

ABSTRACTS POSTER PRESENTATIONS AMGEN AWARD

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This publication contains the abstracts of the master's thesis submitted to obtain the degree of master in hospital pharmacy and submitted for the VZA award. The best master's thesis will be awarded the 'VZA award' at the 'Hospital Pharmacists' Day' held by the Flemish Association of Hospital Pharmacists from Dilbeek (Belgium) on February 4, 2025.

This publication contains nine out of 17 abstracts for which the BJHP received approval for publication in the BJHP by the submitting author.

PP | 1 AUDITING THE PROCESS OF MEDICATION VERIFICATION AT HOSPITAL ADMISSION: THE EXPERIENCE IN THE ANDREAZ NETWORK

Decoutere Liesbeth¹, Dewandre Luce¹, Vandael Eline¹, Renkens Karen², Schrooten Nele³, Vandeweyer Anaïs⁴, Jochen Bergs⁵, De Troy Elke¹

¹ *Jessa Ziekenhuis, Hasselt*

² *AZ Vesalius, Tongeren*

³ *Sint-Franciscus Ziekenhuis, Heusden-Zolder*

⁴ *St. Trudo Ziekenhuis, Sint-Truiden*

⁵ *Universiteit Hasselt, Hasselt*

BACKGROUND & AIM

The medication verification (MV) process at patient admission within the Andreaz network hospitals follows a standardized three-step protocol: verification, clarification, and reconciliation. This study aimed to examine whether the professional profile (physician, nurse, or pharmacy assistant) conducting MV affects the process quality.

METHODS

Audits were performed to assess two key performance indicators:

1. The percentage of patients for whom all MV steps were completed (goal: >80%).
2. The percentage of patients with one or more discrepancies identified when a hospital pharmacist, considered the gold standard, repeated MV (goal: <20%). Discrepancies were classified by severity using the NCC MERP index.

RESULTS

Regarding adherence, all MV steps were completed for 83% of patients (n=63) (verification (95%), clarification (100%), and reconciliation (88%)). Observation bias may have influenced these results.

For quality, the MV process was time-intensive (median: 15 minutes/patient, IQR 10-24). When assessing only registered medications, discrepancies were found in 67% of cases (n=107), with omissions being the most common (40%). When only discrepancies of severity "temporary harm" or higher were considered, the discrepancy rate was 48%. Regression analysis showed no significant impact on admission type (planned/emergency), hospital, healthcare professional profile, patient age, or number of home medications on the likelihood of discrepancies. However, the average number of discrepancies was significantly lower ($p < 0.01$) when MV was performed by a pharmacy assistant, though this was not statistically significant for severe discrepancies.

DISCUSSION & CONCLUSION

The study's findings underscore the need for enhanced training in MV. Further research should explore the role of pharmacists, and consider including pharmacists in the control group. Pharmacy assistants may be a cost-effective choice, as they showed lower discrepancy rates and reduced salary costs without compromising quality.

These results led to an increase in the number of FTE's of pharmacy assistants employed for MV in Andreaz (May 2023:10.9, October 2024:13). An e-learning program is implemented to improve quality of MV.

PP | 2 MEDICATION RECONCILIATION AT THE EMERGENCY DEPARTMENT AND CLINICAL INTERNSHIP PHARMACEUTICAL SCIENCES: A PERFECT MATCH?

Walgraeve Karolien¹, Hias Julie^{1,2}, Caubergs Valerie¹, Lammens Astrid¹, Van der Linden Lorenz^{1,2}, De Winter Sabrina¹, Van De Sijpe Greet^{1,2}, Spriet Isabel^{1,2}

¹ *Pharmacy Department, University Hospitals Leuven, Leuven, Belgium*

² *Department of Pharmaceutical and Pharmacological Sciences, KU Leuven, Leuven, Belgium*

BACKGROUND & AIM

Discrepancies in preadmission medication lists are common and can result in preventable harm. Medication reconciliation, a process mandated to reduce preventable medication errors, enables pharmacy students to apply their communication skills and drug-disease knowledge in a clinical setting. This study evaluated the feasibility and impact of integrating medication reconciliation into the clinical internship program for pharmacy students.

