Pharmacy Education (2020) 20(3) 91 - 132
https://doi.org/10.46542/pe.2020.203.91132

CONFERENCE ABSTRACTS

FIP VIRTUAL 2020

Pharmacy Practice Research

Economic evaluations of antivirals for pandemic influenza viruses

Dalia M. Dawoud* [1], Khaled Soliman[2]

[1]*Clinical Pharmacy, Cairo University, Cairo, Egypt*
[2]*Accident and Emergency Department, North Middlesex University Hospital, London, United Kingdom*

Background: The coronavirus, COVID-19, has caused a global pandemic of an unprecedented scale. The efficacy of antivirals and other drugs, considered for repurposing, is assessed in clinical trials. It is not clear, however, whether these treatments, when available, will be cost effective.

Purpose: To systematically review published economic evaluations of antivirals for the management of pandemic influenza.

Method: The following databases were searched from inception to 26 March 2020: Medline (EBSCO HOST), EMBASE (OVID), EconLit (OVID), NHS EED (OVID) and HTA (OVID). Citation tracking and reference checking were also used. Only full economic evaluations published in the last ten years were included. Studies were quality assessed using NICE economic evaluation checklist. Data were extracted into standard data extraction tables and narratively summarised.

Results: Of 709 records identified, 14 studies were included. These were mostly conducted in high income countries. They were seven (50.0%) cost-utility analyses, four (28.6%) cost-effectiveness analyses, two (14.3%) cost-consequences analyses, and one (7.1%) cost-benefit analysis. Antiviral treatment-containing strategies were found to be either cost saving or cost effective. Empirical treatment was more cost effective than test-guided treatment for young adults but less for older adults. Infection rate, prevalence, antiviral efficacy and costs were the key drivers of cost effectiveness

Conclusion: Antiviral treatment for managing pandemic influenza viruses that have high case fatality rate, similar to the COVID-19 pandemic, has shown to be cost effective, either as standalone intervention or part of a multifaceted strategy

Effect and associated factors of a clinical pharmacy model in the incidence of medication errors

Johan Granados[1,2]*, Andrea Salazar-Ospina[1,3], Juan Pablo Botero-Aguirre[4], Andrés Felipe Valencia[1,4], Natalia Andrea Ortiz-Cano[4], Pedro Amariles[1]

[1]*Facultad de Química Farmacéutica, Universidad de Antioquia, Grupo Promoción y Prevención Farmacéutica, Colombia*
[2]*Facultad de Química Farmacéutica, Universidad de Antioquia, Grupo de investigación en Tecnología en Regencia de Farmacia, Medellin, Colombia*
[3]*Facultad de Química Farmacéutica, Universidad de Antioquia, Grupo de investigación en Tecnología en Regencia de Farmacia, Colombia*
[4]*Farmacia, Hospital Pablo Tobón Uribe, Medellin, Colombia*

* = *Presenting Author*

ISSN 1477-2701 online

Background: Medication errors are considered by the WHO to be a subject that requires attention at all levels of care, to reduce serious and preventable damage related to medication. Clinical pharmacy practice standards have been proposed around the world where the pharmacist, as part of a multidisciplinary health team, can help improve patient safety; however, further evidence derived from adequate studies is needed to demonstrate this.

Purpose: The aim of this study was to assess the effect of a clinical pharmacy practice model (CPPM) in preventing medication errors (MEs) associated with the medication use process.

Method: A prospective, stepped-wedge cluster randomised controlled trial with a duration of 14 months was performed to compare the effect of a CPPM along with the usual care process of patients in a Pablo Tobón Uribe Hospital. The study was designed as a cluster-randomised controlled trial, involving five units and 720 patients. Unit care was allocated to interventions using a Stepped Wedge Design.

Results: The incidence of ME was 13.3% for Intervention group and 22.8 for control group. In the Poisson model estimated a RR 0.52 (IC 95% 0.34 to 0.79), determining that the probability of presenting a medication error was 48% lower when the patient is followed up by CCPM.

Conclusion: This trial assessed the effect of a clinical pharmacy model as demonstrated an effect in reducing medication errors in hospitalised patients (RR=0.52). To the authors knowledge, this study is the first stepped-wedge controlled trial designed to assess the effect of the clinical pharmacy practice model on the incidence of medication error in hospitalised patients, generating strong evidence.

References

Aguirre, J.P.B., Quintero, A.F.V., Vega, E.J.G. (2017). Redesign of the Clinical Pharmacy Practice Model in a Tertiary Academic Hospital in Medellín, Colombia. *The Canadian Journal of Hospital Pharmacy*, **70**(3), 225-31. https://doi.org/10.4212/cjhp.v70i3.1662

Granados, J., Salazar-Ospina, A., Botero-Aguirre, J.P., Valencia-Quintero, A.F., Ortiz, N., & Amariles, P. (2020). Effect and associated factors of a clinical pharmacy model in the incidence of medication errors (EACPharModel) in the Hospital Pablo Tobón Uribe: study protocol for a stepped wedge randomized controlled trial (NCT03338725). *Trials*, **21**(1), 26

Kohn, L.T., Corrigan, J., Donaldson, M.S. (2000). To err is human: building a safer health system. Washington, D.C: National Academy Press, p.287

NCC MERP [National Coordinating Council for Medication Error Reporting and, Prevention]. (2010). National Coordinating Council for Medication Error Re-, porting and Prevention. Taxonomy of medication errors (online). Available at: http://www.nccmerp.org/sites/default/files/taxonomy2001-07-31.pdf

Pastó-Cardona L, Masuet-Aumatell C, Bara-OliváнB, Castro-Cels I, Clopés-Estela A, Pàez-Vives F, et al. Estudio de incidencia de los errores de medicación en los procesos de utilización del medicamento: prescripción, transcripción, validación, preparación, dispensación y administración en el ámbito hospitalario. Farm Hosp. septiembre de 2009;33(5):257-68

Pickette, S.G., Muncey, L., & Wham, D. (2010). Implementation of a standard pharmacy clinical practice model in a multihospital system. *American Journal of Health System Pharmacy*, **67**(9), 751-6

WHO [World Health Organization]. (2017). WHO launches global effort to halve medication-related errors in 5 years. WHO Newsroom. Available at: http://www.who.int/mediacentre/news/releases/2017/medication-related-errors/es/

Roles for pharmacists to address medicine safety in Australia

John K. Jackson*, Amy Page

Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Parkville, Australia

Background: With Medicine Safety declared a National Health Priority in Australia in 2019, the pharmacy profession needs a strategy to tackle medicine-related harm.

Purpose: To identify priority areas in medicine safety relevant to pharmacists and determine a key intervention by pharmacists in each priority area.

Method: An expert advisory group identified 20 domains in which pharmacists could potentially improve medicine safety. A workshop of pharmacists evaluated each domain using prevalence, risk and the level of pharmacist engagement. Sub-groups within the workshop scoped potential interventions relevant to the five priority domains. Based on the effort required to implement each intervention and the likely impact, each group selected a preferred intervention within pharmacists' scope of practice. The preferred interventions were described using a common nine-point instrument.

Results: In descending order of priority, the selected domains are poly-pharmacy, health literacy, geriatrics, high risk medicines and potentially inappropriate medicine use. The preferred interventions in the respective domains are; primary care embedded pharmacists, improved counselling, medication review with follow-up, pharmacist workforce capacity building to increase confidence, and pharmacists' engagement in on-going medication management. Factors common to the implementation of these interventions include workforce capability and capacity, regulatory changes, enhanced communication, access to patient records, and remuneration.

Conclusion: All five interventions are enhancements of current practise and the implementation factors align with prior work that identified macro-environmental changes required to adopt enhanced roles (Jackson, Hussainy, & Kirkpatrcik, 2016).

References

Jackson, J., Hussainy, S., Kirkpatrcik, C. (2016). The identification of major factors in Australian primary care pharmacists' practice environment which have a bearing on the implementation of professional models of practice. *Australia Health Review*. http://dx.doi.orf/10.1071/AH16080reference

The attitude of Dutch community pharmacists towards vaccination qualification and the willingness to vaccinate

Jeltje J. Luinenburg[1]*, Simone Van den Bosch[1], Barzo Sulaiman[2]

[1]*Pharmaceutical care, research and innovation, Royal Dutch Pharmacists Association (KNMP), Den Haag, Netherlands*

[2]*Pharmacy, Leiden University, Leiden, Netherlands*

Background: In the Netherlands, pharmacists are not qualified to vaccinate. KNMP would like to advocate for this qualification.

In order to do so, it is important to know the attitude of Dutch community pharmacists towards vaccination qualifications, the willingness to be trained to vaccinate and towards a possible different scenario: pharmacy-based vaccination by a nurse.

Purpose: To assess the attitude of Dutch community pharmacists towards vaccination qualification of pharmacists, the willingness to be trained to vaccinate and the attitude towards pharmacy-based vaccination by a nurse.

Method: We developed a questionnaire and spread it by email to all KNMP members.

Results: Sisty-six percent (66%) of the responders were positive about vaccination qualification of pharmacists (17% neutral and 17% negative), and even 78% were willing to be trained to vaccinate (ten percent neutral and 12% negative).

On the other hand, only 34% was positive about pharmacy-based vaccination by a nurse (27% neutral and 39% negative). 95% of the responders were community pharmacists, of which 12% were hospital-based community pharmacists, five percent were hospital pharmacists and five percent were other pharmacists. The total number of respondents was 60, that is a response rate of two percent.

Conclusion: We have a positive impression of the attitude of Dutch community pharmacists towards vaccination qualification of pharmacists and the willingness to be trained to vaccinate.
This is a much more popular scenario than vaccination by a nurse who could vaccinate in the pharmacy.

Because the total response to the questionnaire was low, we cannot be sure whether this is representative of Dutch community pharmacists or not. We considered sending the questionnaire again after the COVID-19 crisis, to gain higher response.

A 2019 survey of YPG Members in FIP's Pharmacy Practice Research Special Interest Group (PPR SIG)

Ayodeji B. Matuluko[1,2]*, Victoria Garcia Cardenas[3], Charlotte Rossing[4], Renly Lim[1,5], Sherly Meilianti[1,6]

[1]*Young Pharmacists Group (YPG), International Pharmaceutical Federation, The Hague, Netherlands*

[2]*School of Health and Life Sciences, Glasgow Caledonian University, Glasgow, United Kingdom*

[3]*Graduate School of Health, University of Technology Sydney, Sydney, Australia*

[4]*Danish College of Pharmacy Practice, Pharmakon, Denmark*

[5]*UniSA Clinical & Health Sciences, University of South Australia, Adelaide, Australia*

[6]*School of Pharmacy, University College London, London, United Kingdom*

Background: The Pharmacy Practice Research (PPR) Special Interest Group (SIG) of FIP disseminates PPR information internationally and serves as a platform for networking and collaboration. Members of the Young Pharmacists Group (YPG) of FIP desire to be actively involved in the SIG.

Purpose: This survey was aimed at understanding the needs of YPG members of the PPR SIG.

Method: From July to August 2019, a survey was sent to 343 YPG members of the SIG. The survey had 12 questions on demographic data, practice areas, reasons for joining the SIG, how to increase involvement, and ideas for PPR projects, amongst others.

Results: Twenty-four (24) responses were recorded. Most respondents were in academia (n=9) and had three to five years of experience (n=10). Reasons for joining the SIG included mentorship; networking; participation in collaborative projects; expanding knowledge/skills in PPR; accessing high-quality research evidence; and awareness of PPR globally. Respondents suggested that involvement in the SIG could be improved by: 'Meet and greets' at FIP conferences; webinars; joint projects; promotion of research activities from different countries; creation of working groups. Most respondents preferred to receive information from the SIG via Newsletters (n=11). Respondents shared 14 research project/additional ideas.

Conclusion: The PPR SIG is a good platform for YPG members to get involved more actively in FIP. Although few responses were received, they highlighted a need to increase the engagement of YPG members in the SIG. The survey findings have been shared with the PPR SIG leadership and are being used to devise plans to increase YPG engagement. This survey has served as a tool in building a fruitful relationship between the PPR SIG and YPG.

Quantifying the value and preferences for sustainable professional pharmacy services: A literature review

Clemence Perraudin[1]*, Joachim Marti[1], Olivier Bugnon[1,2,3]

[1]*Centre for Primary Care and Public Health (Unisanté), University of Lausanne, Lausanne, Switzerland*

[2]*School of Pharmaceutical Sciences, University of Geneva, Switzerland*

[3]*Institute of Pharmaceutical Sciences of Western Switzerland, University of Geneva, University of Lausanne, Switzerland*

Background: Designing professional pharmacy services (PPS) should include considering the preferences of the stakeholders (in particular consumers and professionals) and match their views and needs for optimal resource allocation and effective implementation. Stated preferences methods are robust to quantify preferences and to identify which characteristics (named 'attributes') of a good or service respondents like, the trade-off between these different attributes, and their relative value.

Purpose: The aims of this review were to identify discrete choice experiment (DCE) and best-worst scaling (BWS) studies designed to elicit preferences for PPS in the community setting, assess their methodological quality, and synthesize the main findings.

Method: This review used a search strategy updating two previous systematic reviews. Study focus, characteristics and main findings were collected to map the use of these methods.

Results: Twenty-two (22) DCE and three BWS were identified, including ten surveys conducted in the United Kingdom. 20 studies elicited consumer preferences in different contexts: e.g. management of minor symptoms (n=4), choice of a pharmacy (n=3), prescribing role of the pharmacist (n=2). Monetary attributes were often integrated to estimate willingness to pay and cost appeared as an important attribute. Nevertheless, consumers valued PPS and some trade-offs were possible. Pharmacists valued the provision of PPS, as well as income level or organisational aspects when they had to choose their preferred job (n=3).

Conclusion: The use of these methods, respecting a high methodological quality, provides robust and powerful information for establishing smarter and sustainable PPS for health systems.

Redefining the community pharmacy workflow: An approach based on the patient journey

Ana Pinto, Ema Paulino, Maria Luísa, Mariana Rosa, Patrícia Soares*

Ezfy, Lisboa, Portugal

Background: Pharmacists are well positioned to facilitate and simplify life for people living with a chronic illness by making use of knowledge and technology.

Purpose: To develop a conceptual model for professional interventions in community pharmacy, based on the journey of people living with chronic conditions.

Methods: An integrative literature review was carried out to identify, in several clinical areas, journeys of people living with chronic conditions, in order to inform a standard patient journey from prevention to palliative care or cure. For each stage, the research team also identified relevant and feasible health interventions in the context of community pharmacy. A literature search was conducted in PubMed/Medline, Scopus and Web of Science, as well as sources for grey literature. The key words used were: 'patient journey', 'patient pathway', 'care pathway' and 'continuum of care'.

Results: Through the analysis of the literature, it was possible to identify several common stages in the patient journey of people living with different clinical situations, namely: (a) Prevention; (b) Pre-diagnosis; (c) Diagnosis; (d) Treatment; e) 'Maintenance'; f.i) Palliative care; f.ii) Cure. Health interventions identified included, among others: health promotion campaigns; new medicine service; medication management and counselling, including medication adherence and Patient-Reported Outcomes; support services for informal caregivers; integrated care with other healthcare professionals and structures such as patient organisations.

Conclusion: A standard patient journey was created that will inform the design and implementation of several health interventions to be developed in community pharmacy.

Design and implementation of a computer application to support pharmaceutical interventions

Ana Pinto, Ema Paulino, Maria Luísa, Mariana Rosa*, Patrícia Soares

Ezfy, Lisboa, Portugal

Background: Pharmacists are well positioned to facilitate and simplify life for people living with a chronic illness by making use of knowledge and technology.

Purpose: To describe the 1) design; and 2) implementation of a patient management software for professional interventions in community pharmacy, namely, a service that improves medication adherence for people with long-term conditions and who have been prescribed a new medicine, similar to the 'New Medicine Service' implemented in the United Kingdom.

Methods: Firstly, a literature review was carried out to define the service process. Next, the computer application, developed from the Salesforce Health Cloud software, was customised to support the intervention. Then logins were assigned to 80 pharmacies and training was provided to pharmacy teams. The data collected (after obtaining informed consent) was anonymised and handled by the application, using pre-defined algorithms.

Results: It was defined that the service consists of two pre-scheduled tasks that correspond to two contacts (undertaken over the phone or in person), that will take place seven and 14 days after dispensing the medication to the patient for the first time. Patient registration in the programme, automatic task scheduling and registration forms were defined and made available through the computer application. Then preliminary data from the first phase of implementation indicated that more than 100 people were included in the first three months of implementation. Data are currently being analysed.

Conclusion: The application facilitates the implementation of pharmaceutical services and the collection of data, it systematises information, and it supports the development of scientific studies

A new work-based learning model: phArmaCy sTudent patIent counselling serVicE (ACTIVE) placements

Adam P. Rathbone[1,2]*, Charlotte Richardson[1,2], Amy Mundell[2], Wing Man Lau[1], Steven Brice[2], Hamde Nazar[1]

Ezfy, Lisboa, Portugal

Background: Delivery of clinical pharmacy services globally is limited by access to appropriately skilled workforce (Bates *et al.,* 2018). Pharmacy students may have knowledge and communication skills to be able to contribute to service delivery. Current evidence, however, indicates student experiences on placement are frustrating and lack hands-on practice of service delivery (Bullen, Davison, & Hardisty, 2019).

Purpose: To explore a phArmaCy student paTIent cOunselling serVicE (ACTIVE) model for work-based learning on placement.

Methods: Small groups of students were asked to complete as many medication histories as possible over ten three-hour placements in a hospital. Students used the medication history to identify if treatment counselling was required and provided counselling using an approved clinical protocol. Students recorded patient interactions using a proforma (SOAP note) which was reviewed and verified by a clinical pharmacist. Student feedback was then collected using an evaluation form; and the data were analysed using descriptive statistics and thematic analysis.

Results: Sixty-eight (68) third year Master of Pharmacy students completed 311 medication histories and provided counselling to 308 patients. Counselling included analgesia (40%), inhaler (41%), NOACs (9%) or a combination of two (8%). 16% of patients were referred to clinical pharmacists for follow-up.

After repeated visits students were confident to provide advice about medications and felt part of the team. However, as the students were visiting the same ward, at the same time, each week, their learning plateaued after six placements.

Students reported feeling well-prepared for practical assessments (e.g. OSCEs) and pre-registration training.

Conclusion: Findings indicate students can be an active part of the pharmacy workforce whilst learning during placements.

References

Bates, I., John, C., Seegobin, P. & Bruno, A. (2018). An analysis of the global pharmacy workforce capacity trends from 2006 to 2012. *Human Resources for Health*, **16**(3). https://doi.org/10.1186/s12960-018-0267-y

Bullen, K., Davison, K., & Hardisty, J. (2019). Community pharmacy as an effective teaching and learning environment: Student perspectives from a UK MPharm programme. *Currents in Pharmacy Teaching and Learning*, **11**(9), 902-908. https://doi.org/10.1016/j.cptl.2019.05.007

Whistle-blower protections for community pharmacists and technicians during COVID-19

Soosmita Sinha[1]*, Jacob Braun[2]

[1]Health Law Institute, Geneva, Switzerland

[2]Osgoode Hall Law School, Toronto, Canada

Background: International human rights law, in particular Article 7 of the International Covenant on Economic, Social, Cultural Rights, calls for 'just and favourable' work conditions including the 'right to safe working conditions'. COVID-19 has exposed many frontline health workers to unsafe working conditions especially in regard to lack of Personal Protective Equipment (PPE) or protocols to minimise exposure. This further jeopardises not only the health of community pharmacists and technicians but also patients.

