drugs involved according to the anatomical therapeutic chemical (ATC) classification, type of PI and acceptance rate. PIs were classified into seven groups: dosage adjustment, pharmacokinetic monitoring, stopping treatment, switching to equivalent therapeutic drug or pharmaceutical form, information about drug administration, duplicity and other (eg, date and time of administration).

Results A total of 430 patients were admitted to the ICU during the study period. We performed 115 PIs in 66 patients (1 intervention/3 patients admitted): 13.9% were related to dosage adjustment, 24.4% to pharmacokinetic monitoring, 12.2% to stopping treatment, 2.6% to switching to an equivalent therapeutic drug or pharmaceutical form, 16.5% to drug administration information, 18.3% to drug duplicity and 12.2% other. Regarding ATC classification, 42.6% of PIs were related to group J, 13.9% to group B, 12.2% to group H, 6.1% to groups N and C, 4.4% to groups A and R, and 10.5% to group V. The acceptance rate was 94.5%.

Conclusion and relevance The clinical pharmacist integration into the ICU enhanced pharmacotherapy optimisation of critical patients, especially through pharmacokinetic monitoring and interventions related to anti-infective drugs. The acceptance rate was >90%, which indicated a considerable concern by the ICU team.

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No conflict of interest.

4CPS-187 PROGNOSTIC VALUE OF HAEMATOLOGICAL INFLAMMATORY MARKERS IN PATIENTS WITH METASTATIC NON-SMALL CELL LUNG CANCER TREATED WITH PEMBROLIZUMAB

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Background and importance Proinflammatory status has been associated with worse outcomes in patients treated with immunotherapy.

Aim and objectives To evaluate the prognosis role of haematological inflammatory markers in patients with metastatic non-small cell lung cancer (mNSCLC) treated with pembrolizumab.

Material and methods This was an ambispective study that included mNSCLC patients with PD-L1 expression level $\geq 50\%$ treated with firstline pembrolizumab between January 2017 and June 2019. Data collected included age, gender, PD-L1 expression level, baseline Eastern Cooperative Oncology Group (ECOG) performance status (PS), baseline absolute neutrophil count (ANC), lymphocytes, leucocytes, monocytes and platelets. Neutrophil to lymphocyte ratio (NLR; ANC/lymphocyte count), lymphocyte to monocyte ratio (LMR; lymphocyte count/monocyte count) and platelet to lymphocyte ratio (PLR; platelet count/lymphocyte count) were calculated. $NLR \geq 5$, $LMR < 1.7$ and $PLR > 144\ 000$ were considered as cut-off values. We analysed response rate, progression free survival (PFS) and overall survival (OS). The Kaplan–Meier method was used to estimate PFS and OS and multivariate Cox proportional hazard modelling.

Results Forty-two patients were included (71.4% men, $n=30$) and mean age was 67 years (± 8.2). PD-L1 expression levels were $\geq 90\%$ in 31% of patients ($n=13$). Most patients had an ECOG PS of 0–1 ($n=30$). Partial response, stable disease and disease progression were recorded in 31% ($n=13$), 28.6% ($n=12$) and 19% ($n=8$), respectively. The remaining 21.4% died before response evaluation. Median PFS and OS were 5.4 months (95% CI 0–11.1) and 10.3 months (95% CI 8.9–11.7), respectively. In the multivariate analysis, $NLR \leq 5$ was identified as an independent predictor of PFS (hazard ratio (HR)=0.73; 95% CI 0.14–0.97) and OS (HR=0.16; 95% CI 0.052–0.52). ECOG performance status score of 0–1 was also significantly correlated with a higher SLP (HR=0.24; 95% CI 0.082–0.73) and SG (HR=0.20; 95% CI 0.058–0.72). $PLR \leq 144$ was only an independent predictor of PFS (HR=0.21; 95% CI 0.065–0.67).

Conclusion and relevance Baseline NLR and ECOG were correlated with PFS and OS in patients with mNSCLC treated with pembrolizumab as firstline therapy. $PLR > 144$ was also an independent predictor of PFS, but not OS. NLR might be a cost effective prognostic biomarker for firstline pembrolizumab treatment in mNSCLC patients.

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No conflict of interest.

4CPS-188 PHARMACEUTICAL INTERVENTION TO REDUCE THE ANTICHOLINERGIC BURDEN IN OLDER HOSPITALISED PATIENTS

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Background and importance Anticholinergic burden has been associated with cognitive and functional impairment, risk of falls, hospitalisations and morbidity/mortality, especially in older patients.

Aim and objectives To study the anticholinergic burden in older patients in a hospital setting and to reduce the use of drugs with anticholinergic effects (DACE) in those patients with a high anticholinergic risk (HAR).

Material and methods A cross sectional study was conducted in patients aged ≥ 65 years of age, admitted to the internal medicine department. The study was scheduled once a week for 4 weeks between August and September 2019. Patients with palliative care and readmissions were excluded. Gender, age, length of hospital stay and the number of drugs prescribed were registered. The anatomical, therapeutic and chemical (ATC) classification was used to classify drugs. Anticholinergic burden was calculated using the drug burden index (DBI) calculator (available at: <http://anticholinergicscales.es/patients>). Ophthalmic drugs and medication ‘as needed’ were not assessed. The medication plan of patients with HAR was reviewed together with their physicians in order to reduce the anticholinergic burden through reducing the dose, stopping treatment or changing the DACE.