METHODS

Eight first-year Master's students in Pharmaceutical Care completed a two-week internship at the emergency department. Over the first two days, the students started targeted training, during which their skills were evaluated by senior hospital pharmacists. From the third day onward, students conducted medication reconciliation using a structured guideline, under close supervision of senior pharmacists. Patient selection was based on 'the MED-REC Predictor', which identifies individuals at increased risk of clinically relevant medication discrepancies*. Discrepancies were documented in the electronic health record and senior staff updated medication lists as needed. Descriptive analysis was used to report on student output, number and relevance of discrepancies and consulted resources. At the end of the internship, students were questioned about their satisfaction with the program.

RESULTS

Over a 4-week period, students performed 101 reconciliations. The medication list was accurate in only 6/101 cases (5.94%). Among the remaining 95 patients, 471 medication discrepancies were identified, 52% of which were considered clinically relevant. A median of two (IQR 2-3) information sources per patient were consulted; general practitioners for 66 and community pharmacists for 64 patients, respectively. Students expressed high satisfaction, highlighting that medication reconciliation taught them important communication and clinical skills.

DISCUSSION & CONCLUSION

Performing medication reconciliation allows Master's pharmacy students to apply their theoretical knowledge into clinical practice while reducing medication discrepancies. Training and supervising the students is mandatory, rendering explicit guidance essential.

In conclusion, medication reconciliation during clinical internships aligns well with both improving patient safety and enhancing students' professional development.

REFERENCES

*Van De Sijpe G et al. A Prediction Model to Identify Clinically Relevant Medication Discrepancies at the Emergency Department (MED-REC Predictor): Development and

PP | 3 LONG-TERM ANTITHROMBOTIC THERAPY PRACTICES IN PATIENTS WITH SHORT BOWEL SYNDROME FOLLOWING ACUTE MESENTERIC ISCHAEMIA: A SURVEY

Deleenheer B^{1,2}, Cuerda C³, Jeppesen P³, Joly F³, Lal S³, Lamprecht G³, Mundi M³, Szczepanek K³, Vanassche T⁴, Van der Linden L¹, Van Gossum A³, Wanten G³, Pironi L³, Vanuytsel T^{2,3}

¹*Hospital Pharmacy Division, University Hospitals Leuven, Leuven, Belgium*

²*Leuven Intestinal Failure and Transplantation Centre (LIFT), Leuven, Belgium*

³*Home Artificial Nutrition-Chronic Intestinal Failure Specialist Interest Group of ESPEN*

⁴*Department of Cardiovascular Diseases, UZ Leuven, Leuven, Belgium*

⁵*Gastroenterology and Hepatology, UZ Leuven, Leuven, Belgium*

BACKGROUND & AIM

Long-term antithrombotic therapy is recommended for short bowel syndrome (SBS) after acute mesenteric ischemia (AMI). However, recommendations on drug selection, dosing, duration and monitoring rely on data from other arterial diseases, overlooking SBS-related drug absorption issues. To understand current practices, this survey aimed to assess long-term antithrombotic therapy practices in AMI.

METHODS

An e-survey was disseminated to HAN-CIF (Home Artificial Nutrition - Chronic Intestinal Failure) database centers of ESPEN (European Society on Clinical nutrition and Metabolism) and coagulation specialists. It included ten cases with varying postsurgical intestinal anatomy, revascularisation and aetiology. Questions focused on drug class choice, administration route, dosing, duration and monitoring of antithrombotic therapy.

RESULTS

For patients with AMI of unknown aetiology, intestinal failure (IF) teams preferred anticoagulants (55.8-65.1%) over antiplatelet therapy (27.9-37.2%), while coagulation specialists favoured antiplatelet therapy (57.1%). IF teams selected antiplatelet therapy more often in patients with type 3 anatomy (largest absorptive capacity). They favoured parenteral agents for patients with end-jejunoostomy or duodenocolic anastomosis (51.2% and 55.8% respectively; lowest absorptive capacity), oral agents for those without IF (69.8%; highest absorptive capacity), and both for patients with a jejunoocolic anastomosis (48.8% oral, 44.2% parenteral; moderate absorptive capacity). Coagulation specialists consistently preferred oral therapy. Coagulation specialists took more into account different comorbidities and guidelines on other peripheral arterial diseases.