Purpose: Whistle-blower protections ensure that individuals can freely report on substandard and unsafe work conditions without fear of retaliation. However, in many cases, unclear or lack of reporting guidelines for employees, or weaknesses in law and resource limitation of regulatory agencies can prevent or deter reporting.

Methods: This paper will explore the state of whistle-blower protections policies in the United States, in order to analyse the effectiveness of these protections and their uptake in community pharmacy settings. Furthermore, the paper will explore the resources available to pharmacists and technicians who wish to become whistle-blowers or have experienced retaliation as a result of whistleblowing.

Results: There is a disconnect between protections available, employee understanding and use of these various instruments, enforcement mechanisms, and protection through alternative policies and laws.

Conclusion: The findings in this paper will be useful for pharmacists and technicians who would like to avail whistle-blower protections and for future research which looks at more effective alternatives to the current whistleblowing protection infrastructure.

Implementation of the appointment-based model in Canadian community pharmacies

Tiana Tilli[1], Qiqi Lin[2], Annalise Mathers[2], Jen Baker[1], Saleema Bhaidani[1]*, Louis Wei[1], Paul Grootendorst[2], Suzanne Cadarette[2], Lisa Dolovich[2]

[1]*Wholehealth Pharmacy Partners, Markham, Canada*

[2]*Leslie Dan Faculty of Pharmacy, University of Toronto, Toronto, Canada*

Background: Community pharmacy practice is traditionally reactive in nature, waiting for patients to request medication refills. The appointment-based model (ABM) is a proactive model that synchronises refills and schedules appointments for the patient and pharmacist to review medication regimens.

Purpose: To be the first in Canada to evaluate the ABM within independent community pharmacies.

Methods: In 2017, the ABM was implemented across five independent community pharmacies in Ontario, Canada. In 2018, a convenience sample of three pharmacies was selected; demographic and quantitative data were extracted from the pharmacy management software. Descriptive statistics and frequencies were analysed.

Results: Analysis of the 131 patients (52.5% female; mean age (±SD) 71.3±8.8) revealed medically complex patients prescribed 7.15±3.29 medications. Polypharmacy was experienced by 102 (77.9%) patients. Patients had a statistically significant reduction in mean number of refills dates (6.78±3.78 six months pre-implementation of the ABM vs. 4.91±3.08 six months post-implementation, p <0.0001) yet a statistically significant increase in the mean number of refills (11.86±6.58 six months pre-implementation vs. 13.29±7.38 six months post-implementation, *p*=0.02). Similar results were seen at 12 months pre- and post-implementation. This reduced filling complexity may reflect higher levels of adherence. Evaluation of clinical services is ongoing and will be presented.

Conclusion: Findings support broader adoption of the ABM as a proactive model of pharmacy care that has potential to increase medication adherence for complex patients

Predicting pharmacist intention to contributing to COVID-19 management: A cross-sectional survey study

Junlei Li, Hao Hu, Carolina Oi Lam Ung*

State Key Laboratory of Quality Research in Chinese Medicine, Institute of Chinese Medical Science, University of Macau, Macau, Macau SAR China

Background: Pharmacists have a key role to play in responding to public health emergencies such as the COVID-19 pandemic. However, few studies have sought to evaluate their intention to contributing to the outbreak management.

Purpose: This study used the theory of planned behaviour (TPB) to investigate pharmacists' intention to practice the FIP COVID-19 recommendations and to explore possible enablers that support such practice.

Methods: A cross-sectional, self-administered survey was distributed to pharmacists in Macau in May 2020. Cronbach's alpha was used to test the reliability for the four TPB constructs (attitude, subjective norm (SN), perceived behavioral control (PBC), and intention). Multiple linear regressions were conducted to predict intention using the other three TPB constructs

Results: Pharmacists (n=110) had a positive intention to contributing to COVID-19 management (mean=4.21±0.60). Attitude (β=0.547, *p*=0.000), SN (β=0.177, *p*=0.050) and PBC (β=0.158, *p*=0.027) were significant predictors of intention, accounting for 60.2% of the variance in their intention to practice. Scale reliability ranged from 0.838 to 0.948 for the four constructs. The difference between past behaviours and intentions was statistically significant (*p*=0.000). Important enablers to support the practice included training (mean= 4.26±0.57), better communication with stakeholders (mean=4.17±0.61) and improved pharmacy management (mean=4.18±0.60).

Conclusion: Pharmacists showed favourable attitude, SN, PBC and intention to contributing to COVID19 management. Actions to enhance training, stakeholder communication and pharmacy management are important to increasing their willingness to take part in public health emergency alike in the future.

References

Icek, A. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, **50**(2), 179-211.

Ung, C.O.L. (2020).Community Pharmacist in Pulic Health Emergencies: Quick to Action Against the Coronavirus 2019-nCoV Outbreak. *Research in Social and Administrative Pharmacy,* **16**(4), 583-586

Adverse drug reactions among breast cancer patients at a teaching hospital in North-Central Nigeria

Felicia E. Williams[1]*, Olaiyide Agodirin[2], Hassanat Jimoh[1]

[1]*Clinical Pharmacy and Pharmacy Practice, University of Ilorin, Ilorin, Nigeria*

[2]*Department of Surgery, University of Ilorin, Ilorin, Nigeria*

Keywords: Breast Cancer, ADRs, Pharmaceutical Care

Background: Adverse drug reactions (ADRs) are a global public health problem. Patients on chemotherapy are vulnerable to ADRs. information dearth about ADRs among breast cancer (Bca) patients in North-Central Nigeria is of concern.

Purpose: To assess the pattern of adverse drug reactions among BCa patients at a teaching hospital in North-Central Nigeria.

Methods: A structured questionnaire was interviewer-administered to 60 eligible BCa patients. Also, designed data extraction forms (coded) were used to obtain relevant information from patients' medical folders. Data entry and statistical analyses were done using Statistical Package for Social Sciences version 20.00. An Institutional Ethical Review Committee granted ethical approval for this study.

Results: Most of the study participants were married (93.3%), 50.0% had primary education, the modal age class was 31- 40 years and 63.3% were on cancer chemotherapy. The medications of the patients included tamoxifen; Anthracycline (Doxorubicin or Epirubicin)+Alkylating agent (Cyclophosphamide) +Taxane (Docetaxel or Paclitaxel); and Anthracycline (Doxorubicin or Epirubicin)+Alkylating agent (Cyclophosphamide). Others were analgesics, corticosteroids, antiemetics, ascorbic acid and vitamin B complex. More than half (53.3%) of the study participants experienced one or more of these ADRs such as headache (36.7%), fatigue (33.3%), dizziness (13.6%), nausea (31.7%), vomiting (15%) alopecia (3.3%) and mouth sore (1.7%).

Conclusion: More than half of the study participants experienced ADRs. These ADRs were mostly Central Nervous system associated. This calls for effective and efficient Pharmaceutical care intervention for Bca patients.

References

Sisay, E.A., Engidawork, E., Yesuf, T.A., Ketema, E.B. (2015). Drug Related Problems in Chemotherapy of Cancer Patients. *Journal of Cancer Science Therapy*, **7**, 055-059

Pharmacy staffs' response to antibiotics request for an upper respiratory tract infection in Vietnam

Shukry Zawahir[1]*, Hien T. T Le[2], Thu-Anh Nguyen[2], Justin Beardsley[3], Dorothy Drabarek[4], Shannon Mckinn[4], L.T. Thanh[5], T.H. Hoang[6], D.D. Anh[6], G.J. Fox[1]

[1]*Central Clinical School, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia*

[2]*Woolcock Institute of Medical Research, Hanoi, Viet Nam*

[3]*Marie Bashir Institute, Viet Nam*

[4]*School of Public Health, The University of Sydney, Sydney, Australia*

[5]*Medical Genetics Institute, Ho Chi Minh City, Viet Nam*

[6]*National Institute of Hygiene and Epidemiology, Ministry of Health, Hanoi, Viet Nam*

Background: Inappropriate sale of antibiotics for upper respiratory tract infections (URTIs) is one of the important drivers of inappropriate antibiotic use.

Purpose: To determine the proportion of antibiotics sold without a prescription to URTI patients and to explore the appropriateness of pharmacy staffs' assessment and patient counselling in Vietnam.

Methods: A standardised patient (SP) study was conducted in the four provinces in Vietnam. A total of 633 visits to 318 selected pharmacies. Each pharmacy was visited twice by a trained actor reporting either a relative with clinical symptoms of a common cold (SBR) or requesting amoxicillin/clavulanic acid 500mg/125mg. Data were analysed using descriptive inferential statistics.

Results: In 88.2% (558/633) of the visits, antibiotics were sold inappropriately. Of these, 92.1% (291/316) were to patients making an SBR and 84.2% (267/317) for PBR. Over half of the pharmacy staff did not ask SPs any clinical assessment questions, 40% asked one or two questions, and only 3% asked three questions during SBR visits. Only 2% of the staff asked assessment questions in PBR visits. The counselling was more frequent in SBR than PBR. Though pharmacies in Northern Vietnam were more likely than Southern to sell antibiotics without a prescription for SBR (A.OR=6.12, 95% CI: 1.32-16.12), it was vice versa in PBR visits (A.OR=0.31, 95% CI: 0.14-0.72). Gender of the actor, population density and interaction time were also associated with antibiotics sales during PBR.

Conclusion: Inappropriate sales of antibiotics remains an important problem in Vietnam. Assessment and counselling qualities are suboptimal. Socio-demographic characteristics seem to influence the staff's decision making during a PBR.

New oral versus common anticoagulants: The future of the pharmacist in medication therapy in Albania

Delina Xhafaj[1]*, Kleva Shpati[1], Klejda Harasani[2], Eni Beci[2]

[1]*Albanian University, Albanian University,*

[2]*Department of Pharmacy, University of Medicine Tirana, Faculty of Medicine, Tirana, Albania*

Background: Anticoagulants known as 'blood thinners' are medications used to prevent blood clots, thrombosis, and ischemic diseases. Their oral form has been the most widely used therapy in medical and outpatient practice for more than 60 years. The limitations associated with this type of therapy are represented by interactions with other drugs and foods, narrow therapeutic intervals and the need for careful monitoring. For these reasons, new oral anticoagulants (NOAC New oral anticoagulants) have been introduced to minimise these concerns for the patient. Many pharmaceutical companies around the world are involved in the development of NOAC. In Europe and throughout the Balkans, including Albania, although some of these drugs have been authorised to be marketed, despite how very little is studied into these.

Purpose: The study aims to understand the role of the pharmacist in medication therapy and the impact of long-term monitoring of patients treated with NOAC medication.

Methods: The study was conducted with 35 doctors of different specialties and 55 pharmacists in three public and one non-public hospital, a health centre in two different regions of Albania through a randomised survey.

Results: The results include different approaches of physicians and pharmacists according to these drugs; there is minimal involvement of the pharmacist in the actual contest, but high expectation for this figure to be a contact point for the monitoring programme of the patient.

Conclusion: The pharmacist can play a crucial role in the good management of the patient on an anticoagulant medication, being a constant and frequent contact in these therapies through consultations and mediator with the doctor.

References

Cimminiello, C., Hatala, R., Pakarinen, S., Polo Friz, H., Fitzmaurice, D., Hobbs, F.R. (2018). Non-vitamin k antagonist oral anticoagulants in a European primary care physician survey. *BJGP Open*, **2**(3). https://doi.org/10.3399/bjgpopen18X101602

Marcello Di Nisio, M.D., Middeldorp, S., & Buller, H.R. (2005). Direct Thrombin Inhibitors. *New England Journal of Medicine,* **353**, 1028-1040, https://doi.org/10.1056/NEJMra044440

Schaefer, J.K., McBane, R.D., Wysokinski, W.E. (2016). How to choose appropriate direct oral anticoagulant for patient with nonvalvular atrial fibrillation. *Annals of Hematology*, **95**(3), 437–449. https://doi.org/10.1007/s00277-015-2566-x

schwarb, H., & Tsakiris, D.A. (2016). New Direct Oral Anticoagulants (DOAC) and Their Use Today. *Dentistry Journal (Basel)*, **4**(1),5. https://doi.org/10.3390/dj4010005

Potentially inappropriate prescription of antibiotics in paediatric age in Albania region

Delina Xhafaj[1]*, Klejda Harasani[2]

[1]*Pharmacy, Albanian University,*

[2]*Pharmacy, Faculty of Medicine Tirana, Tirana, Albania*

Background: Inappropriate prescriptions are one of the leading causes of errors and the occurrence of side effects in the paediatric population.

Purpose: The purpose of this study is to develop a database to identify inappropriate prescriptions in paediatric patients based on international guidelines and indicators used in European countries to assess these inadequacies in prescribing.

Methods: The current study focuses on the evaluation of antibiotic use in the paediatric population (0-14 years old) using data from a regional hospital at Tirana University Hospital Centre 'Mother Teresa' at the Paediatric Intensive Care and at three health centres in the city of Tirana as well as frequency estimates of PPP (Potentially Inappropriate prescriptions) prescriptions according to international criteria. The study is a retrospective type study where data were collected during the period of time 2018 to 2019.

Results: The data obtained from the files and prescriptions are reflected in a database that summarise the data, classifies them and makes it possible to identify PPPs according to selected POPI criteria. In the health files there was a marked lack of examinations that the doctor did before prescribing an antibiotic as well as precise specification of diagnosis, age or patient age.

Conclusion: This is a shortcoming of the health services in Albania, as there is a lack of electronic patient records where to obtain information on all of its clinical data and history. This study goes a step further than other studies as it takes into account recently developed criteria by applying the POPI and PIPc criteria for paediatric aged individuals, a population that is very poorly studied in this way in the Albania region.

References

Barry, E., Moriarty, F., Boland, F., Bennett, K., & Smith, S. (2018). The PIPc Study—application of indicators of potentially inappropriate prescribing in children (PIPc) to a national prescribing database in Ireland: a cross-sectional prevalence study. *BMJ Open*. https://doi.org/10.1136/bmjopen-2018-022876

Marc, C., Vrignaud, B., Levieux, K., Robine, A., Guen, C.G.-L., & Launay, E. (2016). Inappropriate prescription of antibiotics in pediatric practice: Analysis of the prescriptions in primary care. *Journal of Child Health Care,* **20**(4), 530-536. https://doi.org/10.1177/1367493516643421

Community pharmacists' knowledge of and perception towards their role in the management of COPD in China

Yuqi Hu, Dongning Yao, Carolina Oi Lam Ung*, Hao Hu

Institute of Chinese Medical Sciences, University of Macau, Macao, China

Background: Community pharmacists are trusted to play an integral role in the management of chronic obstructive pulmonary disease (COPD). However, little is known about their knowledge of COPD and the perceptions towards their role in COPD management

Purpose: To evaluate community pharmacists' attitudes towards their role related to COPD, assess their COPD-related knowledge, and analyse factors affecting their knowledge.

Methods: A cross-sectional survey study was conducted in three cities (Nanjing, Zhuhai and Qingyang) in China in 2019. *T*-test and one-way ANOVA were used for data analysis.

Results: The survey was completed by 177/796 community pharmacists (response rate 22.2%). The majority (91.0%) of participants were positive about their role in COPD management despite only 73 (41.2%) and 81 (45.8%) reported previous COPD training prior to and during practice respectively. To a list of 12 questions, no one answered all of them correctly, only 34 (19.2%) had correct answers for at least half of the questions, and the number of correct responses varied in different COPD aspects: risk factors (4.0%), disease characteristics (33.3%), symptoms (96.6%), diagnosis (13.0%), awareness of guideline (27.1%), pharmacotherapy (51.9%), non-pharmacotherapy (6.8%) and rehabilitation (87.6%). Higher knowledge score was significantly associated with higher academic education, on-the-job training, and pharmacies selling COPD medications (all $p<0.05$).

Conclusion: Our findings prompt the need to enhance COPD content in the university curriculum and continuing education in COPD management for community pharmacists.

Examination of pharmacist outpatient services in a travel clinic in Japan

Satoshi Yuyama[1]*, Masanori Suzuki[1], Naoto Hosokawa[2], Ryohkan Funakoshi[1]

[1]*Department of Pharmacy, Kameda Medical Center, Japan*

[2]*Department of Infectious Diseases, Kameda Medical Center, Japan*

Background: Pharmacists in the field of travel medicine in Western countries contribute to the health care of travellers. However, pharmacists in Japan rarely work in this field at present.

Purpose: To examine the role of pharmacists at a travel clinic in Japan.

Methods: The authors targeted outpatients who booked appointments at Kameda Kyobashi Clinic and consulted before travelling abroad. The study period was from December 2016 to August 2017. The following items were investigated using an electronic health record and interview sheet: age, sex, purpose of travel, region of travel, time until travel from first doctor's consultation, source of travel information, and whether they were taking any drugs. In addition, we evaluated the vaccine matching rate between the plan recommended by the resident pharmacist, based on appointment data (region and date of travel), and the finalised plan after consultation with the doctor.

Results: Sixty patients participated in the study. The median age was 36.0 years, and 41 patients (68.3%) were men. The median time until travel was 4.0 weeks, and 13 patients (21.7%) reported taking a drug regularly. We recommended 26 vaccination plans, and the matching rate was 26.9%. Mismatches were mainly attributed to patients' vaccination history, and their personal preferences.

Conclusion: This study revealed limited sources of information for recommending a vaccination plan prior to a doctor's consultation. Further, Japanese pharmacists must collect data in a manner similar to pharmacists from Western countries, and it is necessary to develop a system that contributes to travel medicines by performing pre-travel consultations

Home medication readiness: Potential threats to community health in China

Weiwei Zhang*, Jike Xie, Yan Yan, Chientai Mao, Yongfang Hu

Department of Clinical Pharmacy, Beijing Tsinghua Changgung Hospital, School of Medicine, Tsinghua University, Beijing, China

Background: Scores of people are prone to store medications for long periods at home. Data regarding home medications are scarce in China. The extent of the knowledge and awareness of medication among Chinese community residents is unknown.

Purpose: To survey the prevalence and the contents of home medications and the knowledge and awareness for medication among Chinese community residents.

Methods: The present study was a cross-sectional study in a suburban community in Beijing during the period of July 2015 to July 2016. Information about home medications was gathered and a survey about the knowledge and awareness of medication was carried. Data were collected by means of a questionnaire.

Results: One hundred and fifty-four (154) subjects completed the survey instrument for a valid response rate of 93.33%; 140

(90.91%) residents had home medications with only 65 (42.21%) of them had disease diagnoses. The main medication classes were medication for cardiovascular diseases (147, 33.79%), for influenza (109, 25.06%), antibiotics (47, 10.80%), and anti-diabetic medications (25, 5.75%). 123 (79.87%) of subjects had basic medication knowledge. But only 23 (14.93%) of subjects had awareness about professional knowledge. 62 (40.26%) of subjects had awareness about medication safety. 41 (26.62%) of subjects knew the correct way to dispose of the expired medications.

Conclusion: Medications were widely used at home among Chinese community residents. A larger number of medications were stored for disease prevention and self-medication. Community residents lack appropriate knowledge and awareness of medications which may expose them to health threats. Sustained efforts are warranted for the future.

Tools to assess the FIP's academic goals of Pharmaceutical Workforce Development Goals: A systematic review

Zeinab Abedini[1]*, Ahmed Awaisu[1], Banan Mukhalalati[1], Ian Bates[2]

[1]*College of Pharmacy, Qatar University, Doha, Qatar*

[2]*University College London, School of Pharmacy, Director of the FIPEd Development Team, FIP-UCL Collaborating Centre, London, United Kingdom*

Background: Pharmaceutical Workforce Development Goals (PWDG) have become an important component of pharmaceutical workforce, practice, and education in the last few years. PWDG comprise three main clusters: academic, professional development, and systems.

