PP 1 | De klinisch apotheker als lid van de multidisciplinaire virtuele diabetestoer ter optimalisatie van het glycemiebeleid van gehospitaliseerde patiënten

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ACHTERGROND EN DOELSTELLINGEN

Optimale glycemieregeling in de acute fase van een hospitalisatie met bijkomende problematieken is complex en vereist vaak bijsturing in de medicamenteuze therapie. Door het bundelen van de expertise van een endocrinoloog, een diabetesverpleegkundige en een klinische apotheker wordt de behandelend arts ondersteund bij de behandeling en glycemieregeling van een diabetespatiënt.

De multidisciplinaire virtuele diabetestoer heeft als doel om ontregelde diabetespatiënten sneller op te sporen en bij te sturen, pre- en perioperatief advies te geven aan de hand van een intern glycemieprotocol en de therapie te optimaliseren o.b.v. evidence-based richtlijnen.

METHODE

Een actief consult kan aangevraagd worden door een arts of een verpleegkundige voor elke gehospitaliseerde diabetespatiënt met hyper-, hypo- of normoglycemie. De klinisch apotheker bereidt op systematische wijze de consulten voor en bespreekt deze met de endocrinoloog. Onder de vorm van een virtueel diabetes consult wordt vervolgens een advies op maat genoteerd in het dossier van de patiënt, bestaande uit een medisch en een farmaceutisch advies.

RESULTATEN

Sinds de opstart van de multidisciplinaire virtuele diabetestoer is het aantal consulten uitgevoerd door de dienst endocrinologie toegenomen. Het merendeel van de consulten wordt aangevraagd door volgende disciplines: cardiologie, cardiale en vasculaire heelkunde, geriatrie, neurologie, abdominale heelkunde en psychiatrie. Verder wordt ook gesteld dat de medische en farmaceutische adviezen een relatief hoge acceptatiegraad kennen en dat de patiënten via de diabetesconventie in nauwere opvolging komen.

DISCUSSIE EN CONCLUSIE

Bovenstaande data bevatten ook consulten voor andere endocrinologische problematieken dan diabetes. Gezien er voor deze andere consulten geen specifieke acties ondernomen zijn, wordt geen bias verwacht op de resultaten.

In de toekomst zullen disciplines zoals orthopedie, gastro-enterologie, pneumologie, nefrologie, neurochirurgie, gynaecologie en urologie gesensibiliseerd moeten worden voor de diabetestoer. Ook is verder onderzoek noodzakelijk om aan te tonen dat de multidisciplinaire samenwerking daadwerkelijk leidt tot een betere glycemieregeling.

PP 2 | Exploring pharmacogenomics: re-using available mendeliome data and determining patient perspectives

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BACKGROUND & AIM

The Centre for Medical Genetics (CMG) of UZ Brussel has been performing next generation sequencing of mendeliomes for diagnostic purposes since 2016. We took the opportunity to explore the possibility of reporting pharmacogenomic information as 'secondary findings' and to investigate the interest in and required features of future pharmacogenomic projects.

METHODS

Available genomic data reported between 01/03/2016 and 30/06/2020 were retrospectively analyzed. We selected 14 pharmacogenes comprising 626 loci for review. A basic tool was developed to enable haplotype assignment and, where possible, phasing was done based on pedigree information. Resulting phenotypes were further compared with medication histories, abstracted from electronic medical records. Additionally, a 24-question survey was conducted between 21/12/2020 and 09/05/2021 among CMG patients exploring interest and attitudes about sharing and using pharmacogenomic tests.