Lifelong antiplatelet therapy was preferred by IF teams (71.4-100.0%), while anticoagulants were prescribed temporarily (16.7-59.1%) or lifelong (40.9-83.3%). Standard doses were used for all drug classes, irrespective of anatomy, revascularisation or comorbidities. Monitoring varied: IF teams monitored subcutaneous low molecular weight heparins and non-vitamin K oral anticoagulants (NOACs), whereas coagulation specialists only monitored NOACs.

DISCUSSION & CONCLUSION

We observed significant variation in long-term antithrombotic management in post-AMI SBS patients, with differing approaches between IF and coagulation specialists. A multidisciplinary position statement is necessary to standardise care.

PP | 4 EFFECT OF BEDSIDE SCANNING IN A CLOSED-LOOP SYSTEM ON MEDICATION ADMINISTRATION ERRORS

Keulen Valérie, Decoutere Liesbeth, Thomas Yelle, De Troy Elke

Hospital Pharmacy, Jessa Hospital, Hasselt, Belgium

BACKGROUND & AIM

Bedside scanning (BSS) is a technology to reduce medication administration errors (MAEs). However the evidence regarding the effectiveness of BSS is contradictory, especially if other technologies of a closed-loop medication management system are already in use.

This study assesses the impact of BSS on MAEs within a closed-loop medication management system, where other technologies (e.g. CPOE, ADDs...) are already implemented. The primary endpoint is the difference in prevalence of MAEs due to implementation of BSS. Furthermore, the difference in prevalence of the different types of MAEs was assessed.

METHODS

This before-and-after study was conducted in one surgical and one medical ward of a 981-bed general hospital in Belgium. Data was collected by direct observation of nursing staff administering medication. A MAE was defined as a deviation from the electronic prescription or generally applicable procedures. A logistic regression random effect (LRRE) model and a generalized estimating equation (GEE) model were used to investigate the impact of BSS on MAEs.

RESULTS

A total of 2,531 medication administrations were observed, 1,266 pre-implementation and 1,265 post-implementation. Pre-implementation a total of five administrations to an erroneous patient were observed. This type of administration error was not observed post-implementation. Among the observations where the patient was correct, a total of 178 (4,40%) MAEs occurred pre-implementation and 129 (3,19%) MAEs post-implementation. The LRRE model showed a statistically significant reduction (p-value 0.0035) of MAEs with a correlation of the experience of the nursing staff within the institution. A higher reduction in MAEs was observed among nurses with less years of experience. BSS tends to increase MAEs with nurses with 20 or more years of experience, however this is not statistically significant. The GEE model showed a non-statistically significant reduction of MAEs. There was a reduction in absolute numbers of all types of MAEs, except omission.

DISCUSSION & CONCLUSION

Implementation of BSS reduces the rate of MAEs, even when other closed-loop system technologies are implemented. This study found a correlation between the effectiveness of BSS and years of experience of the nursing staff, emphasizing the critical role of the end-users of this technology. Further research is needed identifying factors affecting the effectiveness of BSS.

PP | 5 TOEDIENING VAN INTRAVENEUZE ANTIBIOTICA: PERIFER OF CENTRAAL

Declercq Peter, Vander Elst Lotte

Ziekenhuisapotheek, UZ Leuven, Leuven

ACHTERGROND & DOELSTELLING

Intraveneuze geneesmiddelen worden in het ziekenhuis vaak toegediend via perifere veneuze katheters (PVK's). Helaas kunnen intraveneuze antibiotica vaatschade of -irritatie veroorzaken, wat leidt tot ongemak, schade en verstoring van de behandeling. Literatuur benadrukt pH en osmolariteit als belangrijke factoren die de irritatie van intraveneuze oplossingen bepalen. Ziekenhuisapothekers worden vaak geraadpleegd over de voorkeurstoedieningsweg van antibiotica, maar een duidelijk overzicht ontbreekt. Het doel van dit project was een tabel op te stellen van hoogrisico-antibiotica die bij voorkeur via een centraal veneuze katheter (CVK) moeten worden toegediend.