Purpose: This review aimed to identify existing tools within pharmacy or other healthcare professions to assess the three academic cluster's goals of PWDG, namely: academic capacity, foundation-training-and-early-career-development, and quality-assurance.

Methods: The following databases were searched from their inception until April 2020: ERIC, PubMed, EMBASE, Scopus, ProQuest, and Google-Scholar. The Crowe Critical Appraisal Tool (CCAT) was used for quality assessment of the included studies. Two reviewers independently assessed eligibility of the studies, and disagreements were resolved by consensus or third reviewer adjudication.

Results: Academic capacity, foundation training and early career development, and quality assurance possess five, three, and four indicators, respectively. Overall, three academic capacity tools (focusing on indicators two and three), followed by four foundation training and early career development (indicators one and three), and three quality assurance (indicators one and four) were identified which were assessing part of the indicators related to each goal. All of the included studies are of a high-quality (scored from 83-98% >75%).

Conclusion: This study is the first study to identify tools available to assess the PWDG's academic goals. The identified tools were focusing mainly on few indicators rather than all indicators in the goal. Therefore, there is a need for the development of objective tools that could assess all of the academic goals of PWDG and their indicators.

References

Bader, L.R., Bates, I., John, C. (2018). From workforce intelligence to workforce development: Advancing the eastern mediterranean pharmaceutical workforce for better health outcomes. *Eastern Mediterranean Health Journal*, **24**(9), 899–904

Mukhalalati, B., Bader, L., Alhaqan, A., Bates, I. (2019) Transforming the pharmaceutical workforce in the Eastern Mediterranean Region: a call for action. Available at: http://www.emro.who.int/in-press/reports/transforming-the-pharmaceutical-workforce-in-the-eastern-mediterranean-region-a-call-for-action.html

Tele-pharmacy innovations to improve pharmaceutical services

Ola Ibrahim Mohammed AJAM[1,2]*

[1]*Community Pharmacy, Osouleldeen University College, Baghdad, Iraq*

[2]*Community Pharmacy, Aby al-khaseeb Pharmacy, Baghdad, Iraq*

Background: Iraqi remote and rural sites suffer from a lack of healthcare services, that causes trouble for the elderly, disabled and poor patients at remote sites who need to travel and spend money to get access to healthcare.

Purpose: Pharmacists in Iraq are able to use tele-pharmacy and other useful technologies to provide patient care in remote areas by active communication with patients; besides, technology also facilitates sharing patient health records.

Methods: Employing the specialised pharmacy to connect with three pharmacies in remote areas to perform specialised pharmaceutical services to any pharmacy on the network. This network is done using both software and hardware, including: headsets, webcams, screens, and the specialised pharmacy photobox.

Through a questionnaire, which was done for patients in underserved areas, the author found that many patients suffered from a lack of healthcare services. Another questionnaire in which pharmacists expressed their suggestions also found that that applying tele-pharmacy was recommended by this group to help serve remote areas.

Results: Pharmacists are able to perform traditional pharmacy practice services by tele-pharmacy, such as prescription

verification and patient education in remote or rural sites. This developed the ability of pharmacists to communicate with specific patients by telephone such as geriatrics and patients with chronic diseases that always need pharmaceutical services.

Conclusion: Tele-pharmacy will facilitate interactions between pharmacists and patients in remote areas. Allows them to give drug information to patients and will also facilitate patients access to pharmacists specialising in high blood pressure, diabetes and heart disease. This will also improve the opening of tele-pharmacy services at all time including holidays in remote sites (allowing drug deliveries and audio video chats with pharmacists).

Student advocacy has ripple effects into the future

Brandy Seignemartin, Jennifer Miller, Julie Akers*

College of Pharmacy and Pharmaceutical Sciences, Washington State University, Spokane, United States

Background: Pharmacy professionals and students have the ability to influence change in policies through advocacy. The ability to understand and engage in the policy process is paramount to our ability to successfully advocate for positive changes in the healthcare system.

Purpose: To share the process students used to successfully lead the passage of a bill at the Washington State Legislature to expand interprofessional service and educational opportunities. The law allows any licensed nurse, physician, or pharmacist to supervise students in programmes of nursing, medicine, and pharmacy respectively, while providing healthcare services, so long the services are within the shared scope of practice and some other caveats.

Methods: The authors identified a need for change that had a legislative policy solution. They then built relationships with stakeholders who would be affected by this policy change and sought to understand their perspectives and objections. This was followed by negotiations with stakeholders during the legislative interim to achieve a proposal acceptable to stakeholders. The developed relationships for legislative sponsorship identified key steps in the legislative process for advocacy efforts. The authors then organised student advocacy days and testimony for public hearings on the bill with appropriate and concise messaging.

Results: The opportunity to advocate for change to a policy with meaningful applications for students provided direct exposure to the policy process that can be applied to other issues in the future.

Conclusion: Encouraging engagement at the student level and providing opportunities for students to engage in advocacy can have ripple effects into the future to improve healthcare with the collective voices of those from within the professions.

Impact of teaching policy and advocacy on student understanding and confidence

Julie Akers*, Brandy Seignemartin, Connor Capdeville, Xiaomeng Jiang

College of Pharmacy and Pharmaceutical Sciences, Washington State University, Spokane, United States of America

Background: For pharmacy professionals, learning to advocate for better healthcare policies is a crucial aspect of professional service and responsibilities. At the Washington State University College of Pharmacy and Pharmaceutical Sciences an elective course focused on politics and advocacy has been in place for seven years. The focus of the course is to teach the legislative and regulatory process and how stakeholders can influence policy.

Purpose: To assess the impact a politics elective course has on students' understanding of the legislative process and their confidence level advocating as stakeholders.

Methods: Students attending a state legislative event were given a survey pre/post the event. The survey assessed whether students were currently or had previously taken the course or if they had never taken the course. Survey questions focused on preparedness to discuss topics with legislators, understanding of the legislative process, belief their opinion is valued, and if the politics elective course influenced their confidence advocating.

Results: Ninety-one percent (91%) of survey respondents either were currently enrolled or had previously taken the elective course. A statistically significant increase was seen pre to post survey in students who agreed or strongly agreed that they were prepared, understood the legislative process, their opinions were valued, and that the course had significantly influenced their confidence in advocating.

Conclusion: The elective course positively influences student growth and understanding of advocacy. Material presented results in students who are confident and believe their opinion is valued. They understand how to navigate the advocacy process and hopefully will remain active members of the pharmacy profession.

What influences change in community pharmacy? A realist review

Suha Alharbi[1]*, Tracey Thornley[1,2], Claire Anderson[1]

[1]*Division of Pharmacy Practice and Policy, University of Nottingham, United Kingdom*

[2]*Boots UK, Nottingham, United Kingdom*

Background: Internationally, policymakers recognise community pharmacists' potential to support the health needs of the

population and reduce workload on the health system through better use of their skills.

Purpose: To explain how new community pharmacy services could be successfully implemented through addressing the research question 'what works for whom in what circumstances?'.

Methods: Conducted according to RAMESES standards. Systematic searching of four databases: Medline, EMBASE, Cochrane Library, and Scopus. Snowballing was used to gather more papers using Google searches, reference lists, and similar citations search.

Results: Fifty-two (52) papers were included for the final descriptive synthesis. Most of the studies explored stakeholder perceptions of community pharmacy services (CPSs). Accessibility and convenience were the main reasons behind using CPSs. Meanwhile time pressure and funding were real challenges for the pharmacists. No studies had developed or tested theoretical models to explore how organisational context could affect the implementation of new CPSs. A provisional realist analysis was possible consisting of six mechanisms: Pharmacist Willingness, General Public Trust, Pharmacy Layout, Nature of the Services, Other Healthcare Perceptions, and Funding of the Service. This review offers hypotheses about how these mechanisms might play out differently in different contexts to account for the success or failure of delivering new services in CP.

Conclusion: Further research is required into the organisational and contextual factors that could affect the delivery of CPSs, then to develop and test the theory

Exploring public attitude towards community pharmacy services in Cardiff: A pilot study

Suha Alharbi[1]*, Tracey Thornley[1,2], Claire Anderson[1]

[1]*Division of Pharmacy Practice and Policy, University of Nottingham, United Kingdom*

[2]*Boots UK, Nottingham, United Kingdom*

Background: Although there are studies on enhanced roles of community pharmacists in the United Kingdom, little is published about the public's perceptions of current or proposed roles in Wales.

Purpose: To investigate public perspectives on the feasibility of delivering various services through community pharmacy in the future in Wales.

Methods: A cross-sectional questionnaire using interviewer assisted or self-completion online.

Results: Sixty-nine (69) responses were analysed (37 interviewer-assisted, 32 online). Two-thirds of the participants were female (65.2%, n=45), with approximately 67% (n=46) below 35 years old. Most participants 78 % (n=54) had visited community pharmacy at least once within the last six months. However, awareness about current services delivered in community pharmacy varied. Most participants felt that the pharmacist and their team could help with medication-related tasks, such as giving advice or repeat prescriptions. Furthermore, 79.7% (n=55) agreed that health campaigns on social media would help to increase awareness of relevant health issues. People were highly willing to use the proposed pharmacy services, including screening services (81%, n=56), digital health (71% n=49), and services provided by pharmacist independent prescribers (71%, n=49).

Conclusion: From the public perspective, it is most feasible to deliver more screening and independent prescribing services in community pharmacies. There is scope to use digital health to deliver future services and social media to promote healthy living.

Quality improvement framework for cardiovascular disease prevention services by Saudi community pharmacists

Hadi Almansour[1]*, Nouf Aloudah[2], Tariq Alhawassi[2,3], Betty Chaar[1], Ines Krass[1], Bandana Saini[1,4]

[1]*School of Pharmacy, Faculty of Medicine and Health, The university of Sydney, Sydney, Australia*

[2]*College of Pharmacy, King Saud University, Riyadh, Saudi Arabia*

[3]*Medication Safety Research Chair, College of Pharmacy, King Saud University, Riyadh, Saudi Arabia*

[4]*Woolcock Institute of Medical Research, Sydney, Australia*

Background: Cardiovascular disease (CVD) is a high burden disease in Saudi Arabia, however, primary care CVD risk prevention services are limited. Globally, there is evidence that community pharmacists can play a key role in CVD prevention. However, the perspectives of decision makers is critical to successful translation of evidence into local practice.

Purpose: To engage decision makers in discussions about implementing high quality CVD risk prevention services in community pharmacies.

Methods: Qualitative semi-structured interviews were conducted, audio-recorded and transcribed verbatim. All transcripts were thematically analysed.

Results: A total of 23 participants (87% male) from government and private sectors were interviewed. Alongside acknowledging the limited provision of CVD risks preventative services in primary care, most participants favoured the concept of utilising community pharmacist's capacity to assist in such services, with the data yielding three broad themes around the notion of

pharmacy service provision, which included: 1) Structure, 2) Processes and 3) Outcomes. Sub-themes included curriculum reform, health system reforms, health workforce development, professional services reconfiguration, professional socialisation and need for demonstrable clinical and cost effectiveness. Professional readiness, economic viability and stakeholder acceptance were considered essential to the successful services implementation.

Conclusion: Most participants favoured pharmacy-based CVD risk prevention services. However, prior to developing such services, support structures at the health system and health professional level are needed as well as building public support and acceptability for pharmacy services.

Primary care pharmacists and the management of chronic illness in young people: A qualitative study

Mohammed Almunef[1]*, Julie Mason[2], Chris Curtis[2], Zahraa Jalal[2]

[1]*University of Birmingham, College of Medical and Dental Sciences, Birmingham, United Kingdom*

[2]*University of Birmingham, School of Pharmacy, Birmingham, United Kingdom*

Background: Recent evidence has shown that the incidence of long-term illnesses in young people is increasing (Shah, Hagell, & Cheung, 2019). Pharmacists, as medicine experts, are in a unique position to promote young people's health.

Purpose: The aim of this study was to explore the role of primary care pharmacists in the management of chronic illnesses in young people aged 18-24 years.

Methods: A qualitative study was undertaken. 21 primary care pharmacists in the United Kingdom were recruited through purposeful sampling. Semi-structured interviews were conducted, and audio recorded, transcribed verbatim and analysed using thematic analysis. The main focus was on primary care pharmacists' roles in caring for young people with chronic illnesses. Pharmacists' perceptions about young people's medication-related experiences, and views on pharmaceutical care services provided to young people and suggestions for improvement were also explored.

Results: Participants identified several roles for primary care pharmacists in caring for young people with chronic illnesses. These roles included following the safe guiding protocols, encouraging young people to visit the pharmacy to collect their medicines and ensuring that they have enough medicines supply, counselling and educating young people about their medicines and answering their queries, building trusted relationships directly with them, provision of specialist services, following up with young people and checking on medication compliance, and signposting them for further support.

Conclusion: Primary care pharmacists feel that they have an important role in supporting young people with chronic illness. This study identified many ways in which pharmacists provide services and support to young people.

References

Shah, R., Hagell, A., & Cheung, R. (2019). International Comparisons of Health and Wellbeing in Adolescence and Early Adulthood. Available at: https://www.nuffieldtrust.org.uk/research/international-comparisons-of-health-and-wellbeing-in-adolescence-and-early-adulthood

Risk of re-feeding syndrome in malnourished patients that initiate total parenteral nutrition

Carlos Angel Alonso Peralta*, Julia Sanchez Gúndin, Berta Rogado Vegas, Rosa María Gonzalez Franco, Juan Casanova Vazquez, María Rioja Carrera, Marta Valero Dominguéz

Hospital Pharmacy, Hospital Universitario Marqués de Valdecilla, Santander, Spain

Background: Re-feeding syndrome (RFS) is a metabolic condition that occur after the reintroduction of complete nutritional therapy, in an excessive and improper amount, in malnourished patients.

Purpose: To evaluate the malnourished patients at risk of developing RFS and with how many energy requirements they had initiated.

Methods: An observational, retrospective study was carried out in a third level hospital from September 2018 to September 2019. Demographic variables: age and sex. The analytical variables of malnutrition at the beginning of total parenteral nutrition (TPN) and subsequent RFS were, respectively: prealbumin (<10mg/dL) and phosphorus (<2.3mg/dL on day 7 after the beginning). Theoretical nutritional requirements were calculated using the Mifflin formula and compared with the initial kilocalories (Kcal) received. Data were collected from the electronic health records and the electronic prescription records.

Results: One hundred (100) patients were included, 66 were men. The median age was 69 years (range 21-93). 36 patients presented malnutrition at the beginning of TPN (defined as prealbumin < 10mg/dL) of which 4 had low phosphorus levels on day 7 (11%). Median starting Kcal of undernourished patients was 1565 Kcal (97.71% of the theoretical nutritional requirements, 1598 Kcal).

Conclusion: The prevalence of malnutrition at the beginning of TPN was 36% of patients of whom 11% were at risk of developing RFS because of starting TPN with practically all requirements. To prevent RFS is critical to identify malnourished patients and gradually increase TPN intake.

Pharmacogenetics in pharmacy practice: Collaboration between community and hospital pharmacists

Guillermo Bagaría[1]*, Joan Francesc Mir[1], Cristina Rodríguez-Caba[1], Maria Estrada-Campmany[1], Laura Gras-Martín[2], Laia López-Vinardell[2], Pau Riera-Armengol[2,3,4]

[1]*Àrea de Projectes i Recerca, Col·legi de Farmacèutics de Barcelona, Spain*

[2]*Servei de Farmàcia, Spain*

[3]*Servei de Genètica, Hospital de la Santa Creu i Sant Pau, Spain*

[4]*Institut de Recerca Biomèdica Sant Pau (IIB-Sant Pau), Barcelona, Spain*

Background: Clopidogrel is a CYP2C19-activated pro-drug, used to prevent cardiovascular events. Up to 27% of Caucasians has at least one CYP2C19*2 allele (impaired enzymatic activity), whereas 38% have at least one CYP2C19*17 allele (higher enzymatic activity). However, CYP2C19 pharmacogenetic analysis before prescribing clopidogrel is not widely implemented in clinical practice.

Purpose: To evaluate feasibility and operability of a collaborative pilot circuit to determine pharmacogenetic markers to optimise clopidogrel prescription.

Methods: The authors expect 150 patients with a clopidogrel prescription by a cardiologist of Hospital de Sant Pau to enrol. They can enrol when filling their prescriptions in one of the 24 collaborating community pharmacies in the Hospital's area. Community pharmacists collect from each participant's pharmacotherapeutic profile and a saliva sample to be sent to the hospital for CYP2C19 genotyping. Hospital pharmacists collate all obtained data with their clinical records. Data are analysed jointly with a cardiologist to assess clopidogrel prescription adequacy. Barcelona Pharmacists' Association (COFB) coordinates the whole project and provides IT and logistic support.

Results: This project started in January 2020 and it was temporarily suspended due to the COVID19 pandemic. On 13th March 2020, 114 patients with clopidogrel prescriptions were registered, 21 met the inclusion criteria and 15 were enrolled. Five out of the eight already genotyped patients were intermediate or poor metabolisers.

Conclusion: This circuit seems to be feasible, but further research is needed once the study is resumed. Pharmacogenetics increasing clinical relevance needs more clinical implication of pharmacists.

Medicines as a hidden source of free sugars

Ana María Besoaín*, Irene Lizano-Díez, Pilar Modamio, Cecilia F. Lastra, Eduardo Luis Mariño

Clinical Pharmacy and Pharmaceutical Care Unit, Department of Pharmacy and Pharmaceutical Technology, and Physical Chemistry, Faculty of Pharmacy and Food Sciences, University of Barcelona, Barcelona, Spain

Background: An unhealthy diet is a risk factor for non-communicable diseases (NCDs). Since high intake of free sugars from foods/drinks is related to low nutritional value, it is important to assess if medicines could be also a potential source, considering the recommendation of reducing the intake of free sugars to <10% of total energy intake and ideally <5% for additional health benefits.

Purpose: To estimate the maximum energy contribution from free sugars of orally administered medicines in Spain, according to their daily doses.

Methods: We conducted a search about all medicines authorised in Spain that declared a presence of glucose, fructose or sucrose. The amount of sugar and maximum daily dose were obtained from the summary of product characteristics (AEMPS-CIMA) or by contacting the manufacturer.

Results: A total of 2,086 medicines were analysed, of which 1,945 had information on free sugar content. On average, the potential daily contribution of free sugars as glucose, fructose or sucrose per medication is 19.4 kcal, equivalent to 1% of the total energy intake for a healthy person who consumes about 2,000 kcal/day.

However, 68 medications exceed the recommended 5% of energy intake from free sugars, reaching a potential of 2,400 kcal/day in the case of a sucrose-containing medicine (120% of total energy). 37% of that medicines are used for respiratory system pathologies and 72% of them could be dispensed without prescription.

Conclusion: Patients and healthcare professionals must be aware that some oral medicines may be an important source of free sugars. Care must be taken especially in people with NCDs associated with a positive energy balance and diabetes.

Gluten-containing excipients in prescribed drugs: are celiac patients at risk?

Ana María Besoaín*, Irene Lizano-Díez, Pilar Modamio, Cecilia F. Lastra, Eduardo Luis Mariño

Clinical Pharmacy and Pharmaceutical Care Unit, Department of Pharmacy and Pharmaceutical Technology, and Physical Chemistry, Faculty of Pharmacy and Food Sciences, University of Barcelona, Barcelona, Spain

Background: Celiac patients must maintain a strict gluten-free diet to reduce symptoms and improve their quality of life. However, not only self-medication but also medications prescribed to treat acute, chronic conditions or even those derived from their underlying pathology could be a source of unintentional gluten intake, due to possible presence of wheat starch (containing gluten) used as an excipient.