RESULTS

Data could be used for 536 patients, revealing that at least 76.9% had 1 ≥ actionable phenotype and 60 gene drug interactions (GDIs) with varying relevance were found. We were able to determine 61.8% (4634/7504) of the genotypes. CYP2C9 had the most actionable phenotypes (174/536) and GDIs (42/60). Intra-/intergenic and 5'/3' UTR regions and structural variants could not be interrogated using the current platform, which was the main cause for indeterminate genotypes. The survey was completed by 60 individuals showing considerable interest in reimbursed pharmacogenetic tests (56/60) and obtaining additional information about their results through a website (47/57) or healthcare provider (52/60). Respondents felt comfortable sharing data through an electronic platform (48/60) or a pharmacogenomic passport (53/60) with all or a selection of healthcare providers (54/60), mainly physicians (58/60). Nevertheless, concerns remained regarding privacy (35/60) and misuse of data (25/60).

CONCLUSION

Reusing genomic data has great potential. This project may provide an impetus for future pharmacogenomic initiatives in Belgium. More research and debate among patients, healthcare providers and other actors is necessary to meet best practices.

PP 3 | Accuracy of renal function estimating equations compared to iohexol clearance in critically ill children.

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BACKGROUND AND AIMS

Accurate assessment of renal function is crucial for drug dosing in critically ill children. The aims of this study were (1) to evaluate the performance of glomerular filtration rate estimating formulas (eGFR) based on serum creatinine (Screat), cystatin C (CystC) and betatrace protein (BTP), in comparison with the gold standard measured plasma iohexol clearance (CLiohex) in critically ill children, (2) to evaluate the feasibility and safety of measuring CLiohex in this vulnerable patient population.

METHODS

Prospective, interventional study. After bolus injection of an age-dependent iohexol dose, 6 blood samples were taken over a 360-minutes interval. Measured CLiohex was calculated using noncompartmental PK analysis (PK Solver, Excel®) and compared with 10 Screat-based, 10 CysC-based, 2 BTP-based eGFR formulas and 3 eGFR formulas combining these biomarkers. Correlation was assessed using Passing-Bablok regression analysis. Agreement between eGFR and CLiohex was assessed by means of Bland-Altman plots. Accuracy was determined as the percentage of GFR estimates within ± 30% of measured CLiohex. P30 accuracy >75% is considered sufficient, ideally, P30 should be >90%.

RESULTS

Median CLiohex was 121ml/min/1.73m2 (range: 43-221 ml/min/1.73m2) (n = 40 patients). Only 5 eGFR formulas showed an overall P30>75%. None of the eGFR formulas reached a P30>90% for the entire study population. The most commonly used Schwartz eGFR formula tended to underestimate the true GFR. Formulas combining more than one biomarker outperformed formulas using only 1 biomarker. Combinations of 2 formulas showed a better performance with P30> 75% for half of the relevant combinations. No adverse events related to iohexol administration were observed.

DISCUSSION AND CONCLUSION

eGFR formulas show low to moderate accuracy compared with GFR measured by CLiohex. Combining eGFR formulas yields a higher accuracy to estimate GFR. CLiohex could offer a safe alternative to accurately quantify GFR in critically ill children.

PP 4 | Clinical pharmacist in the Emergency Department during nighttime hours

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BACKGROUND AND AIM

The Emergency Department (ED) is a 24/7 high-risk setting for medication discrepancies (MDs) and drug-related problems (DRPs). The objective was to identify the importance of a 24/7 presence of a clinical pharmacist (CP) in the ED, performing structured medication reconciliation (MR) and review, by determining the number/type of MDs and DRPs, simulated at nighttime hours vs. <24h after ED admission.

METHODS

We conducted an interventional study between 01/2021 and 02/2021, including patients ≥ 60 years with ≥ 4 chronic medications admitted in the ED of UZ Brussels (5 p.m.-7 a.m., from Sunday night to Friday morning) with a signed informed consent. MR and review were simulated as if these were performed at nighttime hours and were completed <24h after ED admission by contacting the community pharmacist and general practitioner.