METHODEN

Drie criteria werden opgesteld voor de toediening via een CVK: pH < 5 of > 9, osmolariteit > 900 mOsm/l, of een incidentie van flebitis > 5%. Antibiotica uit het formularium van UZ Leuven werden geëvalueerd aan de hand van bijsluiters, literatuur en indien nodig via informatie van fabrikanten. Van zodra aan één van de criteria werd voldaan, werd toediening via een CVK aanbevolen. De lijst werd besproken in een multidisciplinair overleg met artsen, verpleegkundigen en ziekenhuisapothekers.

RESULTATEN

Voor pH en incidentie op flebitis bepaalden de voorkeur voor CVK-toediening; osmolariteit vormde geen probleem. De opgestelde tabel (Tabel 1) werd beschikbaar gemaakt binnen het Plexus netwerk, toegevoegd aan de lokale antibioticagids en geïntegreerd in het beslissingsalgoritme voor de aanvraag van een intraveneuze katheter in het Klinisch Werk Station. De antibiotica niet vermeld in deze tabel kunnen perifeer toegediend worden.

Antibioticum	Aanbeveling	Criteria
Aciclovir	Centraal	pH>9
Amikacine	Centraal	pH<5
Amphotericine B (liposomaal)	Centraal	Incidentie flebitis > 5%
Anidulafungine	Centraal	pH<5
Caspofungine	Centraal	Incidentie flebitis > 5%
Cefepime	Centraal	pH<5
Cefiderocol	Centraal	Incidentie flebitis > 5%
Ciprofloxacine	Centraal	pH<5
Erythromycine	Centraal	Incidentie flebitis ~ 5%
Flucloxaciline	Centraal	pH<5
Fosfomycine	Centraal	Incidentie flebitis ~5%
Ganciclovir	Centraal	pH>9
Gentamicine	Centraal	pH<5
Imipenem	Centraal	Incidentie flebitis ~5%
Isavuconazole	Centraal	pH<5
Levofloxacine	Centraal	pH<5
Linezolid	Centraal	pH<5
Meropenem	Centraal	Incidentie flebitis (vanuit praktijkervaring)
Piperacilline/tazobactam	Indien continue toediening: centraal	pH<5 na enkele uren
Posaconazole	Centraal	pH<5
Sulfamethoxazol + Trimethoprim	Centraal	pH>9
Thiamfenicol	Centraal	pH<5
Tobramycine	Centraal	pH<5
Vancomycine	Tot 5 mg/ml: perifeer >5-40 mg/ml centraal	pH<5 Incidentie flebitis > 5%

Tabel 1. Hoog- risico antibiotica die bij voorkeur via een centraal veneuze katheter worden toegediend

DISCUSSIE & CONCLUSIE

UZ Leuven is het eerste ziekenhuis dat een praktische aanbeveling opstelde met antibiotica die bij voorkeur via een CVK worden toegediend. De implementatie in een beslissingsalgoritme zal bijdragen aan de kwaliteit van zorg voor de patiënt. Deze lijst zal tevens de basis vormen voor een richtlijn gepubliceerd op de website van de beroepsvereniging.

PP | 6 EFFECTS OF PHARMACIST CARE ON HOSPITALIZATIONS IN HEART FAILURE ACROSS OUTPATIENT AND INPATIENT SETTINGS: A SYSTEMATIC REVIEW AND META-ANALYSIS.