Purpose: To estimate the prevalence of medication prescribed to celiac patients in Spain that may contain gluten in their excipients and to be aware of this potential source exposure.

Methods: Medications prescribed to celiac patients between January 2013 to December 2018 were collected from a national prescription database. The gluten content was analysed with the Nomenclator for prescription of the Medicine Online Information Centre of Spanish Agency of Medicines and Medical Devices (CIMA-AEMPS).

Results: On average, 19,458 (10.2%) out of 190,983 medicines prescribed to celiac patients had excipients that may contain gluten, during the course of the five year study. The highest rates were observed in 2016 and 2017, both with 14%. Fifty percent (50%) of prescriptions were issued for patients under 40. Fifteen oral medicines with excipients that may contain gluten were identified, of which 13,241 medication belong to the ATC code A: alimentary tract and metabolism (68.0%), being sodium carboxymethyl starch the most frequently declared excipient (75.7%).

Conclusion: The percentage of potential gluten-containing medicines prescribed to celiac patients in Spain is not negligible. Given that this disease is commonly underreported these results could show just the tip of the iceberg.

Analysis of the care consumption of Belgian children taking asthma medications

Natacha Biset[1]*, Wies Kestens[2], Dominique De Temmerman[2], Murielle Lona[2], Güngör Karakaya[2], Ann Ceupens[2], Stéphanie Pochet[1], Carine De Vriese[1]

[1]*Pharmacology, Pharmacotherapy and Pharmaceutical care, Université libre de Bruxelles, Belgium*

[2]*Department of Studies & Innovation, Mutualités Libres - Onafhankelijke Ziekenfondsen (MLOZ), Brussels, Belgium*

Background: Asthma is a multifactorial disease often associated with higher health care utilisation such as higher drug consumption or more frequent hospitalisations.

Purpose: The purpose was to analyse the consumption of asthma medications in children (2-18 years) in order to investigate the association with healthcare consumption.

Methods: A retrospective study using anonymised administrative data for 2013 to 2018 from the third Belgian health insurer, Mutualités Libres, was conducted. The authors identified two groups of suspected asthma cases based on asthma drugs deliveries: 1) at least one asthmatic drug dispensation; and 2) at least 2 asthmatic drugs dispensations with at least 30 days between two purchases (more severe clinical picture). Health care consumption was analysed by the use of allergy medication or antibiotics, emergency rooms visits and overnight hospitalisations.

Results: 67.5%(1) to 75.6%(2) of preschool-children who received asthma medications also received allergy medications against 34.8% for children without asthma medications. The same trend was observed for antibiotics: children with asthma medications were about twice as likely to receive antibiotics. Regarding hospital visits, children who have received asthma medications were more likely to end up in the emergency room (34.8%(1) to 38.8%(2)) than those who have not (23.0%), and this is especially true in preschool-children. Furthermore, children who have been prescribed at least one asthma medication were twice as likely to be hospitalised.

Conclusion: Further studies are needed to understand the reasons for this increased use of healthcare, which could be related, for example, to medication adherence problems

Real-world effectiveness and safety of ixekizumab in patients with psoriasis

Sergio Cano Domínguez[1]*, Misael Rodríguez Goicoechea[1], Sara Guijarro Herrera[1], Eduardo Tejedor Tejada[2]

[1]*Farmacia del hospital, Hospital Universitario Virgen de las Nieves, Granada, Spain*

[2]*Hospital pharmacy, Hospital Universitario Torrecárdenas, Almería, Spain*

Background: Ixekizumab is a recently approved interleukin 17A inhibitor indicated for the treatment of patients with plaque psoriasis and psoriatic arthritis.

Purpose: To assess effectiveness and safety of ixekizumab in patients with psoriasis.

Methods: Retrospective, observational study performed in a third-level hospital. Patients with psoriasis starting treatment with ixekizumab between July 2017 to December 2019 were included. Demographic, clinical and treatment variables were collected at baseline. Efficacy and safety were assessed based on the Psoriasis Area and Severity Index (PASI), Body Surface Area (BSA), and pre and post treatment analytics. Data were obtained from medical records (Diraya) and electronic prescription (Prisma) applications.

Results: Seventeen (17) patients included, mean age 42±11 years, of whom 76% were men. All patients had moderate to severe psoriasis. 88% had received prior non-biological systemic treatment and 71% had failed to prior biologics

Patients were assessed according to PASI or to BSA, baseline average was 7.2 and 15.3 respectively. Treatment's average duration was 56 weeks. eight patients achieved a PASI75 and six of them reached PASI90. Two patients reached BSA0 and one attained BSA1. 35% of patients achieved completely clear skin and 59% attained almost clear skin. Five patients had no response data available during the study period. Regarding safety, three patients experienced injection site reaction and one suffered a UTI.

Conclusion: Ixekizumab shows high efficacy, achieving almost clear skin in more than 50% of patients, both in naive patients and in those who failed prior biologics. Ixekizumab is well tolerated, with a good safety profile and without discontinuations due to adverse effects

Effectiveness and safety of nab-paclitaxel in metastatic breast cancer

Isabel María Carrión Madroñal, Olalla Montero Pérez*, María Teresa Garrido Martínez

Servicio De Farmacia Hospitalaria, Hospital Universitario Juan Ramón Jiménez, Huelva, Spain

Background: Trial results might have limited external validity in daily practice so real-life studies are commonly performed to confirm the results.

Purpose: To analyse nab-paclitaxel effectiveness and safety.

Methods: A retrospective observational study from 2014-2019. Data collected: age, number of cycles, duration of treatment, progression-free survival (PFS), number and type of previous chemotherapy regimens, adverse events (AE), dose reductions and delays between cycles. Data obtained from the health records and chemotherapý s software.

Results: Thirty-five (35) patients were included, median age of 57 years. The median duration of the treatment was 2.9 months (five cycles). Patients had a median of one previous chemotherapy line in metastatic stage (range 0-4). Ninety-four percent (94%) of the patients received nab-paclitaxel as metastatic therapy in the second line or later. Most common regimens used before nab-paclitaxel were: paclitaxel+ bevacizumab 31%, non-pegylated liposomal doxorubicin 25.7%, epirubicin+docetaxel 20%, vinorelbine 14%, paclitaxel 11%, docetaxel 11%, eribulin 11%, pegylated liposomal doxorubicin 8.6%, and cisplatin+gemcitabine 5.7%. Median PFS was 3.4 months; 62.8% of the patients had any AE during treatment. Most frequents were: neuropathy 59%, asthenia 54.5%, sickness 36.0%, alopecia 27%, mucositis 18%, constipation 18%, diarrhoea 9.0% and anorexia 9%. One patient interrupted the treatment due to AE. There were two delays and six dose reductions due to toxicity.

Conclusion: Nab-paclitaxel median PFS was lower than the PFS obtained in phase III trial. It could be explained because the patients received previous regimens of chemotherapy with taxanes for metastatic disease and our sample size was smaller. Nab-paclitaxel was well tolerated

Secukinumab for the treatment of plaque psoriasis and psoriatic arthritis

Isabel María Carrión Madroñal, Ana Belén Guisado Gil, Ernesto Sánchez Gómez, Olalla Montero Pérez*

Servicio De Farmacia Hospitalaria, Hospital Universitario Juan Ramón Jiménez, Huelva, Spain

Background: Secukinumab is authorised for the treatment of moderate-to-severe plaque psoriasis (PP) and psoriatic arthritis (PA).

Purpose: To assess the effectiveness and safety of secukinumab in adults with moderate-to-severe PP or PA.

Methods: An observational transversal study was carried out in 2019, which included patients treated with secukinumab for moderate-to-severe PP or PA. Data collected: sex, age, indication, treatment regimen, previous treatment and reason for discontinuation, Psoriasis Area and Severity Index (PASI) and adverse events (AE). Effectiveness endpoint was PASI75 at 12 weeks.

Results: Forty (40) patients (62.5% men), median age of 46 years; 57.5% were treated for PA and 42.5% for PP. The treatment regimen consisted of secukinumab 300 mg for PA 78% and PP 100%, or secukinumab 150 mg for PA 21.7%. The frequency of administration was monthly 95% for maintenance therapy except in two cases of dose optimization in PA. Secukinumab was first 20%, second 35%, or subsequent biologic treatment line 45%. Previous treatments were adalimumab 52%, etanercept 45%, ustekinumab 22.5%, infliximab 17.5%, golimumab 10% and certolizumab 5%. Discontinuations of previous treatments were due to lack of efficacy 95% or AE 5%. PASI could be evaluated in 14 patients. At week 12, the median PASI value was six for PA and five for PP. Seven patients achieved PASI75, two with PA and five with PP. No AE were reported.

Conclusion: According to PASI75 at 12 weeks, secukinumab was an effective treatment in approximately half of the patients evaluated. Our data showed a PASI improvement worse than clinical trials that could be due to most patients presented prior biologic treatment failure. Secukinumab was well-tolerated.

Six Sigma as a modern medical method of managing healthcare systems

Sinisa Cikic[1]*, Ivan Bosnjak[2], Marija Bosnjak[3]

[1]*Pharmacology, Tulane University, Medical School, New Orleans, United States*

[2]*Neurosurgery, UHC Sisters of Mercy, Zagreb, Croatia*

[3]*Macroeconomics, Faculty of Economics and Business, Zagreb, Croatia*

Background: Throughout history, healthcare systems have always had difficulties in achieving optimal and cost management.

Purpose: The goal is to give patients the best possible evidence based medical treatment which in modern medicine includes individualised modalities of treatment.

Methods: In recent centuries, as medicine has reached new horizons, big improvements have been made in management theory and application. Management thought has transformed organisational structures of many different organisations.

Results: The initial approach from Webber's administrative management in which there are rigid organisations with vertical information flow was altered to mixed decentralised organisation with small but efficient processes. Rigid organisational structures have failed to follow medical improvement in individual drug patient treatment and implementation of newest medical technology with cost efficiency. Six Sigma is based on business process analysis and removing or remodelling individual processes defect. A defect is defined as a factor that leads to patient dissatisfaction. The goal of Six Sigma is three to four defects per million. An example of Six Sigma implementation would be implementation of efficient enterprise resource management programmes in hospital pharmacies; This is a computerised system that promotes faster communication with suppliers and tracks drug supplies in pharmacy. This way there is improvement in business process by removing defect of running out of drugs or oversupply.

Conclusion: Modern management methods are becoming more utilised in medical institutions. Utilisation of these theories which gave positive results in other industries provides more value to patient health as well as employee satisfaction.

Effect of pharmacists' medication reconciliation and counselling in ambulatory dialysis patients

Lynette Joy Colonia[1,2]*, Vina Rose Dahilig[3]

[1]*School of Pharmacy Graduate Studies, Philippine Women's University, Manila, Philippines*

[2]*Pharmacy Department, De La Salle University Medical Centre, Dasmarinas, Philippines*

[3]*Pharmacy, Manila Adventist College, Pasay City, Philippines*

Background: Management of patients with kidney diseases poses many challenges to health practitioners because they often have existing co-morbidities and are taking multiple medications which predisposes them to a higher risk of adverse events (Patricia, & Foote, 2016). Pharmacists, through medication reconciliation and patient counselling, are in the best position to improve the level of care and health related quality of life of kidney disease patients (Thomas *et al*., 2009).

Purpose: It is the interest of this study to explore pharmacists' potential interventions in the management of out-patient dialysis patients through medication reconciliation and counselling.

Methods: This study is a randomised quasi-experimental non-equivalent (pre-test and post-test) control group design exploring the effects of patient counselling and medication reconciliation among CKD patients undergoing dialysis.

Results: Results showed that there were 108 identified errors identified through medication reconciliation. Majority of these Level 0/No Harm errors were due to unspecified dosage form. There appears to be a significant change in the dialysis patients' quality of life after pharmacist's patient counselling. This indicates that patient counselling may help improve kidney patients' quality of life. There appears to be a significant change in the dialysis patients' quality of life after pharmacist's patient counselling and medication reconciliation as shown by higher scores in the post test.

Conclusion: The results of the study showed that patient counselling and pharmacists' interventions through medication counselling offered benefits to kidney patients undergoing dialysis in terms of improvement of their health-related quality of life.

References

Ghimirey, A., Sapkota, B., Shrestha, S., Basnet, N., Shankar, P.R., & Sapkota, S. (2013). Evaluation of pharmacist counseling in improving knowledge, attitude, and practice in chronic kidney disease patients. *SAGE Open Medicine*, **1**. https://doi.org/10.1177/2050312113516111

Maciel, A.P.F., Pimenta, H.B., & Caldeira, A.P. (2016). Quality of life and medication adherence in hypertensive patients. *ACTA Paulista de Enfermagem*, **29**(5), 542–548. https://doi.org/10.1590/1982-0194201600075

Salgado, T.M., Moles, R., Benrimoj, S.I., & Fernandez-Llimos, F. (2012). Pharmacists' interventions in the management of patients with chronic kidney disease: A systematic review. *Nephrology Dialysis Transplantation,* **27**(1), 276–292. https://doi.org/10.1093/ndt/gfr287

Shareef, J., Kripa, G.S., & Baikunje, S. (2014). Impact of Pharmacists' Counseling on Quality of Life in Patients Undergoing Hemodialysis in a Tertiary Care Teaching Hospital. *World Journal of Nephrology and Urology*, **3**(4), 143–150. https://doi.org/10.14740/wjnu188w

Developing pharmacy assistants' role in medication checking

Rebecca Curran[1]*, Christy Noble[2], Shelley Roberts[3,4], Trudy Teasdale[5], Rachael Raleigh[5]

[1]*School of Pharmacy, University of Queensland, Brisbane, Australia*
[2]*Faculty of Medicine, University of Queensland, Brisbane, Australia*
[3]*School of Allied Health Sciences, Griffith University, Australia*
[4]*Allied Health Research, Australia*
[5]*Pharmacy, Gold Coast Hospital and Health Service, Gold Coast, Australia*

Background: Medication safety is a patient care priority worldwide. In Australian hospitals, patients' medications are predominantly checked by pharmacists, a labour and time intensive process. Expanding the scope of pharmacy assistants' roles to include medication checking may address this challenge. While this approach has shown benefits, implementation in Australia is limited and no formalised training is available to Australian-qualified assistants.

Purpose: This study aimed to explore barriers and facilitators to developing pharmacy assistants' capabilities to accuracy-check inpatient medications at an Australian tertiary hospital.

Methods: This qualitative descriptive study involved semi-structured interviews with pharmacists and pharmacy assistants using purposive sampling. Interview guides based on the Theoretical Domains Framework (TDF) were used to collect data. The interviews were audio recorded, transcribed verbatim, and framework analysis conducted.

Results: A total of 22 interviews were conducted with pharmacy assistants (n=10) and pharmacists (n=12). Several key themes and sub-themes relating to barriers and facilitators to developing pharmacy assistants' capabilities for medication accuracy checking emerged. Barriers included negative peer influence and limited personnel resources, whilst enablers included career goals/motivation and improved workflow.

Conclusion: This study identified perceived barriers and facilitators to developing pharmacy assistants' capabilities in conducting medication accuracy checking in an Australian hospital context. To bring about a successful change in practice, barriers must be addressed, and facilitators should be promoted, so the assistant workforce is able to upskill.

The role of pharmacist in therapy optimisation among patients after myocardial infarction–a preliminary study

Edyta Czepielewska[1], Agnieszka Lisowska[1], Anna Dworakowska[1], Jadwiga Bukita[1], Joanna Marciniuk[1], Joanna Oberska[1], Adrianna Osiak[1], Liliana Pałczyńska[1]*, Agnieszka Serafin[2], Magdalena Makarewicz-Wujec[1], Małgorzata Kozłowska-Wojciechowska[1]

[1]*Department of Clinical Pharmacy and Pharmaceutical Care, Medical University of Warsaw, Warsaw, Poland*
[2]*1st Department of Cardiology, Medical University of Warsaw, Warsaw, Poland*

Background: Myocardial infarction (MI) is one of the leading causes of mortality in Europe. To reduce the risk of cardiovascular complications, the guidelines on management in acute coronary syndrome recommend poly-pharmacotherapy. Patients with MI often suffer from concomitant diseases that also require treatment. The use of multiple drugs increases the risk of drug-related problems (DRPs).

Purpose: This project aimed to identify and resolve DRPs in MI patients, as well as to support their therapy by informing patients about medications taken, correct principles of pressure measurement and, in case of smokers, smoking cessation.

Methods: The research was performed among Polish patients included in Managed Care after Myocardial Infarction programme. For DRPs identification, pharmacist-led medication use reviews were conducted five weeks after MI. Number and type of DRPs were assessed according to PCNE classification, version 8.03. Every patient was given written recommendations concerning adherence and health-related issues.

Results: The study recruited 20 MI patients. The most common comorbidities were hypertension (60%), hyperlipidemia (50%), heart failure (40%) and diabetes (20%); 30% of patients were addicted to nicotine. Each individual was taking on average eight medications (range of 5-10). A total of 18 DRPs were identified in 13 (65%) patients. The most common DRPs (67%) were related to treatment safety: the use of an inappropriate drug or inappropriate combination of drugs.

Conclusion: Comprehensive therapy needs cooperation among healthcare professionals. Pharmacists, with their knowledge and skills, can provide significant support for therapy optimisation in MI patients.

Characterisation of professional pharmacy association resources and recommendations on COVID-19 pandemic

Alexis Del Pilar[1]*, Kimberly Diaz[1], Tasong Metangpa[1], Noella Sama[1], Jacqueline Yuven Mabu[1], Alina Cernasev[2], Hoai-An Truong[1]

[1]*School of Pharmacy and Health Professions, University of Maryland Eastern Shore, Princess Anne, United States*

[2]*Department of Clinical Pharmacy & Translational Science, The University of Tennessee Health Science Center, Nashville, United States*

Background: As one of the most accessible healthcare workers, pharmacists are at the frontlines during emergencies such as the COVID-19 pandemic. Professional pharmacy associations provide resources and recommendations for pharmacists on COVID-19. Yet, the extent and repository of resources are currently not categorised.

Purpose: To identify COVID-19 resources for pharmacists provided by associations in the United States of America and the International Pharmaceutical Federation (FIP) and characterise these resources to better serve pharmacists' needs to combat the pandemic.

Methods: A review of 17 pharmacy association websites was conducted to identify available resources. Search terms included 'resource, policy and recommendation'. Specific criteria were applied to categorise results in six areas. Descriptive statistics were used for data analysis.

Results: Of the 16 US pharmacy associations and the FIP websites, 94% provided COVID-19 resources, 53% developed policies, and 94% had specific recommendations. Those were characterised into 6 types of recommendations, including 94% on general recommendations, 65% on education/training, 53% on supply chain management/drug shortages, 47% on guidelines/protocols, 71% on scope of practice, and 24% on the emergence of tele-health.

Conclusion: Whilst the majority of associations provide COVID-19 related resources on general recommendations, scope of practice, and education/training, there are opportunities for more specific areas on guidelines/protocols and telehealth. With the dynamic nature of COVID-19, it is important for pharmacists to stay updated to provide optimal care for diverse patients and populations while combating the current pandemic and beyond.

