Results: A total of 2262 patients (62.1 [20.2] years (range, 17–102), 1172 female) were evaluated in the study. Of these, 426 (18.8%) took psychotropic drugs at home. Comparing patients taking psychotropic drugs with patients not taking these drugs, they were significantly older (72.7 vs 59.7 years), took significantly more drugs at home (8.1 vs 3.6), and stayed significantly longer at the hospital (7.4 vs 5.3 days) (all, $P < 0.0001$). In 134 (31.5%) patients taking psychotropic drugs, we identified 162 ADE (106 adverse drug reactions including QTc-prolongation, 56 associated with at least 1 medication error) as well as 98 medication errors without or with unknown clinical consequences. In 80 patients, 1 or more ADE related to psychotropic drugs was a major contributing factor to hospitalization. Most frequently, patients suffered from the following symptoms: syncope (n = 33), somnolence (n = 12), seizures (n = 10), and anticholinergic effects (n = 8). In 49 (59.8%) of the 82 ADE associated with hospitalization, a drug–drug interaction was involved. At least 1 medication error (eg, ignored contraindication or missing indication) was involved in 31 (37.8%) of the ADE associated with hospitalization, which were, therefore, judged to be preventable. Based on the data available for 72 (87.8%) of the patients hospitalized because of ADE, the average treatment costs of ADE-related to psychotropic drugs was €2556 (2148).
Conclusion: Nearly one third of all patients taking psychotropic drugs suffered from a psychotropic drug-related ADE and nearly one fifth were hospitalized in relation to the ADE. That is, ADE due to psychotropic drugs are common, costly, and often preventable. Strategies have to be found to ensure the safe use of psychotropic drugs, especially for the elderly people with polypharmacy.
Disclosure of Interest: None declared.

PP025—IMPROVING HY'S LAW DEFINITION TO BETTER PREDICT THE RISK OF DEVELOPING ACUTE LIVER FAILURE IN DRUG-INDUCED LIVER INJURY (DILI)

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Introduction: Prediction of serious DILI at early stages of drug development is a major concern. A broad "Hy's Law" definition as ALT >3 × ULN and total bilirubin (TBL) >2 × ULN has been used to predict a worst DILI outcome. We aimed to examine the best way to define Hy's law by analyzing whether the R value provides a better way of identifying hepatocellular (HC) versus cholestatic (Chol) contribution to injury at different time points, and whether an alkaline phosphatase (ALP) value above 2-fold indicates Chol predominance and low risk of acute liver failure/liver transplantation (ALF/OLT).
Patients (or Materials) and Methods: The study cohort encompasses all patients with idiosyncratic DILI submitted to the Spanish DILI Registry until 2012. Clinical and biochemical analyses were performed using available information from 805 episodes in 771 patients at 3 different time points: DILI onset, peak of ALT, and peak of TBL.
Results: Thirty-one (4%) patients developed ALF/OLT. Sixty-five percent of the cases were HC (nR ≥5; nR calculated with AST or ALT (which ever being the highest) × ULN/ALP xULN). Of these, 28 cases (5.5%) had ALF/OLT whereas only 2 (0.7%) in the chol/mixed group. Risk factors significantly associated to DILI-induced ALF/OLT were HC injury, female sex, high AST/ALT ratio, and TBL. To ascertain the best criteria for predicting ALT/OLT cases, we compared all cases that fulfilled "Hy's Law" definition according to ALT >3 × ULN, R ≥5 (ALT × ULN/ALP x ULN) or nR ≥5 and TBL >2 × ULN at various time points. nR criteria showed a better balance between sensitivity and specificity, mainly at onset as type of injury evolves into Chol damage. Of 282 who fulfilled these criteria, 27 had ALF/OLT at onset, 25 of 280 at ALT peak, and 18 of 266 at TBL peak. The sensitivity ranged from 72% to 90% and specificity ranged from 62% to 65%. Incidences of ALP ≥2 x ULN in patients who did or did not go on to develop ALF/OLT were similar and rarely ≥4 × ULN.
Conclusion: DILI patients with HC injury (nR ≥5) show a higher risk of ALF/OLT than Chol/Mix damage, with highest predictive value at DILI onset. Risk factors for ALF/OLT are HC injury, female sex, high AST/ALT ratio, and TBL. The definition of Hy´s law with nR at the first blood test available after presentation shows the major predictive value. Therefore, delayed presentation can complicate assessment of ALF risk. ALP levels >2 × ULN do not exclude "true" Hy´s law cases and do not predict a lower risk of ALF/OLT.
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PP026—MEDIGENIA: INNOVATIVE CLOUD BASED SOLUTION FOR PHARMACOVIGILANCE