Van der Linden Lorenz^{1,2}, Beavers Craig³, Forsyth Paul¹, Vandenbriele Christophe^{5,6}, Tsuyuki Ross⁷, Karapinar-Carkit Fatma^{8,9}, Van Aelst Lucas^{10,11}

¹Hospital pharmacy department, University Hospitals Leuven, Leuven, Belgium;

²Department of Pharmaceutical and Pharmacological Sciences, KU Leuven, Leuven, Belgium;

³Department of Pharmacy Practice and Science, University of Kentucky College of Pharmacy, Lexington, Kentucky, USA;

⁴Department of Pharmacy, NHS Greater Glasgow & Clyde, Glasgow, Scotland, UK;

⁵Department of Anaesthetics, Pain Medicine and Critical Care, Imperial College, London, UK;

⁶Cardiology and Cardiac Intensive Care, Heart Center, OLV Hospital Aalst, Aalst, Belgium;

⁷Department of Medicine, Division of Cardiology, Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Alberta, Canada;

⁸Department of Clinical Pharmacy and Toxicology, Maastricht University Medical Centre, Maastricht, Limburg, The Netherlands;

⁹Department of clinical pharmacy, CARIM, Cardiovascular Research Institute Maastricht, Maastricht University, Maastricht, The Netherlands;

¹⁰Department of Cardiology, University Hospitals Leuven, Leuven, Belgium;

¹¹Department of Cardiovascular Sciences, KU Leuven, Leuven, Belgium

BACKGROUND AND AIM

Heart failure (HF) affects 1-2% of the population in developed countries, with high 30-day post-admission mortality (10%) and readmission (15%) rates. Optimizing medical therapy is critical for improving outcomes. Although pharmacists play a pivotal role in HF medication management, evidence on the impact of hospital-affiliated pharmacists in both inpatient and outpatient settings is limited. This study evaluates whether pharmacist interventions reduce all-cause and HF hospitalizations across these care settings.

METHODS

A systematic review of PUBMED and EMBASE (up to November 2024) identified randomized controlled trials (RCTs) evaluating pharmacist interventions on hospitalizations in HF patients. Studies involving community pharmacy or home-based interventions were excluded. Study quality was assessed using the Cochrane risk-of-bias 2 tool. Random-effects models calculated odds ratios (ORs), with heterogeneity assessed using I^2 and Cochrane's Q test. The number-needed-to-treat (NNT) for all-cause hospitalizations was estimated using Belgian outcome data. Sensitivity analyses using a leave-one-out approach and subgroup analyses focusing on intervention components were conducted.

RESULTS

Eleven RCTs (n=3576) were included. Pharmacist interventions significantly reduced all-cause hospitalizations (OR 0.67, 95% confidence interval (CI): 0.49-0.92, p=0.0119; 3472 patients, 927 events) and HF hospitalizations (OR 0.64, 95% CI: 0.48-0.87, p=0.0038; 3442 patients, 504 events). Heterogeneity was moderate for both outcomes. The NNT for all-cause hospitalizations was 26 (95% CI: 16-103). Subgroup analyses suggested greater effectiveness in outpatient settings and with extended interventions. Sensitivity analyses supported the robustness of the findings.

DISCUSSION AND CONCLUSION

Hospital-affiliated pharmacist-collaborative care in HF significantly reduced all-cause and HF hospitalizations by about one-third, indicating a large effect size. The greatest benefits were observed in outpatient settings and with interventions extending beyond the initial phase (e.g., telephone follow-up after discharge). These findings underscore the importance of integrating hospital pharmacists into multidisciplinary HF care teams to improve patient outcomes across care settings.

PP | 7 OP WEG NAAR UNIFORME THUISHOSPITALISATIE MET OPAT IN VLAANDEREN

Vander Elst Lotte¹, Heeckhout Sofie², Forrester Valérie³, Boey Eline⁴, Callewaert Stefrey⁵, Symens Ine³, De Nocker Phebe⁶, Quintens Charlotte¹