Attitudes of Estonian pharmacists towards pharmacy-based vaccination

Kaie Eha[1]*, Lilian Ruuben[1], Kadi Lubi[2]

[1]*Medical Technology Education Centre, Curriculum of Assistant Pharmacist, Estonia*

[2]*Health Education Centre, Tallinn Health Care College, Tallinn, Estonia*

Background: Estonia is experiencing a decline in overall vaccination rates and Estonia has one of the lowest vaccination rates in Europe for seasonal influenza. In 2018, a pilot project for pharmacy-based flu vaccination took place and the public received it very well. Many of the patients indicated they would accept pharmacists as vaccinators, in addition to nurses or other health-care professionals.

Purpose: To find out the attitudes of Estonian pharmacists towards pharmacy-based vaccination and themselves as vaccinators and pharmacies as place to administer vaccines.

Methods: An online survey was carried out amongst currently working community pharmacists after the vaccination pilot project. The questionnaire consisted of 25 questions and was anonymous. Altogether 313 pharmacists from four pharmacy chains took part of the survey. For data analysis descriptive statistics with Microsoft Excel was performed.

Results: Although pharmacists find pharmacy a suitable place to vaccinate, most of them are not willing to vaccinate by themselves. After proper training, 30% of participants are already willing to vaccinate people. The biggest concerns were lack of private counselling rooms, lack of counselling knowledge about vaccines, unwillingness to touch patients and fear of administering vaccines due to syringes and possibility of anaphylactic shock.

Conclusion: Pharmacies are most accessible primary health-care institutions and therefore hold a significant role in informing public about the importance of vaccination. Training programmes should be implemented during studies and as further training for working professionals to use pharmacists as

Systemic solutions for addressing non-communicable diseases (NCDs) in low and middle-income countries (LMICs)

Luna El Bizri[1]*, Aakash Ganju[2], Alessandra Goulart[3], Amanda Stucke[4] Amrit Ray[5], Anurita Majumdar[6], Barett Jeffers[7], David Humphreys[8], Gloria Llamosa[9], Henry Canizares[10], Ianne Ramos-Canizares[10], Ibtihal Fadil[11], Kannan Subramaniam[12], Lee Ling Lim[13], M Ramesh[14], Matthew Guilford[15], Raghib Ali[16], Ratna Devi[17], Rayaz Malik[18], Shektar Polkar[19], Wang Yuan-Pang[20]

[1]Scientific Committee, Lebanese Order Of Pharmacists, Beirut, Lebanon

[2]Founder/CEO, SaatHealth, Mumbai, India

[3]Center for Clinical and Epidemiological Research, University Hospital of Sao Paulo, Sao Paulo, Brazil

[4]Health Policy and Clinical Evidence, The Economist Intelligence Unit, Washington,D.C., United States

[5]Research, Development and Medical, , Upjohn – a Pfizer Division, New York, United States

[6]Research, Development and Medical, Emerging Markets, Upjohn – a Pfizer Division, Singapore, Singapore

[7]Research, Development and Medica, , Upjohn – a Pfizer Division, New York, United States

[8]Health Policy and Clinical Evidence, The Economist Intelligence Unit, Washington D.D., United States

[9]Vice president, 6Mexican Neurology and Psychiatry Society, Mexico , Mexico

[10]Vicente Sotto Memorial Medical Center, Vicente Sotto Memorial Medical Center, Cebu, Philippines

[11]founder and chair, Eastern Mediterranean Non-Communicable Disease Alliance, Auckland, New Zealand

[12]Research, Development and Medical, Upjohn – a Pfizer Division, Sydney, Australia

[13]Department of Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia

[14]Lee Kuan Yew School of Public Policy, National University of Singapore, Singapore, Singapore

[15]Common Health, Common Health, Kuala Lumpur, Malaysia

[16]Public Health Research Center, New York University, Abu Dhabi, United Arab Emirates

[17]DakshamA Health and Education, DakshamA Health and Education, Gurgaon, India

[18]Weill Cornell Medical College, Weill Cornell Medical College, Qatar, Qatar

[19]Research, Development and Medical, Upjohn – a Pfizer Division, Dubai, United Arab Emirates

[20]Clinicas Instituo de Psiquiatria, , Universidade de Sâo Paulo Paculdade de Medicina , Sao Paulo, Brazil

Background: NCDs have been on the rise in LMICs representing a significant healthcare concern. The need for inter-sectoral partnerships between all sectors is key element in addressing the rising burden of NCDs in these countries.

Purpose: To address challenges in emerging nations, actors from across the health sector in LMICs formed a think-tank to examine issues and offer potential opportunities that may address the rising burden of NCDs in these countries.

Methods: An Expert Forum on NCDs in LMICs was convened in Dubai September 2019: From the 15 experts, one Community Pharmacist and member of FIP NCDs working group was representing the community pharmacists as front line primary health care providers. Each delegate presented the patient journey in the context of his/her respective region and put his expertise to analyse current situation and find solutions.

Results: The experts identified five challenges and seven solutions for NCD burdens.

The main challenges were limited implementation of Universal Health Coverage, need for inter-sectoral partnership, gaps in the implementation of regulations, in systemic data collection and longitudinal surveillance data. The main solutions were: screening and risk assessment, optimised education for all sectors; access to treatment, better use of human resources; and greater utilisation of technology. Community pharmacists already embrace several of these solutions but remain under-utilised as health care professionals with broad capability

Conclusion: A multi-sectoral approach with novel accountable alliances involving both public and private sectors, including community pharmacists, is needed to ensure that the essential resources for NCD care are evenly distributed and accessible to all.

References

Doll, R., Peto, R., Boreham, J., & Sutherland, I. (2004). Sutherland I. Mortality in relation to smoking: 50 years' observations on male British doctors. *BMJ.* **328**(7455), 1519. https://doi.org/10.1136/bmj.38142.554479.AE

Parascandola, M., & Xiao, L. (2019). Tobacco and the lung cancer epidemic in China. *Translational Lung Cancer Research*, **8**(S1):S21-S30. https://doi.org/10.21037/tlcr.2019.03.12

Mascayano, F., Armijo, J.E., & Yang L.H. (2015). Addressing Stigma Relating to Mental Illness in LMICs. *Front Psychiatry*, **6**(38). https://doi.org/10.3389/fpsyt.2015.00038

Stein, J., Benjet, C., Gureje, O., Lund, C., Scott, K.M., Poznyak, V., & van Ommeren, M. (2019). Integrating mental health with other NCDs. *BMJ,* **364**, 1295. https://doi.org/10.1136/bmj.l295

Acceptance of CMM intervention in a nursing home

Katarina Fehir Šola[1]*, Donatella Verbanac[2], Sanda Vladimir Knežević[3], Pero Hrabač[4], Iva Mucalo[5], Andrea Brajković[5]

[1]Pharmacy, Pharmacy Bjelovar, Bjelovar, Croatia

[2]Department of Medical Biochemistry and Hematology, Croatia

[3]Centra for Applied Pharmacy, University of Zagreb Faculty of Pharmacy and Biochemistry, Croatia

[4]"Andrija Stampar" School of Public Health, School of Medicine, University of Zagreb, Croatia

[5]Centre for Applied Pharmacy, University of Zagreb Faculty of Pharmacy and Biochemistry , Zagreb, Croatia

Background: Comprehensive Medication Management Services (CMM) are clinical services based on pharmaceutical care. It is a patient-centred approach in which pharmacists take responsibility for the patient's needs.

Purpose: To determine the prevalence of drug therapy problems and identify their type. Secondary aim: To describe the interventions proposed to a general practitioner and identify the proportion of accepted interventions.

Methods: An interventional study was conducted during a 17-month period in a nursing home. DTPs were classified according

to an evaluation of the indication, effectiveness, safety, and convenience of each medication the patient was taking.

Results: Sixty (60) residents were included in the study. Median age was 79.9 (56.1 – 96.7) years. On average, residents used seven (2-16) medications and had five (1-10) comorbidities. The total number of 146 DTPs were identified (4.3 ± 1.9 per resident). The most prevalent DTP was ''Needs additional drug therapy'' (N=74; 23.9%), falling into effectiveness category. Pharmacists involved in the study suggested a total of 133 modifications to the mentioned DTPs. Pharmacist suggested six intervention. Physicians accepted a total number of 112 interventions.

Conclusion: The high prevalence of DTPs identified among elderly institutionalised patients strongly suggests the need to incorporate CMM services within the already existing institutional care facilities to improve the care provided to nursing home residents. High acceptance of such suggestions by the physicians proves that pharmacists are an essential part of the health system

Exploring ethical pharmacy practice in Jordan

Leen Fino[1,2]*, Iman Basheti[2], Betty Chaar[1]

[1]School of Pharmacy, The University of Sydney, Sydney, Australia

[2]Faculty of Pharmacy, Applied Science Private University, Amman, Jordan

Background: Contemporary pharmacy practice is patient-centred practice, which implies a closer participation in patient's needs and wellbeing. As a result, pharmacists have more diverse decisions to make on handling different situations, ranging from simple matters to major ethical dilemmas. There is a paucity of research conducted in the area of pharmacy ethics in Jordan.

Purpose: This study aimed to explore the manner in which ethical dilemmas can be handled by Jordanian pharmacists, the resources used and their attitudes towards them.

Methods: Semi-structured interviews were carried out, using four pre-set scenarios, each based on ethical principles of pharmacy practice. The transcribed interviews were thematically analysed for emerging themes.

Results: Interviews were conducted with 30 registered pharmacists in Jordan. Four major themes were identified: Legal Practice; Familiarity with the Code of Ethics; Personal and Religious Values; and Professionalism. Findings showed that ethical decision-making in pharmacy practice in Jordan was decisively influenced by pharmacists' personal moral values and legal requirements; and managed by exercising common sense and experience. This pointed to large gaps in Jordanian pharmacists' understanding and application of basic principles of pharmacy ethics.

Conclusion: This study highlighted that paternalism, personal values and legal obligations are the major drivers influencing decision making processes of Jordanian pharmacists and a concerning trend of lack of respect for patient autonomy, which is a major gap in the ethical reasoning of Jordanian pharmacists. This illuminated the need for increased literacy in professional ethics of Jordanian pharmacists'. anaphylactic shock.

EXXITO - Children, youth and community pharmacy

Jesús Aguilar Santamaría, Raquel Martínez García, Ana López Casero-Beltrán, Laura Martín Gutiérrez*, Tàmara Peiró Zorrilla, Blanca Vargas Cosín, Raquel Varas Doval

General Pharmaceutical Council of Spain, Madrid, Spain

Background: The General Pharmaceutical Council of Spain, with the collaboration of Cinfa Laboratories, has been promoting annual training and practical actions for the development of Professional Pharmacy Services (SPFA) since 2014.

Purpose: This action aimed to update the knowledge of community pharmacists in addressing health problems whose prevalence is increasing among the child and youth population: Attention-Deficit/Hyperactivity Disorder (ADHD), addiction to new technologies, food intolerances and allergies, and eating disorders.

Methods: The action was developed between January and June 2019 using the CGCOF training platform with four theoretical modules, four interactive clinical cases, materials for parents and other complementary materials (audio book, website of interest, etc.). On a voluntary basis, the community pharmacists could register six real cases of the Medicines Dispensing Service indicated for the treatment of ADHD, thus leaving a record of their professional performance.

Results: Two thousand, eight hundred and nineteen (2,819) registered CPs from all over Spain; 1,061 CPs completed the action; 354 actual cases registered (65.5% women, 34.5% men)

-Main health problems: ADHD (50.3%), insomnia (5.0%), attention deficit (4.4%)

-Active treatments: methylphenidate (24.6%), atomoxetine (9.8%) and lisdexamfetamine (2.5%)

-Medicines to be dispensed: methylphenidate (36.0%), atomoxetine (9.6%)

-Professional performance: dispensing with health education (52.0%), dispensing with personalized information on the medicine (32.0%).

Conclusion: The CP provides different SPFA, such as medicines and health products dispensing, protocolised by AF-FC Forum[1], to respond to new needs in the child and youth population in

regard not only to medicines but also to other health-related aspects.

References

Pharmaceutical Care Forum in Community Pharmacy (AF-FC Forum). (2019). Practical Guide from the Pharmaceutical Care Services in Community Pharmacy. Madrid. General Pharmaceutical Council of Spain.

Applying the WHO SAGE Working Group Survey to Pneumococcal Vaccination Hesitancy in High-Risk Adults

Justin Gatwood[1]*, Chi-Yang Chiu[2], Kelsey Frederick[1], Chelsea Renfro[3], Tracy Hagemann[1], Kenneth Hohmeier[1]

[1]School 1Clinical Pharmacy, University of Tennessee College of Pharmacy, Nashville, United States

[2]Preventive Medicine, University of Tennessee College of Medicine, United States

[3]Clinical Pharmacy, University of Tennessee College of Pharmacy, Memphis, United States

Background: Significant attention has been paid to vaccine hesitancy in paediatric and adolescent populations, with several frameworks developed to interpret vaccine-seeking behaviours. However, frameworks established in younger populations may be applicable to adult vaccine hesitancy but have yet to be fully tested.

Purpose: To test the model fit of the WHO SAGE Working Group Survey on constructs associated with vaccine hesitancy in adults.

Methods: This was a cross-sectional survey of adults (18-64 years old) residing in select Tennessee cities and diagnosed with a condition placing them at high-risk for an invasive pneumococcal disease according to the US Centre for Disease Control and Prevention. The survey instrument used items suggested by the WHO SAGE Working Group on Vaccine Hesitancy, adapted for use in adults. Inferential statistics compared responses by hesitancy status, and exploratory factor analysis fit scaled responses to the Three C model of vaccine hesitancy.

Results: Vaccine hesitancy was identified in 31.9% of respondents (total N=1002), 27.2% of which were specifically resistant to the pneumococcal vaccine. Factor analysis resulted in a ten-item structure with most items mapping to 'complacency' and those remaining mapping to 'confidence'. Comparisons between hesitancy status indicated that 'convenience' factors, including clinic hours, wait times, and vaccine costs, were more likely to be barriers to vaccination among those indicating historical hesitancy (all $p<0.01$).

Conclusion: The WHO SAGE Working Group Survey may be an effective tool for predicting vaccine hesitancy in adults, but further application in other vaccinations recommended in adults is needed.

Association of gestational diabetes with age and its risk factors: A cross-sectional study in Pakistan

Sabiha Gul[1]*, Sana Sarfraz[2]

[1]Department of Pharmacology , Pharmacy, Hamdard University Karachi, Pakistan

[2]Department of Pharmacology , Pharmacy, University of Karachi, Karachi, Pakistan

Background: Gestational diabetes is one of the most prevalent pregnancy complications among women in Pakistan, linked with numerous destructive health effects for both mother and progeny.

Purpose: This study was conducted to systematically review the evidences gathered on gestational diabetes linked with several factors like co-morbid diseases, family history, etc. The authors also observed whether the recommended treatment protocol was in accordance to the guideline suggested by American Diabetes association and whether there were any pharmacists specialised in diabetes who dealt with them and counselled them.

Methods: The authors analysed data from 1000 pregnant Pakistani women who were aged between 16-45 years old, GDM outcomes were compared by age and different other factors of pregnant women by applying cross – sectional study using SPSS. This survey was conducted in different maternity hospitals in Karachi, Pakistan.

Results: According to this survey gestational diabetes mellitus risk is higher in women who were greater than 30 years old because of it they were more prone towards maternal obesity as compare to those aged between 16 to 30 years old, and the p-value was found to be 0.0001 in diabetes mellitus associated with all risk factors and we also observed that lack of pharmacist in maternity hospitals only approximately 10% of mothers interacted with pharmacists regarding their counselling.

Conclusion: The antenatal survey results showed that Gestational diabetes mellitus rate was higher in older pregnant women due to issues with being overweight and they are more insulin resistant as compared to younger women and they should maintain their health and also attended regular paternal check-ups and maintain their diet because due to GDM women face complication during delivery.

References

Logakodie, S., Azahadi, M.O.B., Fuziah, B.P., Norizzati, B.I.B. (2017). Gestational diabetes mellitus: The prevalence, associated factors and foeto-maternal outcome of women attending antenatal care. *Malaysian family physician: the official journal of the Academy of Family Physicians of Malaysia*, **12**(2), 9-17

Chinese expert consensus of the prescription audit for anti-tumor drugs - lung cancer

Li Guohui*, Min Liu

Department of Pharmacy, National Cancer Centre/Cancer Hospital, Chinese Academy of, Beijing, China

Background: Primary lung cancer is the most malignant tumour with the highest incidence and highest mortality in China. MDT (Multidisciplinary Team), as well as individualised treatments, are normally used for most cases. However, with whichever treatment is adopted the use of drug is indispensable

Purpose: To standardise the drug therapy for tumours, to further improve the prognosis of lung cancer patients, with the purpose of providing a reference to review the prescriptions of lung cancer patients for oncology pharmacists

Methods: The 'Six steps method' was raised for the first time by consensus in the process of reviewing the prescription of anti-tumour drugs, that is, legitimacy review, patient assessment review, scheme review, organ function and laboratory index review, pre-treatment review and non-prescription audit. This consensus refers to the guidelines home and abroad and the drug instructions, focusing on the detailed description of the audit points of patient basic information evaluation audit, scheme audit organ function and laboratory index audit, pre-treatment audit of the drug therapy scheme of lung cancer.

Results: There are totally five frequently-used chemotherapy schemes, ten targeted drugs, two immunotherapy schemes of NSCLC (non-small cell lung cancer) and two chemotherapy schemes of SCLC (small cell lung cancer) involved in the consensus.

Conclusion: To the oncology pharmacists, the consensus plays a positive role in guiding the prescription audit work in China.

A user-driven teaching programme delivered by community pharmacy for relatives to achieve medication safety

Rikke N. Hansen*, Gitte R. Husted, Charlotte Rossing

Research and Development, Danish College of Pharmacy Practice, Pharmakon, Hillerød, Denmark

Background: Older people with chronic conditions often depend on support from relatives to manage their daily medication. It is perceived as an enormous responsibility for relatives to carry out alone.

Purpose: To develop and evaluate a user-driven teaching programme delivered by community pharmacy to groups of relatives who manage the daily medication for persons ±65 years using ±5 drugs.

Methods: Six relatives and four community pharmacists in Denmark participated in developing the teaching programme to groups of relatives (n=10-12) comprising four sessions lasting two hours each. Topics: 1) Introduction; 2) Use of medication; 3) Same medicine – different names; 4) Local support.

The programme was tested at five community pharmacies in Denmark. Relatives and community pharmacy staff evaluated the programme quantitatively and qualitatively through surveys and focus group interviews.

Results: One pharmacist and one pharmacy technician from five community pharmacies delivered the teaching programme for three months to a total of 29 relatives. The relatives were very satisfied with the user-driven teaching style and programme and grateful for the opportunity to talk to other relatives being in the same situation. The relatives gained new knowledge about how the community pharmacy could be a support in the future. Teaching materials supported the pharmacy staff in delivering the user-driven programme.

Conclusion: Pharmacy staff can develop and deliver a user-driven teaching programme for relatives which reflect their challenges and needs to achieve medication safety. The pharmacy staff obtained new insight into relatives' specific needs for knowledge and advice which can be used for other relatives at the pharmacy.

Improving prescriber adherence to commissioning criteria when prescribing high-cost SACT in lung cancer

Seetal Hirani, Hector Mateo-Carrasco*

Cancer Services, University College London Hospital, London, United Kingdom

Background: In the United Kingdom, funding of high-cost systemic anti-cancer treatments (SACT) falling outside the standard payment-by-results reimbursement system is managed and approved using a web-based system (Blueteq). Absence of relevant funding prior to SACT administration may have considerable cost implications and/or result in treatment delays.

Purpose: To analyse the percentage of patients lacking relevant funding prior to SACT administration and the impact of pharmacy-led changes in the rate of funding requests and prescribers with active Blueteq access in a tertiary care teaching institution.