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Introduction: Adverse drug reactions (ADR) are the fourth cause of death in Western Countries: people receive multiple medications, and resulting drug response may differ significantly from expected outcomes. Medigenia is a free health service that prevents ADR using the social security number (SSN).
Patients (or Materials) and Methods: Medigenia is a cloud-based smart city that collects patient' s drug recruitment information from all the sources of exposure (pharmacy, general physician (GP), hospital). The patient, freely registered to the service, is related through her/his SSN with the list of drugs administered.The element that connects all health actors is a software solution that permits the creation of a unique electronic space where patient profiles are stored and updated. Medigenia supports GP in his decisions, providing him with an online pharmacologic profile of the patients, information about prescribed drugs/over the counter (OTC)/herbs, detailing dosage, number of packages and pills per package, prescription/purchase date, drug half-life, drug–drug interactions (DDIs), therapeutic index, and prescribing doctor. System also provides important information about patient's global health status, inspecting comorbidity (Charlson age-adjusted Comorbidity Index), allergy, organ failure,and glucose6 **phosphate** dehydrogenase deficit. Every complete profile permits to define, for each patient, a priori risk, expressed in percentage, which represents the probability of heading for ADR after taking a new drug. Range percentage identifies the risk among 3 cutoffs: low (from 25% to 50%), moderate (from 50.1% to 75%) and high (>75.1%). Medigenia integrates a real-time alerting system that is automatically activated when pharmacologic risk, strictly related to a priori risk of the patient, overcomes those cutoffs: overtaken them, the doctor received a warning by e-mail for a timely therapy update.

Results: The pharmacovigilance program involved 1 general hospital (Ass.2 'Isontina', Gorizia-Italy), 12 pharmacies, and 24 GPs. From March 2012 to March 2013, Medigenia enrolled 2074 patients (52.4% women; mean age, 69 [8]).The system totally administered 62,499 drugs (68.2% prescriptions, 28.4% OTC, and 3.4% herbs), and 3028 were the DDIs identified among them. GPs received 2738 alerts for ADR risk (48% moderate risk, 23.2% high risk): treatment was changed 871 times (31.8%).The most frequent alert among high risk connected with hemorrhage (87.6%), involving primarily acetyl-salicylic acid and warfarin. Moderate risk concerned mainly neurologic sequels (38.2%) and involved in particular antineoplastic agents and phenytoin.
Conclusion: People taking drugs are not always aware of the health risk they are going toward after a multidrug therapy or simply taking a medicine without asking GP, a trend that is increasing in the last years. Medigenia prevents ADR and their health sequels using a cloud-based approach for pharmacovigilance.
Disclosure of Interest: None declared.