¹Ziekenhuisapotheek, UZ Leuven, Leuven

²Ziekenhuisapotheek, Noorderhart, Pelt

³Ziekenhuisapotheek, ZOL, Genk

⁴Ziekenhuisapotheek, Imelda, Bonheiden

⁵Ziekenhuisapotheek, ZAS, Antwerpen

⁶Ziekenhuisapotheek, UZ Gent, Gent

ACHTERGROND & DOELSTELLING

Sinds 2022 zet de werkgroep HOST-OPAT, als onderdeel van de VZA werkgroep antimicrobiële middelen, zich in voor de uniformisatie van OPAT-zorg (Outpatient Parenteral Antimicrobial Therapy) in Vlaanderen. Deze inspanning werd verder versterkt door de publicatie van de overeenkomst voor thuishospitalisatie met OPAT vanaf juli 2023, met inclusief een wettelijk en financieel kader. Onze belangrijkste partner voor thuishospitalisatie is de koepel van thuisverpleegkundigen. Zij spelen een cruciale rol in de zorg voor OPAT-patiënten, opgestart vanuit verschillende ziekenhuizen. Om deze zorg op een efficiënt en kwaliteitsvolle manier te leveren, is een uniforme samenwerking met consistente werkwijzen noodzakelijk.

METHODEN & RESULTATEN

Binnen dit project heeft de werkgroep verschillende initiatieven gerealiseerd, waaronder:

1. Opleiding: Een e-learning met vijf modules, die zowel theoretische als praktische componenten omvat, werd ontwikkeld. Daarnaast werden instructievideo's gemaakt, in samenwerking met Baxter, voor de bereiding en toediening van elastomeerpompen. Deze opleiding is toegankelijk via de website van VZA en het Departement Zorg.
2. Service Level Agreement (SLA): Er werd een SLA opgesteld tussen de thuisverpleging en ziekenhuizen om heldere afspraken te maken over de zorgverlening.
3. Protocollen: Gestandaardiseerde protocollen werden ontwikkeld voor de bereiding en toediening van elke specifieke OPAT therapie, en beschikbaar gesteld op de VZA-website.
4. Gegevensuitwisseling: Er werd enerzijds gedefinieerd welke minimale gegevens bij opstart worden gedeeld vanuit het ziekenhuis, inclusief uitlijning van de specifieke zorgopdracht voor thuisverpleegkundigen. Anderzijds werd een set van observaties en parameters gedefinieerd te rapporteren door thuisverpleging aan het ziekenhuis zorgteam. In de toekomst wordt gestreefd naar maximaal digitale gegevensuitwisseling, wat wordt uitgewerkt in het kader van een FOD-innovatieproject.

CONCLUSIE

Deze uniforme aanpak biedt een solide basis voor de verdere optimalisatie van OPAT-zorg in Vlaanderen, draagt bij aan een meer gestandaardiseerde en kwaliteitsvolle thuishospitalisatie en bevordert zowel de efficiëntie voor thuisverpleegkundigen als de veiligheid van de patiënten

PP | 8 A PROSPECTIVE EVALUATION OF CLINICAL PHARMACIST ACTIVITIES AT THE GERIATRIC DAY HOSPITAL

Simal Ine^{1,2}, Capiu Andreas^{1,3}, De Spiegeleer Anton^{4,5}, Velghe Anja^{2,4}, Van Den Noortgate Nele^{2,4}, Petrovic Mirko^{2,4}, Somers Annemie^{1,3}

¹Department of Pharmacy, Ghent University Hospital, Ghent, Belgium

²Department of Internal Medicine and Paediatrics, Faculty of Medicine and Health Sciences, Ghent University, Ghent, Belgium

³Pharmaceutical Care Unit, Faculty of Pharmaceutical Sciences, Ghent University, Ghent, Belgium

⁴Department of Geriatrics, Faculty of Medicine and Health Sciences, Ghent University Hospital, Ghent, Belgium

⁵Translational Research in Immunosenescence, Gerontology and Geriatrics (TRIGG) group

BACKGROUND & AIM

Drug-related problems (DRPs) are prevalent in geriatric patients and associated with poor health outcomes. Clinical pharmacists (CPs) play a key role in optimising medication use, yet the benefits of CP interventions in collaboration with the geriatrician in a geriatric day hospital setting remain underexplored.