Methods: Two PDSA cycles were conducted.

PDSA 1: pharmacist-led lung MDT education session;

PDSA 2: weekly highlighting of outstanding funding requests prior to clinic by the responsible pharmacist. Efficacy measures: (a) percentage of non-approved funding requests pre-SACT, and (b) percentage of prescribers with Blueteq active accounts.

Results: (a) baseline = 29.75%, post-PDSA 1 = 15.75%, post-PDSA 2 = 5.42%; (b) baseline = 40% (2/5), post-PDSA 2 = 71% (5/7).

Conclusion: Results post-PDSA cycles showed a continued downward shift below baseline median in the percentage of patients lacking funding pre-SACT until the end of the observations. This runs parallel to an increase in the number of prescribers with active Blueteq accounts. This project led to an improvement in the adherence to high-cost drugs prescribing criteria and highlights the key role of the clinic pharmacist in successfully influencing prescribing habits, preventing treatment delays, and ultimately affecting the efficacy of SACT.

References

Department of Health. (2012). A simple guide to payment by results. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/213150/PbR-Simple-Guide-FINAL.pdf

Use of total parenteral nutrition in a university hospital

Ana Peláez Bejarano, Maria De Las Aguas Robustillo Cortes, Olalla Montero Pérez*, Ignacio García Giménez

Farmacia Hospitalaria, Hospital Juan Ramón Jiménez, Huelva, Spain

Background: Parenteral nutrition is a high-alert medication available for patient care within a complex clinical process. An appropriate use of this complex therapy maximises clinical benefit while minimising the potential risk of adverse events, therefore it must be supervised by a nutrition support team.

Purpose: To describe the use of total parenteral nutrition (TPN) in a university hospital.

Methods: An observational and retrospective study including patients who received TPN in a year period (2019) was performed. Intensive care unit (ICU) patients were excluded. Data were collected from the medical history records including: Age, sex, fasting times before TPN, TPN prescribing service, supervision by the nutritional support team, pharmaceutical intervention, indication and duration of TPN. Guidelines from American Society for Parenteral and Enteral Nutrition (ASPEN) were consulted.

Results: A total of 171 patients received TPN; 106 (60%) male. Mean age was 64±15 years. Mean fasting times before TPN was 2.5 days (0-8). The TPN regimen was prescribed by the nutrition team in 52% of patients, followed by the surgery department with 30%. Nutrition team monitored 87% of TPN. Hospital pharmacists carried out 88 interventions based on notifications to the nutrition team for monitorisation. The median duration of TPN was 10.8±45 days, being less than five days in 36%. According to ASPEN, 61% of TPN prescribed was well-indicated.

Conclusion: A high proportion of TPN was prescribed by non-nutritionists. Indication and duration of the TPN did not agree with ASPEN guidelines, being necessary a protocol review.

Real-world clinical practice of isavuconazole

Ana Peláez Bejarano, Raquel Sánchez del Moral, Olalla Montero Pérez*, Ignacio García Giménez

Farmacia Hospitalaria, Hospital Juan Ramón Jiménez, Huelva, Spain

Background: The aim of the pharmacy and therapeutics (PyT) committee is to promote the rational use of drugs through medication-use policies to improve effectiveness and safety.

Purpose: Analyse the degree of protocol compliance established by the PyT committee on the use of isavuconazole.

Methods: A retrospective observational study was carried out in all patients treated with isavuconazole from January 2019 to January 2020. Data sources: electronic prescription program and electronic medical records. Collected data: demographics, indication (invasive aspergillosis or mucormycosis), dosage, duration, adverse drug reactions, previous treatments, kidney failure (glomerular filtration<50 ml/min), ineffectiveness or toxicity with voriconazole or amphotericin B liposomal.

Results: Ten patients were included. Mean age: 58±10 years; 50% male. Therapeutic indications were: 90% invasive aspergillosis,10% Candida endocarditis. Two patients presented kidney failure (45 and 14 ml/min glomerular filtration). About lines treatment: 20% first-line,30% second-line and 50% third-line. Previous treatments: 86% amphotericin B liposomal(20% toxicity and 60% ineffective), 86% voriconazole(70% toxicity and 10% ineffective), 43% caspofungin, 14% daptomycin, 14% dalbavancin and 14% posaconazole. All patients received loading dose (200 mg/8 hours, two days) and subsequently maintenance (200 mg/24 hours). The median duration was 5.5 days (range: one-69). No adverse effects to the drug were reported.

Conclusion: The degree of protocol compliance was high. The role of the pharmacist in an interdisciplinary team, assuming an active role can contribute to achieving the therapeutic objectives of the patient.

Utilisation of immunotherapy for cancer treatment in a university hospital

Ana Peláez Bejarano, Maria Teresa Garrido Martinez, Olalla Montero Pérez*, Ignacio García Giménez

Farmacia Hospitalaria, Hospital Juan Ramón Jiménez, Huelva, Spain

Background: Immunotherapy is a rapidly growing field for cancer treatment. Immunotherapeutic strategies focus on reactivating the immune system to display an antitumor response. Since the approval of immunotherapy an increasing proportion of patients are achieving long-term survival.

Purpose: To analyse the utilisation of immunotherapy in a university hospital.

Methods: A retrospective and observational study was performed in a university hospital. Between June 2016 to December 2019, patients who had active treatment with immunotherapy were selected. Patients with hematologic malignancies were excluded. Data were collected from the medical history records including: sex, age, expression of programmed cell death ligand 1(PD-L1), diagnosis, drugs, duration of treatment and cycles received.

Results: A number of 111 patients were selected; 87 (78.4%) men. Mean age was 61±8.7 years. Expression of PD-L1 was: 56 (50.5%) unknown and 55 (49.5%) positive (27% with PD-L1>50%). Main diagnoses were: Lung adenocarcinoma 51 (49.9%), squamous cell lung cancer 21 (18.9%), melanoma 14 (12.6%), renal cell carcinoma 8 (7.2%), bladder cancer 8 (7.2%) and others (oropharyngeal cancer, laryngeal cancer, large cell neuroendocrine and colon cancer). Drugs used: Pembrolizumab 47 (42.3%), nivolumab 37 (33.3%) and atezolizumab 27 (24.3%). Mean duration of treatment was 6.2±8 months and 10.5±12.9 cycles. A total of 18(12.6%) patients responded to treatment for more than 12 months. 36(32.4%) patients received less than three cycles.

Conclusion: Immunotherapy was mainly used in lung cancer, with pembrolizumab being the drug most widely used. More than a half of patients received immunotherapy with unknown PD-L1.

Off-label use of drugs in a university hospital

Sofia Horta Martins, Ana Peláez Bejarano, Ignacio García Giménez, Olalla Montero Pérez*

Farmacia Hospitalaria, Hospital Juan Ramón Jiménez, Huelva, Spain

Background: Off-label use is the prescription of pharmaceutical drugs for an unapproved indication or in an unapproved age group, dosage, or route of administration. This type of prescribing practice is increasing; however, the suitability of medications for off-label use remains an issue of controversy, due to uncertainty around the clinical benefits.

Purpose: To analyse the prevalence and the cost of off-label drugs prescribed in a university hospital.

Methods: A retrospective observational study of patients who received off-label drugs from January 2019 to January 2020 was performed. Data collected from electronic medical records: sex, age, drugs, prescribing service and costs.

Results: Sixty-thre (63) patients were included. Mean age: 52.5±15 years; 60.0% male. The main drugs prescribed were: Rituximab (45.5%; n=15), infliximab (18.2%; n=6), dalbavancine (6.1%; n=2), lenalidomide (6.1%; n=2), nintedanib (6.1%; n=2) and others (mepacrine, nivolumab, pembrolizumab, sarilumab, sorafenib and tocilizumab). Off-label drugs were prescribed by internal medicine (27.3%; n=9), followed by neurology (24.2%; n=8). Oncology, haematology, and pneumology prescribed three drugs (9.1%). Rheumatology, dermatology and infectious diseases prescribed two drugs (6.1%) and nephrology one drug (3%). The least expensive drug was mepacrine (0.042 euros/mg); pembrolizumab was the most expensive purchase (1352.15 euros). The department with the highest spent was Oncology (22609.17 euros) and Nephrology cost the least (209.9 euros). The total spent of the Hospital on off-label drugs was 87405.234 euros.

Conclusion: Internal medicine had the most prescriptions, but oncology costed a quarter of the whole expense. Monoclonal antibodies were the drugs with the highest cost.

Development of a performance-based pharmacy payment framework for Australia

John K. Jackson*

Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Parkville, Australia

Background: Community pharmacists in Australia are funded for dispensing on a fee-for-service basis and outcomes of their dispensing have not to date, been assessed in determining their level of remuneration.

Purpose: To develop and evaluate a framework that links community pharmacists' remunerations to a performance-related measure.

Methods: Semi-structured interviews with 23 including consumers, pharmacist, pharmacy regulators and funders determined attitudes towards current and alternate funding models, measures of pharmacists' performance and factors relevant to the introduction of a performance-linked payment model. A funding framework based on the data were evaluated by focus groups of pharmacists.

Results: The current funding model is not transparent and promotes dispensing speed and volume over quality. It provides a single level of remuneration for the professional aspect of dispensing and does not consider patient or drug complexities or the need to adapt the interaction between the patient and the pharmacist based on these complexities. There is no recognition of patient outcomes in the current model. The proposed funding framework separates payment for dispensing into a commercial payment to the pharmacy and a professional component to the dispensing pharmacist. The level of the professional component would be adjusted based upon drug and patient risk factors, quality-related inputs applied at the time of dispensing or

outcome measures such as adherence, bio-markers or satisfaction.

Conclusion: Performance-based payment for dispensing in Australia is technically feasible however significant political and cultural barriers would need to be addressed.

References

Jackson, J., & Urick, B. (2019). Performance-based pharmacy payment models: the case for change. *Australian Health Review,* **43**(5), https://doi.org/10.1071/AH18201

Exploration and practice of hospital pharmacy continuous training based on CMEI affiliated to CPA

Yingyu Zhou[1], Xiaohua Liu[2]*, Hui Liu[3]

[1]*Lead Office, Science & Technology Development Centre of CPA, Beijing, China*

[2]*Department of Organisation and communication, Beijing, China*

[3]*Department of Organisation and communication, Science & Technology Development Centre of CPA, Beijing, China*

Background: In 2009, the drug price addition was cancelled in state owned hospital during the health system reformation in China. The pharmaceutical training has sprung up as a response to the requirements from the pharmacists

Purpose: To promote the healthy development of China's hospital pharmacy, improve the overall quality of pharmacists, and to promote the development of pharmacist teams

Methods: Chinese medicine and economic information network (CMEI) is a non-profit organisation affiliated to the Chinese Pharmaceutical Association, which is run by the science and technology development centre of the China Pharmaceutical Association. Relying on the advantages of CMEI membership hospital, and combined with the new policy, new trends and new problems of hospital pharmacies, the themes for the trainings were designed and a new mode of training was explored from 2008 to 2019

Results: From 2008 to 2019, trainings have been carried out in 61 cities in China. In total, 441 trainings have been organised from 2008 to 2019, with 1298 experts and 43,910 participants. Training frequency had been increased year by year, reaching a peak in 2016. The number of organisational sessions reached 73 at most, with 252 experts and 8,380 participants. Since 2016, the average number of holding training remained 50 every year. In recent years, pharmaceutical service has changed from fully artificial to information intelligent, so from 2016, medical information technology training gradually has been increased to 30.3% by 2018.

Conclusion: The number of participants and the themes of trainings have greatly met the needs of pharmaceutical personnel. In future, various forms of online and correspondence courses will be designed and more tutor modes will be offered

Study on the change of Fisher drug price index in China base on the data from CMEI affilated to CPA

Yingyu Zhou[1], Liping Kuai[2]*, Dongyan Xu[2], Rang Wang[3]

[1]*Lead Office, Science & Technology Development Centre of CPA, Beijing, China*

[2]*Department of Policy Research, Science & Technology Development Centre of CPA, Beijing, China*

[3]*Department of Technology, Science & Technology Development Centre of CPA, Beijing, China*

Background: The drug price supervision and administration is one of the key policies in the Chinese health reformation system, which could ensure drug affordability for the patient. Since 2015, the regulation of retail drug price capping was cancelled by the government, since then drug prices have been formed by the market mechanisms.

Purpose: To study on the change in drug price since 2015 and evaluate the effectiveness of drug price regulations

Methods: The method of Fisher price index was used to establish the drug price index in China, which included the fixed based index and linked index, according to the procurement price of drug in sample hospitals from Chinese medicines and economic information networks run by Science & Technology Development Centre of CPA.

Results: From 2015 to 2019, the fixed based Fisher price index of total drug costs, declined gradually as the government had organised the centralised bidding and procurement of drugs multiple times during this period. The fixed based Fisher price index of the National Essential Drug and the drugs in the National Essential Medicare Formulary all fell significantly. But the fixed based Fisher price index of emergency used drugs was significantly raised. The change of linked Fisher price index was regular during these years, which showed seasonal variation and the overall decline trend. The DDDc was stable during these years between 12yuan to 14yuan.

Conclusion: The Fisher price index could be a good method of supervision of the changes to drug prices, which could reflect the effective of drug price regulation in some respect. Drug prices in China have slowed down these years due to the work of centralised bidding and procurement and optimised administration of the government.

outcome measures such as adherence, bio-markers or satisfaction.

Knowledge of hypertension and diabetes comorbid patients about their medication in a Hospital in Ghana

Adwoa Kwakye[1]*, Kwame Buabeng[1], Mercy Opare-Addo[1], Ellis Owusu-Dabo[2]

[1]*Pharmacy Practice, Kwame Nkrumah University Of Science And Technology, Ghana*

[2]*Public Health, Kwame Nkrumah University Of Science And Technology, Ghana*

Background: Patients with hypertension and diabetes co-morbidity may have medication knowledge and therapy challenges that could impact on patient outcomes.

Purpose: To assess patients' knowledge about medication and therapy for hypertension and diabetes mellitus.

Methods: This was a prospective study involving 338 patients with co-morbid diabetes and hypertension, enrolled from the out-patient pharmacy at Tema Municipal hospital in Ghana. The patients were interviewed with a semi-structured questionnaire about the number of medications taken, knowledge of name, duration of therapy, side effects, administration and purpose of the medication therapy. Bloom's cut off was used to assess the overall knowledge, and chi-square analysis was used to test significance of association between knowledge and other variables

Results: The highest number of medications taken per patient was five (n=98, 29%) and the least was nine (n=3, 0.9%). Patients' had knowledge of the name (n=158, 46.8%), side effects (n=50, 14.8%), duration of therapy (n=322, 95.3%), administration (n=324, 95.9%), purpose of anti-hypertensive (n=254, 75.1%) and anti-diabetic therapy (n=251, 74.9%). More than half had inadequate knowledge overall (n=187,55.3%). There was significant relationship between the level of knowledge about medications and family history of hypertension (p=0.001)/diabetes (p<0.026); and duration of hypertension (p=0.026)/diabetes (p<0.0001).

Conclusion: The diabetic and hypertensive patients' knowledge about their medications and therapy was inadequate. Effective pharmaceutical care interventions should be instituted to improve patient outcomes.

Drug-drug interactions in cancer patients and impact on the survival rate

Anne-Sophie Lechon[1]*, Majda Koubaity[1], Karim Amighi[2], Marc Van Nuffelen[3], Michel Moreau[4], Anne-Pascale Meert[5], Carine De Vriese[1]

[1]*Department of Pharmacotherapy and pharmaceutics, Faculty of Pharmacy, Université Libre de Bruxelles (ULB), Brussels, Belgium*

[2]*Department of Pharmacotherapy and pharmaceutics, Faculty of Pharmacy, Université Libre de Bruxelles (ULB), Bruxelles, Belgium*

[3]*Department of Intensive Care and Emergency, Erasme, Université Libre de Bruxelles (ULB), Belgium*

[4]*Department of Information Management Unit (UGI), Institut Jules Bordet, Brussels, Belgium*

[5]*Department of Internal Medecine, Intensive care Unit and Oncology Emergency, Institut Jules Bordet, Brussels, Belgium*

Background: Cancer patients undergo heavy treatment and are consequently at a high risk of poly-pharmacy. Drug-drug interactions (DDI) remain a constant concern, although their clinical effects can be hard to evaluate since they might be masked by disease progression or symptoms. Besides chemotherapy interactions, other interactions can also be linked to patient weakening during cancer treatment.

Purpose: The aim of this study was to detect the DDI in the cancer population with different tools, which were compared to highlight the prevalent interactions and assess the impact on the survival rate.

Methods: This study followed a six-month observational retrospective study in two major care facilities in Brussels. Patients readmitted within 30 days after their last hospital care for a potential drug-related problem (DRP) were included. Interactions were analysed using Lexicomp and Epocrates databases. Kaplan-Meier and Cox analysis were performed to evaluate the link between the interaction and death onset.

Results: The final population included 299 patients. Around 80.0% of patients had at least one interaction. Opioids (29.9%) followed by anxiolytics (15.8%) were drugs most often involved. The most predominant harmful effects were central nervous system (CNS) and respiratory depressions. Kaplan-Meier analyses highlighted a difference between patients with and without interactions regarding death. Nevertheless, death seems not to be linked directly to the presence of an interaction.

Conclusion: Interactions are predominant in cancer patients and lead to adverse effects but do not seem to be directly linked to the onset of death.

Regulating patient's use of medicinal herbs during cancer chemotherapy: VigiBase, WHO global database survey

Anne-Sophie Lechon[1]*, Véronique Mathieu[1], Carine De Vriese[1], Stéphanie Pochet[1], Jamila Hamdani[2], Cécile Lescrainier[2], Florence Souard[1]

[1]*Department of Pharmacotherapy and pharmaceutics, Faculty of Pharmacy, Université Libre de Bruxelles (ULB), Belgium*

[2]*Belgian Centre for Pharmacovigilance (BCPH), Federal Agency Federal Agency for Medicines and Health Products (FAMHP), Brussels, Belgium*

Background: Up to 70% of cancer patients use Herbal Medicines (HMs)1 despite the risk of interactions with Anti-Cancer Drugs (ACDs).

Purpose: The aim of this study was to analyse the adverse effects suspected to be associated with the concomitant use of a plant and a drug using Individual Case Safety Reports (ICSRs) from the World Health Organization (WHO) database, VigiBase.

Methods: ICSRs up to January 2020 containing at least one ACD and one of ten representative plants (pineapple, green tea, marijuana, black cohosh, turmeric, echinacea, St John's wort, milk thistle and ginger) were extracted. ICSRs containing at least one ACD and sufficient enough (including at least 'suspected' or 'interacting' drugs/plants and symptoms) were selected. Descriptive analyses were performed to confront them with literature data.

Results: One hundred and eighty-nine (189) ICSRs concerning co-suspected HMs and ACDs were retrieved, 47 (25%) were selected. No causality assessment had been reported for 20 cases (43%) while an analysis of the interactions would have been possible for 44 (94%). Literature seems to confirm the causality assessment in 17 ICSRs (36%) but 9 (19%) didn't contain any causality assessment while literature suggests there could be a causality link. In one case (2%), no literature was found to corroborate the causality assessment.

Conclusion: An in-depth review of literature could result in a better understanding and management of the HMs-ACDs interactions.