RESULTS

During 30 days, 206 patients were included. A statistically significant difference in median number of chronic medications was discovered between MR by the CP and patient file, both at nighttime hours (9.0 [IQR 7.0-12.0] vs. 8.0 [IQR 6.0-11.0]; P<0.005) and <24h after ED admission (10.0 [IQR 7.0-12.0] vs. 8.0 [IQR 6.0-11.0]; P<0.005). A median of 3 MDs in chronic therapy was found (IQR 1.0-5.0 vs. IQR 2.0-5.0), mostly drug omissions (51.3% vs. 55.9%). Inappropriate medications in chronic therapy (30.8% vs. 36.3%) and untreated indications in prescribed medication (26.8% vs. 33.2%) occurred as most frequent DRPs. Significant severe DRPs were common in chronic therapy (58.6% vs. 59.6%) and prescribed medication (72.7% vs. 69.1%). The ward physician accepted and implemented 65.8% of the PIs.

CONCLUSION

Presence of a 24/7 CP in the ED could have an added value in patient care and medication safety because of interception of MDs and DRPs after performing MR and reviewing prescribed medications both during nighttime hours as <24h after ED admission.

PP 5 | Use of fall-risk-increasing drugs in older patients admitted to the emergency department- a retrospective study with focus on central nervous system drugs

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BACKGROUND AND AIM

Falls and fall-related injuries are an increasing problem, primarily in older people. Certain drug classes are associated with an increased risk of falls and are called fall-risk-increasing drugs (FRIDs).

We aimed to evaluate the use of FRIDs, sedative and anticholinergic drugs and drugs inducing orthostatic hypotension (OH); to determine the incidence of falls; to analyse potentially inappropriate prescribing (PIP) with focus on drugs acting on the central nervous system (CNS).

METHODS

Drug use and fall history was retrospectively analysed for patients ≥ 65 years, admitted to the department of emergency medicine of Ghent University Hospital between 10/2020 and 01/2021, in whom a medication reconciliation was performed by a hospital pharmacist.

Number and type of prescribed FRIDs, sedative and anticholinergic drugs, and OH inducing drugs was analysed, as well as Sedative Load Model (SLM) and Anticholinergic Impregnation Scale (AIS) score, incidence of falls, and CNS PIP using the STOP-NL criteria.

RESULTS

For 200 patients using 1791 drugs, 596 FRIDs were identified (median 3, IQR 1-4). A total of 32.9% were CNS drugs, with antidepressants (31,1%), opioids (24%) and hypnosedatives/anxiolytics (30,6%) being the most prescribed FRIDs. Fifty patients (25%) experienced a fall in the recent or past history. There was a positive association between the number of FRIDs and the number of drugs, comorbidities, sedative and anticholinergic drugs as well as the number of OH inducing drugs, and the SLM and AIS score ($p < 0.001$). Furthermore, age ($p = 0.014$), sex and rate of PIP ($p < 0.001$) were significantly different between patients with and without falls. Almost one-fourth of patients was treated with at least one CNS PIP item.

DISCUSSION AND CONCLUSION

FRID use was high in older patients. Fallers had a higher number of CNS PIP. The results confirm the need for multidisciplinary medication review, with focus on attempts for deprescribing of CNS FRIDs.

PP 6 | A guideline for therapeutic drug monitoring of linezolid in critically ill patients

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BACKGROUND AND AIM

In up to 40% of the critically ill patients, exposure to linezolid (LZD) (600mg q12h) is inadequate, with both over- and underexposure described, potentially leading to toxicity and therapeutic failure respectively. Therefore, recent guidance recommends to perform therapeutic drug monitoring (TDM) of LZD.[1,2] The purpose of this work was to implement a new hospital TDM guideline of LZD for the intensive care unit (ICU) at Ghent University Hospital (GUH).

METHODS

A hospital guideline was developed based on a literature search; in cooperation with intensive care specialists, hospital pharmacists and clinical biologists and implemented after approval of the Antibiotic Policy Group at GUH (July '21).