Results Eighty-two patients (70% women, 85 ± 8 years old) were included. Median length of hospital stay and number of

drugs prescribed per patient were 7 days and 10 ± 3.5 drugs, respectively. Fifty-nine patients (72%) had at least one DACE prescribed (an average of two DACE per patient). Most common DACE grouped by ATC were: anxiolytics (N05B, $n=30$), antidepressants (N06A, $n=28$), antipsychotics (N05A, $n=22$), opioids (N02A, $n=16$) and antiepileptic (N03A, $n=14$). Thirty-two (39%) patients had a moderate anticholinergic risk (median DBI 0.6) and 27 (33%) patients had a HAR (median DBI 1.5). Four out of 27 (15%) interventions were accepted and consisted of two dose reductions and two DACE descriptions. The interventions were not accepted mainly because the drugs were part of the patient's chronic psychiatric or neurological treatment, the presence of refractory pain or insomnia disorders.

Conclusion and relevance Our pharmacological intervention was poorly accepted by physicians. During the hospitalisation process it is difficult to re-evaluate the need for adjusting chronic medication, especially related to psychiatric or neurological pathologies. For future studies we believe that this type of study would have more impact at the primary care level.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

4CPS-189 FALL INCIDENTS IN NURSING HOME PATIENTS: DEVELOPMENT OF A PREDICTIVE CLINICAL RULE (FINDER)

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Background and importance Fall incidents are common among nursing home patients. Different tools have been developed in the prevention of fall incidents but with unsatisfactory results.

Aim and objectives To develop (part I) and validate (part II) a clinical rule (CR) that can predict a fall risk in nursing home patients.

Material and methods The study was conducted in two parts. In part I, the variables which could lead to an increased risk of falls were determined and implemented in the predictive clinical rule. Subsequently, data from a retrospective cohort study were used to validate the developed clinical rule.

Multiple linear regression analysis was conducted to identify the fall risk variables in part I. With these, a predictive fall risk algorithm was developed where the overall prediction quality was assessed using the area under the receiver operating characteristic curve (AUROC), and a cut-off value was determined for the predicted risk ensuring a sensitivity ≥ 0.85 . This prediction model and cut-off value were externally validated in part II.

Results A total of 1668 (824 in part I, 844 in part II) nursing home patients were included in the study. Eleven fall risk variables were identified in part I. The externally validated AUROC of the prediction model, obtained in part II, was 0.603 (95% CI 0.565–0.641) with a sensitivity of 83.41% (95% CI 79.44–86.76%) and a specificity of 27.25% (95% CI 23.11–31.81%).

Conclusion and relevance Medication data and patient characteristics were not sufficient to develop a successful clinical rule with a high sensitivity and specificity to predict the risk of falls.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

4CPS-190 EVALUATION OF A NEW CLINICAL PHARMACY SERVICE WITHIN A NEWLY LAUNCHED SURGICAL ADMISSION PROCESS

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Background and importance Clinical pharmacy services (CPS) targeting the admission of surgical patients have been shown to provide significant benefit for patient safety and care.

Aim and objectives To evaluate a CPS within a newly launched integrated admission process for elective surgery patients: (1) by defining the number and type of identified drug related problems (DRPs) and acceptance rate of pharmacists' suggestions for medication optimisation; and (2) by assessing the perception of the service and identifying barriers and optimisation potential.

Material and methods This was a retrospective descriptive analysis of number and type of identified DRPs, suggested interventions and their acceptance rate based on a validated classification system.¹ We also determined the health professions' perceptions towards the new service, measured using a piloted self-administered quantitative questionnaire.

The setting was a 450 bed teaching hospital, with an on-site service implemented within a central integrated admission process for elective patients across four surgical wards. All patients receiving the CPS in the data collection period (April–December 2018) were included. Questionnaires addressed medical and nursing staff on covered surgical wards (4 week data collection period).

Results Pharmacists reviewed 1877 patient files (6214 drugs) and identified 2003 DRPs, on average 1.07 DRP/patient. The most common DRPs were drug interactions (31%), drug without indication (20%), need for monitoring (14%) and untreated indication (11%).

The most common recommended interventions were drug monitoring (30%), starting a drug (13%) and stopping a drug (13%), and advisory information was provided (17%). Overall, 22% of interventions were implemented. Identified barriers were lack of awareness of the pharmacists' e-consults, limited time resources and the surgical setting.

The questionnaire confirmed the benefits, indicating patient safety, medicine optimisation and reduced workload for medical staff. The CPS was rated as 'good'.

Conclusion and relevance The high prevalence of identified DRPs reflected the contribution of the CPS towards improved patient safety and care. The questionnaire highlighted the value and acceptance of the CPS by other health professions and identified barriers to further adaption. The acceptance rate can be perceived as successful considering the limitations of the short on-site stay of surgical patients and the recent implementation of the CPS in April 2018. Hence the data showed clear benefits. The role of the clinical pharmacist within the central admission process should be further established to exploit further potential for CPS in this field.