References

Clairet, A.L., Boiteux-Jurain, M., Curtit, E., Jeannin, M., Gerard, B., Nerich, V., & Limat, S. (2019). Interaction between phytotherapy and oral anticancer agents: prospective study and literature review. *Medical Oncology*, **36**(5), 45. https://doi.org/10.1007/s12032-019-1267-z

Aknowledgment: The Global ICSR database VigiBase was used as a data source for this article. The information in VigiBase comes from a variety of sources, and the probability that the suspected adverse effect is drug-related is not the same in all cases. The information in this article does not represent the opinion of the UMC or the World Health Organisation.

Rogue online pharmacies in the time of pandemic: Capitalising on misinformation and fear

Al Carter[1]*, Niamh Lewis[2]

[1]*Executive Office, National Association of Boards of Pharmacy, Mount Prospect, United States of America*

[2]*Digital Health, National Association of Boards of Pharmacy, Mount Prospect, United States of America*

Background: Rogue internet pharmacy networks are run by criminal opportunists - and the COVID-19 pandemic has provided the perfect opportunity for illegal online drug sellers to prey on fearful consumers. These criminals are not new to the game: they are simply targeting a novel disease.

Purpose: This study establishes the prevalence and practices of websites being used for the illegal sale of prescription-only medicine marketed as a therapy for COVID-19, and calls on internet intermediaries to take action against these websites.

Methods: NABP identified hundreds of domain names (web addresses) that include key words related to COVID-19. Among them were dozens of illegal online pharmacies that were actively peddling prescription-only drugs marketed as COVID-19 treatments. Staff evaluated these sites and looked for commonalities.

Results: In our review, we found the following: 1) most active websites have clear ties to known criminal networks; 2) some newly-created COVID-specific websites redirect users to established rogue network sites; 3) many domain names are clustered on "safe haven" registrars; and 4) the domain name registration information for almost all identified websites is anonymised, making it difficult for enforcement agencies to investigate these criminals.

Conclusion: Numerous websites are indeed being registered and used illegally to sell prescription-only medicine marketed as a therapy for COVID-19. Internet intermediaries must implement long-term policies that will not only put a stop to COVID-19 related cybercrime but will also shut down rogue internet pharmacy networks for good.

Impacts of science popularisation on knowledge attitude and practice of medication use of rural women

Yifan Li[1]*, Feng Xin[1], Yingyu Zhou[2], Yang Shi[2], Yue Zhang[3], Xiaolei Ma[1], Anni Wang[1], Ran Wang[1]

[1]*Pharmacy department, Beijing Obstetrics and Gynaecology Hospital, Beijing, China* [2]*Science and Technology Development Centre of Chinese Pharmaceutical Association, Beijing, China*

[3]*Division of science and technology , Beijing Obstetrics and Gynecology Hospital, Beijing, China*

Background: The project 'Wise Mom Programme: Rural women cared by pharmacists in China' is aimed at rural women and performs popular science activities, to improve women's scientific literacy of medication, establish healthy living habits, promote family happiness and social harmony. Improving the scientific literacy of drug use of the public has become an issue of concern to the whole society.

Purpose: The purpose of this study is to understand the current situation of medication attitude and behaviours of rural women in China, and to evaluate the changes in knowledge, attitude and practices (KAP) after medication education.

Methods: This study is a multi-centred cross-sectional study. A structured questionnaire was applied to evaluate the KAP of rural women. The Kruskal-Wallis test was conducted to analyse the relation between KAP scores and demographic characteristics. And the Wilcoxon-Rank test was used to analyse the impact of popularisation and education on KAP level.

Results: A total of 9093 surveys were collected in this study. The average score of medication knowledge questionnaire is 27.94±6.23 points. Women of different income levels, medical insurance and working conditions have no significant difference in KAP scores, while various education levels and residences have significant statistic differences. After two years of popular science education and publicity, the average and median value of KAP score have been increased. The influence of popular science education and publicity is statistically significant.

Conclusion: Popular science education and publicity have a positive impact on rural women's KAP. The 'Wise Mom Programme' has effectively improved the scientific literacy of rural women.

Value of price discount, pharmacy channel and medicine information for the online pharmacy OTC customers

Kari Linden[1]*, Inka Puumalainen[1], Merja Halme[2]

[1]*University Pharmacy, Helsinki, Finland*
[2]*Aalto School of Business, Aalto University, Espoo, Finland*

Background: Relatively little is known about the customer preferences for over-the-counter (OTC) purchases, in particular in digital pharmacy channels. The preferences are relevant from a viewpoint of rational pharmacotherapy.

Purpose: To assess heterogenic preferences for an OTC pain medicine to measure the concomitant value of price, pharmacy channel and availability of medicine information in online pharmacy. Customer groups and the price elasticity of demand were assessed.

Methods: The preference groups were identified on the basis of additive utility functions employing choice-based conjoint analysis among the customers of the online University Pharmacy. The purchase attributes comprised: price (discount 0-20%), channel (brick & mortar, online University Pharmacy, other legal online pharmacy), medicine information (not available, pharmacist chat immediately, chat after a 10 minute waiting period).

Results: Five preference groups (7–32% of the respondents, N=3118). Pharmacy channel was a dominating attribute for three segments (50% of the respondents; of which 63% preferred for a B&M pharmacy) and price for two segments (50%). Overall, pharmacy channel, price and medicine information were valued (of weight over 20%) by 72%, 68% and 30% of the customers, respectively. Preference group profiles were illustrated. The price elasticity of demand for online University Pharmacy varied much across the preference groups.

Conclusion: Most online pharmacy customers still prefer brick and mortar pharmacy for a non-acute OTC purchase. Potentially strong price elasticity, value of University Pharmacy brand and varying preference for medicine information have to be considered in the development of online pharmacy services.

Effect of PDCA cycle method on reducing positive rate of tetanus skin test

Sheng-Nan Liu*, Chao Ai, Chientai Mao

Department of Pharmacy, Beijing Tsinghua Changgung Hospital, School of Clinical Medicine, Tsinghua University, Beijing, China

Background: A great number of patients with tetanus antitoxin (TAT) skin test present false positives. The authors consider it of interest to reduce the false positive rate through pharmaceutical management.

Purpose: The study aims to evaluate the effect of PDCA cycle method on reducing the false positive rate of TAT skin tests.

Methods: The authors investigated patients received TAT skin test of Beijing Tsinghua Changgung Hospital from January 2019 to January 2020. An analysis was performed on the proportion of different factors of TAT skin test through the PDCA cycle method. Among these influencing factors, order of drug preparation, injection dose, the observation time, the standard of the injection method accounted for 35%, 31%, 12%, 9% respectively, and other factors accounted for 13%.

Results: One thousand six hundred and sixty-six (1,666) patients were enrolled on the study. The influencing factors included adjusting the order of saline and drug preparation, reducing the injection dose from 0.1ml to 0.05ml, extending the observation time from 20minutes to 30minutes, making the injection

method more standardised. The positive rate of TAT skin test were decreased from 76.4% to 57.9% (p<0.01) after the application of PDCA method.

Conclusion: The application of PDCA method would promote the standardisation of the TAT skin test and ensure the continuous improvement of hospital pharmaceutical management.

Investigation report on China's health emergency popularisation of science about the COVID-19 pandemic

Xin Liu, Yang Shi*, Yingyu Zhou, Liping Kuai, Weiwei Liu, Lei Zhang, Yi Bai, Qin Tang

[1]*Science and Technology Development Centre of Chinese Pharmaceutical Association, Beijing, China*
[2]*Chinese Medical Association, Beijing, China*

Background: The COVID-19 pandemic is a huge challenge to world health systems. The harm of public panic is more serious than that of the virus infection. Public panic will create a lot of rumours; Rumours will not only hinder the government's handling of public health emergencies, but also disrupt the public's awareness and behaviour of preventing viruses and cause social unrest.

Purpose: In order to investigate the demand of the ordinary personnel and health professionals for emergency popularisation of science, discover the current problems in popular science work during public health emergencies, and provided suggestions for future health popular science work.

Methods: This study designed two versions of the health emergency science questionnaire, which are divided into ordinary personnel version and health professional version. From 21st February to 10th March 2020, the authors received questionnaires from 25,935 ordinary personnel and 30,143 professionals from all provinces of China.

Results: The public has a high demand for health emergency popularisation of science about COVID-19, and the professional demand is higher than the ordinary personnel. Ordinary personnel's evaluation of the role of health emergency popular science in COVID-19 pandemic is 8.58±1.80 points (out of ten points), and the professional's evaluation is 8.93±1.44 points.

Conclusion: Ordinary personnel and professionals have highly evaluated the role of health emergency popular science during the COVID-19 pandemic. Mobile Internet is currently the main channel for the public to obtain emergency popular science information, but due to rumours, the public's trust in mobile Internet is low.

Assessing patient medicine adherence: Imaging a method for pre-filled syringes

Pedro Martins*, James Brown, Vanessa Squibb

Care UK, Plymouth, United Kingdom

Background: It is widely recognised that medicine adherence is sub-optimal with potential negative outcomes and an increased burden to health services. On an elective orthopaedic setting a fairly common prescribed medicine for DVT prophylaxis is enoxaparin.

Purpose: On initial attempts to assess the adherence to enoxaparin treatments (normally presented in self-administrating pre-filled syringes) the traditional methods, apart from self-report, were deemed unfeasible. Consequently, we have devised a method to achieve such goal.

Methods: The authors propose X-raying the sharps bins provided to patients and perform a physical counting of the used syringes collected. The imaging specifications are fairly standard and achievable with basic equipment.

Results: Initial observations show clear and distinctive images that allow easy identification of the used syringes.

Conclusion: Even taking to account some limitations we have made a proof of concept that can be easily replicated and set up. Further developments will include an image processing algorithm for fully automatic counting of units.

Use of indirect methods in clinical decision-making: Two different scenarios from published trial data

Hector Mateo*

Pharmacy, University College London Hospitals NHS Foundation Trust, London, United Kingdom

Background: Network meta-analyses (NMA) allow indirect comparisons between 3+ alternatives, thus facilitating therapeutic positioning.

Purpose: Apply NMAs to create efficacy-based algorithms for two different oncological conditions.

Methods: Separate comparisons were performed for: (1) CDK4-6 inhibitors in ER+, HER2-, locally-advanced/metastatic breast cancer in post-menopausal women, using PFS data from PALOMA-2, MONALEESA-2, and MONARCH-3 trials; and (2) drugs used in moderate/severe ulcerative colitis, using clinical response at week six to week eight (CR6-8) obtained from ACT 1&2 (infliximab), ULTRA 1&2 (adalimumab), and GEMINI-1

(vedolizumab). Within each analysis, trials had similar design, population, and common comparator (placebo). Fixed-and-random-effect model analyses were conducted on NetMetaXL.

Results: (1) No PFS difference found; (2) CR6-8 higher (yet not statistically significant) for infliximab, followed by vedolizumab, and adalimumab.

Conclusion: (1) In the absence of PFS differences, clinical decisions should consider the drugs individual toxicities and comparative costs. Conversely, (2) showed differences in favour of infliximab, thus supporting its first-line use, reserving vedolizumab for refractory cases. Results are consistent with the perceived clinical efficacy, as well as with vedolizumab's different mechanism of action. Caveats lie with the imperfect nature of the comparison and the presence of confounders. Nonetheless, NMAs provide insightful information on the relative efficacy of pharmacological alternatives, and illustrates how indirect methods can play a role in addition to direct methods, or when limited head-to-head comparisons are available.

References

Brown, S., Hutton, B., Clifford, T., Coyle, D., Grima, D., Wells, G., & Cameron, C. (2014). A Microsoft-Excel-based tool for running and critically appraising network meta- analyses-an overview and application of NetMetaXL. *Systematic Reviews*, **3**(110). https://doi.org/10.1186/2046-4053-3-110

Bucher, H.C., Guyatt, G.H., Griffith, L.E., Walter, S.D. (1997). The results of direct and indirect treatment comparisons in meta-analysis of randomized controlled trials. *Journal of Clinical Epidemiology*, **50**(6), 683-691. https://doi.org/10.1016/s0895-4356(97)00049-8.

Creating a new course to train student pharmacists to provide clinical community pharmacy services

Kimberly C. Mckeirnan[1]*, Julie Akers[1], Taylor Bertsch[1], Daminanne Brand[2], Christina Buchman[2], Jennifer Miller[1], Nicole Perea[1], Jennifer Robinson[1], Angela Stewart[2]

[1]*Pharmacotherapy, Washington State University College of Pharmacy and Pharmaceutical Sciences, SPOKANE, United States*

[2]*Pharmacotherapy, Washington State University College of Pharmacy and Pharmaceutical Sciences, Yakima, United States*

Background: The role of the pharmacist in the community setting is transforming to include direct patient care responsibilities. Teaching future pharmacists the skills needed to excel in pharmacy practice involves providing education on innovative new clinical community services.

Purpose: WSU faculty created a new two-credit course, Point-of-Care and Clinical Services. The goals of this course are to provide an educational experience focused on specific clinical services that can be provided in a community setting, to develop the knowledge, skills, and abilities needed to provide those patient care services, to instil independent clinical decision making skills, and to utilise collaborative drug therapy agreements for prescriptive authority when appropriate.

Methods: Topics covered during this course includes performing point-of-care screening for influenza, group-A streptococcus, and human immunodeficiency virus, adult and paediatric immunisation needs assessment and administration techniques, providing travel medicine consultations, and identifying and treating minor ailments and conditions.

Results: This course uses a non-traditional delivery model involving teaching and facilitating the entire course during the first week of the semester. Logistically, this is very challenging as it requires all other second-year courses to postpone instruction until the second week of the semester.

Conclusion: A new course targeted to train students to perform clinical community pharmacy services can benefit students and their future patients.

Pharmacist-led HIV And HCV screening and education for adults experiencing homelessness

Kimberly C. Mckeirnan*, Sorosh Kherghehpoush

Pharmacotherapy, Washington State University College of Pharmacy and Pharmaceutical Sciences, SPOKANE, United States

Background: Over half a million people experience homelessness on a given night in the United States of America. As a result of increased exposure to disease, violence, malnutrition and substance abuse, homeless persons experience medical problems and treatment complications at higher rates than the general population. Chronic disease states that require uninterrupted treatment and high rates of adherence, such as HIV/AIDS, are more difficult to control in those with unstable housing. Individuals living with HIV or HCV who are unaware of their infection are more likely to transmit their disease to others.

Purpose: This project looks to describe the implementation of HIV and HCV screening conducted by a community pharmacist.

Methods: Project participants are walk-in patients of First Avenue Pharmacy who are adults that are experiencing homelessness. HIV and HCV screening tests are administered along with a risk determination questionnaire and comprehensive HIV/HCV education. Next, the investigator discusses personalised risk mitigation strategies and makes referrals to community partners based on the patient's risk and test results for follow-up testing, treatment and partner notification.

Results: The community pharmacy setting seems to be an ideal location to screen patients who are experiencing homelessness and connecting them to local services. The study population is very receptive to HIV and HCV screening.

Conclusion: Pharmacist-led screening, education, and connection to care may have a significant impact on the course of illness in high-risk populations. Pharmacists are the most accessible healthcare providers and are poised to play a significant role in the HIV and HCV epidemic.

Pharmacists leading use of quality control circle to reduce drug consumption

Huijie Meng[1]*, Yan Yan[1], Jike Xie[1], Kun Sun[1], Chientai Mao[2], Yongfang Hu[1]

[1]*Clinical Pharmacy, Beijing Tsinghua Changgung Hospital,School of clinical Medicine, Tsinghua University, Beijing, China*

[2]*Pharmacy, Beijing Tsinghua Changgung Hospital,School of clinical Medicine, Tsinghua University, Beijing, China*

Background: In order to reduce medical expenses and patients' burden, the government requires hospitals to make a policy of drugs with limited functions but high prices.

Purpose: The purpose of our research is to explore whether a pharmacist-led quality control circle (QCC) activities could reduce drug consumption and promote the rational use.

Methods: This is a prospective study carried out in a tertiary teaching hospital. The first phase was carried out from March to September 2018. According to the amount of drug consumption, the authors then identified the drugs they needed to focus on. Then, they used quality control circle methods such as Gantt chart, Fishbone chart, inspection table and Plato chart. Three measures were then taken to reduce the drug use for each expensive drug, including prescription comment, training of doctors, implementing clinical pathway management. In the second stage, the restriction of human albumin order was added, which was only allowed when the serum albumin was lower than 25g/L in 2019.

Results: Through this QCC activity, The hospital has established a special prescription review system, and strictly limited the medical order conditions of butylphthalideand and human albumin. Our hospital saved 2.62 million RMB in 2018 and 0.88 million RMB in 2019 . Through this activity ,the monitoring drug use rate decreased from 22.21% to 17.45% (p<0.001), and continued decreased to 16.76% in the first quarter in 2019 ;the rational rate of drug use increased from 85.17% to 94.1% (p<0.001).

Conclusion: Pharmacist-led drug management can reduce drug consumption and improve their rational use. Pharmacists can do excellent work in improving medical quality. In the future, the QCC activities should be more applied to drug management.

Assessment of drug therapy problems among patients in an intensive care unit of a tertiary hospital

Maureen Nwafor[1]*, Rosemary Nnamani[1], Maxwell Adibe[2], Abdulmuminu Isah[2], Andrew Nwafor[3]

[1]*Pharmacy Department, University of Nigeria Teaching Hospital Ituku/Ozalla Enugu Nigeria, Enugu, Nigeria*

[2]*Department Of Clinical Pharmacy And Pharmacy Management, University Of Nigeria Nsukka, Nsukka, Nigeria*

[3]*Department Of Surgery, Faculty Of Medical Sciences University Of Nigeria Ituku -Ozalla Campus, Enugu, Nigeria*

Background: Intensive care units (ICUs) are a potential area for drug therapy problems (DTPs) to develop; patients treated there are complex patients. Studies have shown that the involvement of a critical care pharmacist in ICUs decreases drug-related costs, prevents adverse drug events (ADEs), and reduces morbidity.

Purpose: To assess the drug therapy problems among patients in the intensive care units in a Nigerian Tertiary Hospital.

Methods: This prospective study was conducted in General and Cardiothoracic ICUs of University of Nigeria Teaching Hospital Enugu for 12 months. Identification of DTPs was assessed by reviewing and analysing all medication orders, administration sheets, laboratory test results and pathophysiological status. Data were collated and analysed using IBM SPSS Version 25. *P*-values at <0.05 were taken to be significant.

Results: A total of 162 patients were used in this study. Out of the 729 DTPs identified, drug interactions accounted for 33.9% of cases, inappropriate drug selection 25.9%, while inappropriate dosage selection accounted for 11.4%. Clinical Interventions at drug level (790) were undertaken in 44.7% of cases; prescriber's level 19.0% and patient level 8.9%. Interventions accepted were 94.2% and 92.3% of DTPs identified were successfully resolved. Increasing number of drugs prescribed per patient/day increasing number of co-morbidity per patient and increasing duration of ICU stay were shown to be independent predicators of DTP.

Conclusion: DTPs among patients admitted at the ICUs of UNTH were high. Drug interaction and inappropriate drug selection were the commonest drug therapy problems. Clinical pharmacists performed a high number of interventions and the level of acceptance of the interventions by the prescribers was high.