PP027—DRUG-INDUCED LIVER INJURY DETECTED THROUGH A PHARMACOVIGILANCE PROGRAM BASED IN LABORATORY SIGNALS

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Introduction: Drug-induced liver injury (DILI) is the most frequent reason for withdrawal of approved drugs from the market and accounts for 7% to 15% of the cases of acute liver failure in Europe and the United States. The risk of developing hepatotoxicity involves a complex interplay between the chemical properties of the drug, environment factors, age, sex, underlying diseases, and genetic factors.
Patients (or Materials) and Methods: *OBJECTIVES*: To determinate the incidence of DILI detected through a pharmacovigilance program from laboratory signals in hospitalized patients in La Paz University Hospital from July 2007 to December 2010. Secondary objectives: (1) characterize patients with DILI; (2) determinate suspected drugs of DILI according to therapeutic group; and (3) classification of cases according to type of lesion.
Methods: All serum alanine transaminase (ALT) and aspartate transaminase (AST) >3 upper limit normality (ULN) or >2 ULN of gamma glutamil transpeptidasa (GGT) or bilirubin, detected at admission to the hospital, including those patients who died in the emergency ward or during hospitalization, were monitored prospectively from July 2007 through December 2010. We evaluated each patient to assess alternative causes or confirm DILI. The incidence was calculated by dividing the number of cases by the number of hospitalizations in that period.
Results: We detected 2490 cases of liver enzyme disorders in the study period, with an incidence of 146 cases per 10,000 inpatients (Poisson 95% CI, 123.3–171.1). Of these, 198 cases (7.95%) were secondary to drugs, reporting an incidence of 11.6 cases of DILI per 10,000 inpatients (Poisson 95% CI, 6.2–19.7). The median of age was 47.6 (24.4) years, and 49.6% were female. Most of the DILI (64.6%) occurred during hospitalization and the rest were outpatients. The hospitalization wards with more cases of DILI were Hematology and Internal Medicine (15.7% each one). The main therapeutic groups of suspected drugs of DILI in our study according to the ATC classification system were: J. Antiinfectives for systemic use (34.1%), L. Antineoplastic and immunomodulating agents (20.1%) and N. Nervous system (18.6%). The classification according to the type of lesion: 52.5% was cholestatic, 32.3% had hepatocellular injury, and 15.2% had mix pattern. The median (range) of ALT level was 656.4 (31–14,397 UI/L); AST, 619.8 (12–17,671 UI/L); GGT, 420.6 (14–5708 UI/L); and BT, 2.11 (0.1–38.2 mg/dL).
Conclusion: (1) One case of 11 inpatients with liver enzyme disorders is drug-induced. (2) Most of DILI occur during hospitalization. (3) The main drugs associated with DILI are antibiotics included in group J of the ATC classification system.
Disclosure of Interest: None declared.

PP028—INFLUENCE OF PHARMACOLOGICAL EDUCATION ON AWARENESS OF THE RISK OF ADVERSE DRUG REACTIONS

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Introduction: The assessment of the adverse drug reactions risk is an important factor in drug safety monitoring system. The aim of our study was to assess knowledge and attitudes of pharmacologically educated and pharmacologically noneducated students from the University of Montenegro regarding drug safety risk.
Patients (or Materials) and Methods: In this cross-sectional study, a self-completion questionnaire was delivered to 63 pharmacologically educated students (medical students who attended Pharmacology course and passed exams within it), 50 pharmacologically noneducated students (medical students who attended Pharmacology course but did not pass exams within it), and 50 students from other nonmedical faculties at the University of Montenegro.
Results: As expected, pharmacologically educated students are considered to be better informed about ADRs than other participants ($P < 0.01$). Prescription drugs were ranked as less dangerous than self-medication by all participants. Anticoagulants were considered the most dangerous drugs by pharmacologically educated students (median, 7.5; scale, 1–10; interquartile range, 3.75–8), and antidepressants, anxiolytics, and hypnotics by pharmacologically noneducated students (median, 8, all). Information about drug safety significantly influenced the choice of therapy by both groups of students questioned (median, 8–10, all).
Conclusion: On the basis of the aforementioned results, it can be concluded that when risk of adverse drug reactions is in question, pharmacologically educated students are much better informed than pharmacologically noneducated medical students and students from nonmedical faculties. Additional educational efforts are necessary to build awareness among general population of adverse drug reactions.
Disclosure of Interest: None declared.

PP029—PHARMACOVIGILANCE IN CRIMEA, UKRAINE IN 2012, ANNUAL REPORT

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Introduction: The knowledge of frequency, character, severity, and other peculiarities of adverse reactions (ADR) as well as of dynamic