RESULTS

LZD exposure is measured via trough concentrations after a minimum of 24 hours of treatment (earliest expected steady state). The therapeutic range for the LZD trough concentration is set at 2 – 7mg/L. Monitoring is recommended in the following settings to avoid sub- or supratherapeutic concentrations: patient related diagnoses (augmented renal clearance, renal or hepatic impairment, low baseline platelet count…); treatment- or procedure related characteristics (sepsis/septic shock, expected treatment duration > 14 days, …); pathogen related characteristics (reduced susceptibility) and drug related considerations (interactions).

Recommended dosage adjustments are summarized below:

1. trough concentration < 2mg/L: change dosing to 450mg q8h;
2. trough concentration > 7mg/L: decrease dose to 450mg q12h or 300mg q12h;
3. in case of persistently low/high trough levels or toxicity: alternative dosing regimen or change to alternative antimicrobial after multidisciplinary consultation.

Since implementation of the guideline 13 patients were monitored in our hospital: median measured trough level was

3.9mg/L (IQR 2.5-9.1mg/L).

DISCUSSION AND CONCLUSION

The implementation of this guideline offers an opportunity to harmonize optimal use of TDM of LZD. A protocol for evaluation of the protocol is submitted to the ethics committee (Oct '21) to subsequently validate practice performance.

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PP 7 | Documentatie van antimicrobiële therapieën in het medisch dossier: nog een lange weg te gaan?

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ACHTERGROND EN DOELSTELLING

Eén van de basiselementen voor een rationeel antimicrobieel beleid is het documenteren van de indicatie en stop/reviewdatum van de antimicrobiële therapie in het elektronisch patiëntendossier (EPD)[1]. De BAPCOC stelde voorop dat tegen 2019 de indicatie voor antibioticatherapie in minstens 90% van de gevallen vermeld moet staan in het medisch dossier[2]. Daarnaast is het tijdig toedienen van antimicrobiële middelen (AM) geassocieerd met een reductie in morbiditeit, mortaliteit en hospitalisatieduur[3]. In dit onderzoek werd nagegaan in hoeverre een aantal basisdoelstellingen voor een rationeel antimicrobieel beleid in het ziekenhuis behaald werden.

METHODEN

Punt prevalentiestudie (PPS) (november 2021):

- Patiëntkarakteristieken en gegevens over het AM (ATC-code J01, J02, J04 en J05) werden per verpleegeenheid (VE) verzameld.
- Er werd nagegaan of de indicatie en stop/reviewdatum teruggevonden werd in het elektronisch medicatievoorschrift (EMV) of elektronisch patiëntendossier (EPD).
- De discrepantie tussen het voorgeschreven 1ste toedieningstijdstip (T0) en het effectieve tijdstip van 1ste toediening (T1) werd bepaald.

RESULTATEN

Er werden 372 patiënten geïncludeerd op 19 VE's. De AM prevalentie was 34% (N = 168). De indicatie en stop/reviewdatum werden voor respectievelijk 76% en 23% teruggevonden in het EPD of EMV. Het mediane verschil tussen T1 en T0 was 16 minuten (IQR=0-71). Bij 59% van de 1ste toedieningen werd het AM binnen 30 minuten na het voorgeschreven toedieningstijdstip toegediend.

DISCUSSIE EN CONCLUSIES

De prevalentie van AM was beduidend hoger dan de prevalentie gerapporteerd in de gepoolde Global-ECDC-PPS studie (34% t.o.v. 27.1%) en blijft hoger na exclusie van VE's met een groot aantal COVID-19 positieve opnames (31% t.o.v. 27,1%)[4].