This study aimed to 1) evaluate the CP activities at a geriatric day hospital by analysing a) the identified DRPs and corresponding recommendations, and b) the prevalence of Potentially Inappropriate Medications (PIMs) at admission and discharge and 2) examine the acceptance and implementation rate of CPs' recommendations by the attending geriatrician.

METHODS

All patients that visited the day hospital during 25 non-consecutive days were invited to participate. DRPs and corresponding CPs' recommendations were categorised and analysed. PIMs were identified retrospectively using the Ghent Older People's Prescriptions community Pharmacy Screening-tool version 2.

RESULTS

Ninety-nine patients were included (median age: 85 years, 72.7% female). The most frequently identified DRPs were 'no indication', 'drug omission', and 'inappropriate treatment duration'. Drugs used for the nervous system and gastrointestinal tract were mostly involved. CPs formulated a median of two recommendations per patient, which most frequently concerned 'stop therapy'. The acceptance rate was 80.1% of which 73.1% were implemented directly. The PIM prevalence decreased from 91.8% on admission to 87.6% at discharge ($p < 0.001$).

CONCLUSION

CPs can be an added value for the multidisciplinary team at a Geriatric Day Hospital. Regularly reevaluating the appropriate use of drugs used for the nervous system and gastrointestinal tract, and initiating judicious deprescribing is recommended.

PP | 9 ECONOMIC BENEFITS OF PHARMACIST-COLLABORATIVE CARE IN HEART FAILURE: A MONTE CARLO ANALYSIS USING BELGIAN DATA

Van der Linden Lorenz^{1,2}, Luyten Jeroen³, Van Aelst Lucas^{4,5}

¹Hospital pharmacy department, University Hospitals Leuven, Leuven, Belgium;

²Department of Pharmaceutical and Pharmacological Sciences, KU Leuven, Leuven, Belgium;

³Leuven Institute for Healthcare Policy, KU Leuven, Leuven, Belgium;

⁴Department of Cardiology, University Hospitals Leuven, Leuven, Belgium;

⁵Department of Cardiovascular Sciences, KU Leuven, Leuven, Belgium.

BACKGROUND & AIM

Heart failure (HF) is a leading cause of hospitalizations and contributes significantly to healthcare costs. Currently, HF accounts for 1-2% of national health budgets, with hospitalizations comprising two-thirds of these expenditures. Pharmacist-led interventions have been shown to reduce hospitalizations. Yet, their economic impact within specific healthcare systems, such as Belgium, remains underexplored. This study aimed to evaluate the economic benefits of implementing pharmacist-collaborative care in HF management, adjusted to the Belgian context.

METHODS

A probabilistic model incorporated hospital pharmacists' labor costs, intervention effort, hospitalization costs, and the number needed to treat (NNT) to prevent one hospitalization (NNT = 26; 95% confidence interval (CI): 16-103). The modeled intervention effort was equivalent to 0.2-0.35 full-time equivalent managing 5-10 HF patients weekly. Worst-case distributions were applied to all variables. Monte Carlo simulations (10000 iterations) assessed the probability of achieving a positive net economic benefit, which was defined as 'hospitalization costs avoided minus pharmacists' costs'. Sensitivity analyses identified the largest determinants of this benefit.

RESULTS

Pharmacist-led interventions demonstrated a nearly certain (i.e., 93.76%) probability of positive net economic benefit, with an average annual net economic benefit of €62932 (95% CI: €-6853 to €149331). The NNT to prevent one hospitalization emerged as the primary determinant of cost-effectiveness. Conversely, pharmacists' costs only played a limited role.

DISCUSSION & CONCLUSION

Hospital pharmacists in HF care are highly likely to be cost-dominant within the Belgian context. Their costs are readily offset by reductions in readmissions. Few - if any - clinical pharmacy services yield such large effects on hard clinical outcomes and costs as those in HF. This is particularly important as hospital pharmacists navigate many competing clinical domains. In conclusion, our findings strongly support prioritizing HF care and expanding pharmacist involvement in HF management as part of multidisciplinary teams.