elderly, aged, 80 and over, anticholinergic drugs, anticholinergic burden, xerophthalmia, dry eye, dryness mouth, xerostomia, hyposalivation and dry mouth. Clinical trials and observational articles were selected. The following variables were collected: number of patients, anticholinergic scales used, study duration and statistical association between xerophthalmia or xerostomia and anticholinergic burden or anticholinergic drug use.

Results Articles included=8, numbers of patients=2926. Only five studies used anticholinergic scales: anticholinergic drug scale (three studies), anticholinergic risk scale (two studies). Three studies correlated anticholinergic drug use with xerostomia and/or xerophthalmia. Five were cross sectional studies, one randomised controlled trial and 2 cohort studies. Mean study duration was 5 months (range 2–10 months). Only three studies found a statistical association between xerostomia and anticholinergic burden when comparing patients without an anticholinergic burden and patients with a high anticholinergic burden. No studies found an association between anticholinergic burden and xerophthalmia.

Conclusion and relevance An association was found only in those studies that compared high anticholinergic burden versus no burden for xerostomia, therefore indicating that measurement of anticholinergic burden could be a good method of predicting xerostomia in patients treated with anticholinergic drugs. However, larger studies are necessary to better corroborate this conclusion.

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4CPS-369 PHARMACHECK AS A SCREENING TOOL TO INTERCEPT HIGH RISK SITUATIONS IN INTERNAL MEDICINE THAT COULD LEAD TO ADVERSE DRUG EVENTS

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Background and importance In the internal medicine department of our hospital, medication review provided by pharmacists during medical rounds is offered to only a fraction of the 200 inpatients, due to limited resources. In order to detect high risk situations potentially leading to adverse drug events, we developed PharmaCheck, an electronic tool that screens all patient electronic health records (EHR) in real time, by aggregating drug prescriptions, laboratory values, vital signs and medical problems.

Aim and objectives To determine the impact of PharmaCheck in the identification of high risk situations and on the clinical pharmacist's interventions.

Material and methods PharmaCheck was set to screen 20 situations distributed into four risk classes: a drug prescription with an abnormal laboratory value, a contraindication, a drug–drug interaction (DDI) and an inadequate administration mode. For 150 days (February to August 2020), PharmaCheck performed a daily screen of patients' EHR, admitted to the internal medicine department. As soon as an alert was triggered, the clinical pharmacist analysed the patient's clinical context to suggest a treatment adjustment when needed. An observational prospective study was performed to assess the distribution of each risk class, the predictive positive value of each alert (PPV: proportion of situations associated with an intervention) as well as the acceptance rate by the prescribers.

Results 430 alerts were triggered for 387 patients (3.3±1.9 alerts/day) with a global PPV of 19.3% (n=83/430). Regarding

risk classes, PPVs were 25.6% (n=58/226) for abnormal laboratory value, 3.10% (4/127) for contraindications, 28.2% (20/71) for DDIs and 16.7% (1/6) for inadequate administration mode. The approval rate of treatment adjustment suggestions was 71.1% (n=59/83); rejections were related to an acceptable risk–benefit balance (n=20) or an unknown cause (n=4).

Conclusion and relevance PharmaCheck identified a significant number of high risk situations. By contextualising these alerts the clinical pharmacist selected the most relevant ones to suggest treatment adjustment, mostly accepted by physicians. Beyond the clinical context, the relevance of alerts depends on the informative quality of the triggering elements, explaining a low PPV for some risk classes (eg, contraindication, depending on unstructured textual medical problems). PharmaCheck expands the coverage of the clinical pharmacist for selected situations and we plan to transpose this strategy to other, more fragile, patient populations (eg, geriatrics, paediatrics, oncology).

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4CPS-370 PHARMACISTS' INTERVENTIONS BEFORE AND AFTER THE USE OF A CLINICAL DECISION SUPPORT TOOL TO DETECT DRUG RELATED PROBLEMS

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Background and importance Drug related problems (DRP) and medication adverse events occur in hospitalised patients. Computer provider order entry (CPOE) systems with clinical decision support systems (CDSS) are a key process for the pharmacist's routine prescription validation to improve medication prescribing and patient safety.

Aim and objectives To evaluate the type and number of pharmacist interventions (PI) before and after the use of a CDSS tool added to the CPOE system.

Material and methods A retrospective observational study was carried out in a 300 bed hospital between January 2019 and May 2020. Data collected were: DRG type, PI and detection method. First period (January–August 2019): pharmacist validation using CPOE and electronic health records (EHR) was performed. The CDSS was introduced in August 2019. The CDSS includes drug information related to dose adjustment according to renal function, monitoring of analytic parameters susceptible to being altered by the drug, and drug–drug/drug–food interactions that are continuously updated by pharmacists. When EHR and CPOE containing demographic, anthropometric and clinical data of the patient as well as pharmacological treatment are integrated with the CDSS, alerts are generated (potential DRP) in real time that are evaluated by pharmacists. When the alerts are considered relevant, pharmacists write a PI in the patient's chart. Second period (August 2019 –May 2020): CDSS alerts were available for prescription validation.

Results First period: 1574 PI. Second period: 1687 PI (1451 using the first period method and 236 using the CDSS alerts). PI as a result of the CDSS were about 14% of total PI, and their type and number comparing both periods are presented in table 1.