Bij 76% van de antimicrobiële therapieën kon de indicatie teruggevonden worden in het EMV of EPD. Hoewel deze niet op een eenduidige plaats genoteerd werd en vaak afgeleid werd uit de omschrijving van een therapieschema in het EMV, komt dit overeen met de data uit de gepoolde Global-ECDC-PPS. De doelstelling van BAPCOC om een traceerbaarheid van indicatie te bereiken van 90% wordt echter niet gehaald. Daarnaast was de stop/review datum slechts in 23% van de gevallen genoteerd, wat beduidend lager is dan de gerapporteerde 40,8% uit de gepoolde Global-ECDC-PPS[2,4].

59% van de voorgeschreven AM werden binnen een halfuur na het voorgeschreven eerste toedieningstijdstip toegediend. Dit is een beter resultaat dan de 48,7%, gerapporteerd door Van Wilder et al[5]. Er is echter een grote variabiliteit in discrepantie zichtbaar binnen en tussen de verschillende VE's. Mogelijk speelt de beschikbaarheid van het AM op de VE hier een belangrijke rol (reeds aanwezig in dienstvoorraad of specifieke levering door ziekenhuisapotheek nodig).

Er kan geconcludeerd worden dat een aantal basiselementen voor een rationeel antimicrobieel beleid in het ziekenhuis dienen geoptimaliseerd te worden. Er is een belangrijke rol weggelegd voor het antibioticabeleidscomité in onder meer een doorgedreven sensibilisatie van de voorschrijvers via de beleidsmakers van het ziekenhuis, pleiten voor een centraal AM-documentatieluik in het EPD, uitvoeren van audits en feedback geven per discipline[1].

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PP 8 | Introductie van pre-emptieve geno- en fenotypering ter reductie van toxiciteit op 5-fluorouracil en capecitabine: Retro- en prospectief onderzoek

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ACHTERGROND EN DOELSTELLING

Volgens de literatuur ervaart ongeveer 22% van de patiënten minstens graad drie toxiciteit tijdens een behandeling met 5-fluorouracil of capecitabine.[1] Deze toxiciteit kan leiden tot het stopzetten of onderbreken van de therapie, een ziekenhuisopname en in 1% van de gevallen tot het overlijden van de patiënt. De Franse richtlijn La Haute Autorité de Santé[2] en verschillende studies[1,2-4] raden aan om pre-emptief de dosis van deze geneesmiddelen aan te passen bij de start van de behandeling op basis van de resultaten van zowel het geno- als fenotypisch onderzoek. Er werd daarom een studie opgestart met als doel om de incidentie van de DPYD polymorfismen binnen het Jessa Ziekenhuis te bepalen, om pre-emptieve geno- en fenotypering te implementeren en om na te gaan of deze implementatie een reductie in ernstige toxiciteit oplevert.

METHODEN

Er werd op 01/01/2020 een monocentrische, gedeeltelijk retrospectieve en gedeeltelijk prospectieve, niet-commerciële en interventionele studie opgestart op de diensten gastro-enterologie en oncologie van het Jessa Ziekenhuis.

Resultaten: Een tijdsmeting gaf aan dat de gemiddelde doorlooptijd voor genotypering via NGS in het Jessa Ziekenhuis, feno- en genotypering via UCL respectievelijk zeven, 13 en 18 dagen bedroeg. De incidentie van de DPYD polymorfismen was 5%. 66% van de patiënten (n=3) zonder dosisreductie met een heterozygoot DPYD polymorfisme deed ernstige toxiciteit. De patiënten (n=5) met een heterozygoot DPYD polymorfisme met dosisaanpassing o.b.v. de resultaten van geno- en fenotypering deden geen ernstige toxiciteit.

DISCUSSIE EN CONCLUSIES

De resultaten van de tijdsmeting suggereren dat genotypering via UCL momenteel niet haalbaar is gezien de wachttijd gemiddeld 18 dagen bedraagt. Er werd daarom in het Jessa Ziekenhuis besloten om, naast fenotypering via UCL, verder te werken met genotypering in huis via NGS. Uit de eerste resultaten, namelijk 0% ernstige toxiciteit na dosisaanpassing versus 33,77% in de literatuur zonder dosisreductie, zou men kunnen vermoeden dat pre-emptieve geno- en fenotypering een reductie in ernstige toxiciteit oplevert. De studie loopt momenteel nog verder.

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PP 9 | Role of pharmacists during COVID-19 pandemic in a Belgian general hospital

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BACKGROUND & AIM

The COVID-19 pandemic caused limited availability of critical drugs and rapidly evolving treatment guidelines. Patient safety must be guaranteed at all times. However, the pandemic took the follow-up of drug shortages to an unprecedented level, increasing the risk of errors. Fulfilling this task was therefore difficult and new strategies needed to be implemented.

METHODS

Microsoft Power BI©, a tool to analyze data, was used to monitor the specific drug needs on the COVID-wards. Medication alerts were sent regularly by mail to ensure that all health care providers were informed about (temporary) changes in order to reduce the risk of medication errors.

Additionally, pharmacists collected evidence-based drug information concerning indications, dosing, possible side effects, drug-drug interactions and other precautions based on (inter)national guidelines. This information was used to develop a back-office validation tool that supported pharmacists to conduct medication reviews in a uniform manner.

RESULTS

In our hospital one pharmacist was dedicated fulltime to the COVID-19 drug management. Another pharmacist was committed to ensure the safe and efficacious use of drugs by conducting medication reviews and giving relevant drug and laboratory recommendations.

Higher drug consumption was more rapidly detected and more specific actions could be executed. The available stocks in the hospital were also registered in a database and this information was updated and reported daily to the medical staff. In this way treatment guidelines could be proactively adjusted if necessary.

Daily updated reports from Microsoft Power BI © were used to analyze relevant interactions and contra-indications. Pharmaceutical recommendations were promptly documented and reported in the medical record of the patient and the physician was contacted immediately if urgent.

DISCUSSION & CONCLUSION

Due to the multi-disciplinary approach and guided medication use, therapy continuation could be guaranteed for all patients. Our validation tool resulted in the early detection and interception of medication errors ensuring patient safety.

PP 10 | Anticoagulation management within a hospital setting: identifying risk factors affecting patient safety

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BACKGROUND & AIM

Anticoagulants are used hospital-wide throughout the patient trajectory involving many healthcare providers. Despite the many precautions and vast experience with these drugs, errors often occur in daily practice. The aim is to investigate which factors currently negatively affect patient safety in our hospital.

METHODS

We performed a retrospective data analysis based on incident reports and registered usage (2018-2019) as well on pharmaceutical recommendations (3-months period in 2019) related to anticoagulants and anti-aggregants. The data was obtained from the hospital information systems. Additionally, we surveyed doctors and trainees, via Google Forms, inquiring into their experiences (participation was voluntary and anonymous). All data was processed via Microsoft Excel © and discussed within the anticoagulation stewardship committee.

RESULTS

Retrospective data analysis: 172 incidents and 132 pharmaceutical recommendations were included. Most incidents were related to low molecular-weight heparin (LMWH; 45%) and took place in a surgery ward (37%). In 35% of the cases, the incident could be linked to a transfer to another ward or operating room. Problems in terms of administration (37%), communication (30%) and prescription (24%) turned out to be the main risk factors.

Survey: 74 doctors, representing 21 disciplines, answered the questionnaire. Non-prescribing of therapy was considered to be the main problem (49%), followed by incorrect dosing (42%). A lack of communication turns out to be a tricky issue: only 23% agree that the patient receives sufficient information on paper. 51% think that the policy is followed consistently hospital-wide. Only 28% think that new employees are sufficiently informed about the hospital-wide agreements. Additional monitoring by a clinical pharmacist would be considered an added value by 88% of the doctors.

DISCUSSION & CONCLUSION

A number of risk factors were identified. It is our opinion that a multidisciplinary, centralized approach with a focus on monitoring is imperative. The use of a clinical pharmacist could play an important role.