References

Pitchale, P.T., Kumar, B.M, Seeba, Z., *et al.*, (2013). An Interventional study on Intensive Care Unit drug therapy assessment in rural district hospital in India. *Journal of Basic and Clinical Pharmacy*, **4**(3). https://doi.org/10.4103/0976-0105.118801

Said, M., & Takrouri, M. (2004). Intensive Care Unit. Available at: www.ispub.com/ostia/index php?xmlfile path=Journals/ijh/vol3n2/icu.xml

Evaluating the impact of telehealth technology in the delivery of COPD comprehensive medication therapy management

Danielle Keeley[1], Yoscar Ogando[1]*, Stacy Garrett-Ray[2], Magaly Rodriguez De Bittner[1]

[1]*Pharmacy Practice and Science, University of Maryland, United States*

[2]*University of Maryland Medical System, Baltimore, United States*

Background: Telehealth technology (TH) can provide remote patient monitoring and alleviate the strain on healthcare resources. Chronic Obstructive Pulmonary Disease (COPD) contributes to significant hospitalisations and cost. Given that Comprehensive Medication Therapy Management (CMTM) initiatives have demonstrated that pharmacists could be part of the solution to this problem, the COPD TH programme was developed.

Purpose: To assess the clinical and economic impact of TH in reducing hospitalisations and ER visits with primary COPD diagnosis, and patient satisfaction with the TH service.

Methods: A cohort of 73 COPD patients in the University of Maryland Health System were enrolled and followed for one year. Eligible patients were those 18 years old and older, ambulatory, had a COPD diagnosis, and had a primary care provider within the network or region. Pharmacists utilised HIPAA compliant video technology to complete CMTM. For analysis, visit and charge data were used to assess clinical service utilisation and cost. Surveys were used to assess satisfaction with services.

Results: A total of 126 TH CMTM visits were conducted through the duration of the programme. A decrease in COPD related ER and inpatient visits was observed among study participants post-TH CMTM intervention (mean visits 3.25 vs .75). Utilisation costs were also lower post-TH CMTM intervention (mean $9,778 vs $760). Overall, the programme received an 84% satisfaction score.

Conclusion: The study demonstrated the impact telehealth CMTM can have on reducing the number COPD patient utilisations and cost. While patient satisfaction was prominently positive, continuous quality assurance for these services should be conducted in order to tailor to patient and provider needs.

References

NEJM Catalyst. (2018). Hospital Readmissions Reduction Program (online). Available at: https://catalyst.nejm.org/doi/full/10.1056/CAT.18.0194#:~:text=Medicare's%20Hospital%20Readmissions%20Reduction%20Program,and%20strategies%20to%20reduce%20readmissions.&text=This%20article%20appeared%20in%20NEJM,Innovations%20in%20Care%20Delivery%20journal

Retrospective study of the MCA in Bizkaia subsidised by the Basque government between 2009 and 2018

Marta Pérez[1]*, Cristina Bruzos[2,3], Natalia Burgos[1]

[1]*Department of Preventive Medicine and Public Health, UPV/EHU, Leioa, Spain*

[2]*Nursing Department I, Faculty of Medicine and Nursing, UPV/EHU, Leioa, Spain*

[3]*Official College of Pharmaceuticals of Bizkaia, Bilbao, Spain*

Background: Medication non-adherence is a persistent and widely recognised health problem in poly-medicated elderly patients1. In Bizkaia, the multi-compartment compliance aids (MCA) is the tool that is subsidised to improve medication adherence in the population.

Purpose: To describe the use of the MCA in Bizkaia between 2009 and 2018.

Methods: A retrospective descriptive study of the use of MCA. Data were analysed with Microsoft Excel and SPSS.

Results: Of the 1453 patients assigned to the MCA during the study period, 77.8% of the total population were women and 22.2% were men. 49.8% were over 65 years. 69.9% of patients started using the MCA due to therapeutic non-compliance, 2.9% due to personal characteristics and 1.5% due to erroneous administration. The number of new patients enrolled in the system increased exponentially (15.6% in total) until 2018. Incidents occurred in 4.1% of prepared MCAs, with the main causes being therapeutic non-compliance (2.9%), hospital admission (0.6%) and change of treatment (0.3%). The return on blisters was 7.5%, corresponding to 30,666 tablets.

Conclusion: Every year new patients are assigned to the MCA service, with women being the ones who demand this service the most. Non-compliance is the main reason for requesting the MCA service and continues to be the main cause of incidents in the service. Contextualising the use of this tool allows us to visualise the situation to develop a prospective study to analyse its effectiveness.

References

Billups, S.J., Malone, D.C., & Carter, B.L. (2000). The relationship between drug therapy noncompliance and patient characteristics, health-related quality of life, and health care costs. *Pharmacotherapy,* **20**(8), 941-949. https://doi.org/10.1592/phco.20.11.941.35266

Satisfaction survey on sanitary personnel after the installation of automatic dispensing cabinets

Elena Prado-Mel*, Marta Mejías-Trueba, Marina Muñoz-Burgos, Rosa Seisdedos-Elcuaz

Clinical Pharmacy, Virgen del Rocío Universitary Hospital, Seville, Spain

Background: Automatic dispensing cabinets (ADCs) allows improving medication management, traceability and safety.

Purpose: To analyse the satisfaction level of ADCs in hospitalisation wards in a third level hospital.

Methods: A survey of 'perception received' was designed through LimeSurvey. The target populations were 230 nurses. The survey assessed three aspects: quality at work, safety in the use of medications and technical service. To analyse the quality, questions were grouped into: cabinet locations, time management and facilitation. Positive questions with >50% positive answers (agree; strongly agree) constituted an improvement, ≥60% advantage and ≥70% progress. In negative questions >50% inconvenient, ≥60% disadvantage and ≥70% recoil. In safety, they were grouped into: drug selection and administration. The same analysis methodology was performed as in quality. Technical service was analysed according to: incident management, frequency of incidents and training received.

Results: One hundred and twenty (120) users conducted the survey. Response rate was 52.2%. The most participative units were: intensive care (30%), maxillofacial surgery (15%),plastic surgery (9.17%) and neurology (9.17%).

Quality of work: location of ADC and facilitation were perceived as an advantage. However, nurses perceived the increased time to take medications as an inconvenience.

Medicines safety: ADC represented a progress in both the selection and administration of drugs. Technical service management: incidents management was perceived as positive(good), however, they consider the training received as poor and that incidents related to ADC frequently occur.

Conclusion: ADC installation has meant a great improvement in the level of patient safety and facilitates nursing care activity.

Study on the use of ceftaroline in an intensive care unit

Carmen Redondo Galán*, María Ferris Villanueva, María Dolores Rivas Rodríguez, Juan Francisco Rangel Mayoral

Hospital Pharmacy, University Hospital Complex of Badajoz, Badajoz, Spain

Background: Antimicrobial resistance represents a major public health problem. Ceftaroline increases the number of options available for treatment of complicated skin and soft tissue infections (SSTIs) and community-acquired pneumonia (CAP) associated with high mortality rates.

Purpose: The aim of the study was to evaluate the effectiveness and appropriate use of ceftaroline, according to the indications approved by the Spanish Agency for Medicines and Medical Devices (AEMPS).

Methods: Retrospective observational study conducted of an Intensive Care Unit (ICU) from December 2018 to December 2019.

Results: The number of patients treated with ceftaroline was 14 (ten men and four women), mean age: 58 years. The diagnosis were CAP (n=9) and endocarditis (n=3) and, it was used empirically in two cases. Nine patients met the utilisation criteria approved by the AEMPS. The average duration of treatment was 7.9 days. In seven patients, the microorganism was identified: Methicillin-resistant Staphylococcus aureus (MRSA) (n=5) and Klebsiella pneumoniae (n=2). The clinical cure rate was 78.6% (n=11), however in 21.4% of the cases it was not effective. This unfavourable situation seemed to be associated with the terminal condition of the patients.

Conclusion: Ceftaroline could be considered an option for patients with CAP or SSTIs, with confirmation or suspicion of MRSA, in those cases in which recommended first-line drugs cannot be addressed. Compliance with the AEMPS criteria has been deficient. The use in patients who meet the established indications and the performance of microbiological tests of identification and sensitivity can lead to a more efficient pharmacotherapy guaranteeing the adequate and rational use of broad spectrum antibiotics.

Medicines' sales and shortages during the COVID-19 outbreak: A nationwide retrospective analysis

Sónia Romano[1], Heloísa Galante[1], Débora Figueira[1], Zilda Mendes[1], António Teixeira Rodrigues[1]*, Paulo Cleto Duarte[2]

[1]*Centre for Health Evaluation & Research - Infosaude (CEFAR/ infosaude), Portuguese National Association of Pharmacies (ANF), Portugal*

[2]*Board, Portuguese National Association of Pharmacies, Lisboa, Portugal*

Background: The COVID-19 is a worldwide public health emergency. A possible direct result of this international outbreak is the disruption of medicine supply chains, which may also have consequences in the increase of drug shortages. Community pharmacies can contribute to early identification and report of medicines' supply and demand problems.

Purpose: The aim of this study is to characterise the impact of COVID-19 on the outpatient medicines' sales and shortages during the initial outbreak

Methods: A retrospective, time-trend analysis of medicine sales and shortages was performed from the 1st February to 30th April 2020 and its homologous period. Portuguese daily new laboratory confirmed COVID-19 cases and major national emergency measures were recorded. All data were subjected to rescaling using the min-max normalisation method to become comparable. Data analysis was performed using Microsoft Excel.

Results: The COVID-19 outbreak resulted in an increased demand for medicines, with a peak reached just after the World Health Organization declaration of the state of pandemic. By the end of March, sales had already dropped to proportions similar to those of 2019. The maximum proportion of drug shortages was reached about one week after the sales peak and by the end of the study period its values were below those recorded in the pre-COVID-19 period.

Conclusion: Data suggest medicines' sales and shortages were initially impacted by the COVID-19 outbreak in Portugal, although by the end of the study period, medicine markets had normalised. The long-term impacts of this pandemic on medicines' sales and shortages are unknown and should continue to be closely monitored.

References

WHO [World Health Organisation]. (2020). Director-General's opening remarks at the media briefing on-COVID-19 (online). Available from: https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020

Screening services in community pharmacies: Needs and conditions for an optimal implementation.

Sarah Rondeaux[1]*, Tessa Braeckman[2], Mieke Beckwé[2], Sandrine Roussel[3], Stephan Van Den Broucke[3], Dirk Devroey[2], Carine De Vriese[1]

[1]*Département de recherche en Pharmacothérapie et Pharmacie galénique, Université Libre de Bruxelles, Belgium*

[2]*Département de médecine familiale et de soins chroniques, Vrije Universiteit Brussels, Bruxelles, Belgium*

[3]*Institut de recherche en sciences psychologiques, Université catholique de Louvain, Louvain-la-Neuve, Belgium*

Background: The health care system is currently facing several challenges due to increased prevalence of chronic diseases. Pharmacists could take up a more active role in identifying, counselling, and referring patients with previously undiagnosed conditions and provide guidance to help mitigate further disease progression.

Purpose: To identify the factors influencing the feasibility of offering diabetes and cardiovascular diseases screening and participative patient education services in community pharmacy.

Methods: Three focus-groups with pharmacists (n=17) were conducted in February and March 2020. Qualitative data were analysed inductively using thematic analysis.

Results: Participants shared that the most important success factors would be the pharmacists' motivation, campaigns to promote the awareness of the service and electronic tools to facilitate the organisation within the pharmacy.

Trainings on screening and motivational techniques could be beneficial to perform the service and provide patient education. Many ideas on materials for patients with low health-literacy were also provided to ensure efficiency of counselling. However, time constraint remains a strong barrier, and strategies such as service-by-appointment and follow-up services need to be considered to guarantee optimal implementation of a prevention programme.

Conclusion: This research outlines factors that could influence engagement and participation in a screening service in community pharmacy. Based on the preliminary results, a patient questionnaire was developed and interviews with patients and general practitioners are still ongoing to gather the input of all the parties involved. Their insights should bring valuable additional recommendations.

Addressing the myth that polio vaccination leads to infertility through scientific evidence

Sana Sarfaraz[1], Rahila Ikram[1], Sabiha Gul[2,3]*

[1]*Department of Pharmacology, University of Karachi, Karachi, Pakistan*

[2]*Department of Pharmacology, Hamdard University, Karachi, Pakistan*

[3]*Department of Pharmacology, Hamdard University, Karachi, Pakistan*

Background: Pakistan is one of the three countries where Polio is still reported. As of March 2020, 25 cases have been reported.

Purpose: This study was carried out to evaluate whether the uneducated population in Pakistan are aware of polio vaccination and if they get their child vaccinated. Based on the answer an experimental study was designed to evaluate the effect of oral polio on fertility.

Methods: A survey-based methodology was adopted, and based on the answers to the survey an experimental study was designed on adult swiss albino mice (22-25gm). They were divided into two groups (n = 6 pairs) in each. Group I was taken as Control (one drop distilled water), Group II was taken as

Treated (one drop of Polio vaccine). The pups delivered from these groups (F0 generation) were given distilled water and polio as per the schedule. After attaining adulthood six pairs each were made from these mice and mated (F1 generation).

Results: SPSS 19 was used for analysis. According to our survey n=46 out of 50 had awareness about the polio vaccine. N=41 did not get their children vaccinated (due to fears that it could cause infertility). Our experimental results showed insignificant effect i.e. nearly equal number of pups were born in both groups. The second group in which the polio vaccine was given at birth to the pups showed a significant result compared to the control group.

Conclusion: The study showed that there are still people who are not vaccinating their children based on the fear that the vaccine could cause infertility in their child. Our experimental study showed that polio vaccine had no negative impact on fertility. Widespread sharing of this knowledge can play a positive role in eradicating polio from Pakistan.

References

Khan, M.U., Ahmad, A., Aqeel, T., Salman, S., Ibrahim, Q., Idrees, J., & Khan, M.U. (2015). Knowledge, attitudes and perceptions towards polio immunization among residents of two highly affected regions of Pakistan.

BMC public health, **15**(1), 1100
Polio Global Eradication Initiative. (2020). Available at: polioeradication.org

Leadership and clinical pharmacy practice advancement training among intern pharmacists in Nigeria

Comfort Sariem[1]*, Ucheoma Nwizu[2], Jodie Malhotra[3]

[1]*Department of Clinical Pharmacy and Pharmacy Practice, Faculty of Pharmaceutical Sciences, University of Jos, Jos, Nigeria*

[2]*Pharmacy Department, Neighborhood Health Centre Canby and Milwaukie Clinics, Oregon, United States*

[3]*Department of Clinical Pharmacy, University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences, Colorado, United States*

Background: The Nigerian Pharmacy training involves didactic and experiential learning for five years, leading to a Bachelor of Pharmacy degree, with a mandatory year-long internship training. However, training in leadership is lacking during internship.

Purpose: To develop and implement a leadership training programme for intern pharmacists in Nigeria.

Methods: The curriculum included online training in leadership, process improvement and project management that culminated in a capstone project to advance the practice of clinical pharmacy. The training was delivered through a modified project based, blended learning approach, utilising the Assessment, Design, Development, Implementation and Evaluation (ADDIE) principles of Instructional Design. Participants were selected from three Pharmacy schools and practicing at four hospitals in Nigeria. They were required to have a minimum cumulative Grade Point Average of 2.5, determined to have high educational and professional self-efficacy, with current placement for internship training. A learner analysis was performed to assess preparedness for the training.

Results: The nine-month long training programme commenced in November 2019 with 12 participants. Preliminary findings showed that 33.3% of the participants previously received training in leadership, 16.7% in project management and process improvement. Majority (91.6%) believed that pharmacy interns could be leaders in advancing clinical pharmacy practice.

Conclusion: Participants had limited prior exposure to leadership training but high level of preparedness for the training. It is expected that participants will acquire competencies in leadership and pharmacy practice upon completion.

References

Allen, W.C. (2006). Overview and evolution of the ADDIE training system. *Adv Dev Hum Resour*, **8**, 430–441. https://doi.org/10.1177/1523422306292942

Pharmacists Council of Nigeria. (2014). PCN's Internship Training Programme for Pharmacy Graduates in Nigeria. Revised ed. PCN.EdT.005, 4-8. Abuja: Nigeria

Understanding mental health challenges of community pharmacists and technicians during COVID-19

Soosmita Sinha[1]*, Jacob Braun[2]

[1]*Health Law Institute, Geneva, Switzerland*

[2]*Osgoode Hall Law School, Toronto, Canada*

Background: Deterioration in the mental health of healthcare workers during and after pandemics have been established. Ongoing health worker shortages and burnout previous to COVID19 and the aggressive transmission of the virus has intensified these mental health issues. Community pharmacists and technicians, who serve on the frontline and who are heavily relied upon during pandemics, are no exception.

Purpose: The purpose of this study is primarily to understand the immensity of the mental health problems faced in community pharmacy settings and highlight the legal and policy structures that may be easing or exacerbating these incidences in the United States of America.

Methods: Exploratory research that includes a rapid review of existing literature, current news articles and professional organisation publications is used to map out the problem.

Results: Little research has been conducted on the unique role that pharmacists and technicians occupy during a pandemic, and how, if at all, they may experience different types, or severities, of mental health problems. However, technological advancements have allowed for various interventions and resources.

Conclusion: This research will help to better understand mental health problems faced in community pharmacy settings, highlight available resources, and discern existing legal and policy structures. Moreover, it could be used to guide future studies on how to address and mitigate specific factors that exacerbate the mental health problems and the need for policy changes to accommodate these incidences.

Drug interactions and duplications in community pharmacies

Miroslava Snopková[1,2]*, Peter Krajčovič[2,3], Ondrej Suke[2]

[1]*Faculty of Pharmacy, Comenius University, Slovakia*

[2]*Slovak Chamber of Pharmacists, Bratislava, Slovakia*

[3]*Faculty of Mass Media Communication, University of Ss. Cyril and Methodius, Trnava, Slovakia*

Background: Potential drug-drug interactions (pDDIs) and drug-duplications (DDs) are a significant risk in pharmaceutical care. The pharmacist has an irreplaceable role in their prevention and reduction.

Purpose: This study aimed to estimate the prevalence of pDDIs and DDs according to severity and analysed which drugs most frequently have pDDIs and DDs.

Methods: Demographic details including gender and age and other characteristics including brand name of medicinal products and dosage were admitted by the electronic application within the Slovak Chamber of Pharmacists´ awareness campaign. Data for analysis were collected in an anonymised form. The prevalence of pDDIs and DDs categories was examined using the DrugAgency(R) database from November 2017 to July 2019.

Results: A total of 29,704 valid inputs were revealed for this study. A valid input was recorded if there was at least one pDDI and/or at least one DD at the level of two medicinal products. A total of 27,632 (93%) pDDIs and 2,072 (7%) DDs were found with 4,388 a clinically relevant pDDIs (15.9%) (categories 4 - 6). pDDIs were more common in men than in women. Drug pairs that entered the most serious pDDIs (category 6, n=406) were escitalopram with amiodarone (11.8%), fixed-combination trandolapril and verapamil with ivabradine (8.6%), and citalopram with hydroxyzine (7.6%). Cardiovascular drugs were the most common in pDDIs and musculoskeletal drugs were the most common in DDs.

Conclusion: The prevalence of pDDIs and DDs was substantial in the pharmaceutical care setting. High prevalence some of pDDIs and DDs enforces the need for further risk-prevention actions regarding, especially for cardiovascular and psychiatric drugs

Patients' perception towards medicines-use review service in community pharmacy

Wei Thing Sze, Yong Fang Lim*

Pharmacy, SEGi University, Malaysia

Background: It was reported that 43.4% of Malaysians do not know how to use their medicines properly, while 35.8% are unaware about their side effects. Medicines use review (MUR) service has been shown to reduce medication adverse events. It was unknown whether patients perceived this service to be beneficial.

Purpose: To evaluate patients' perceived benefits of MUR service in community pharmacy and their intent to participate in this service.

Methods: This was a cross-sectional survey conducted from September to October 2019 via self-administered questionnaires. Three hundred and eight-five (385) patients who took at least three types of chronic medications were recruited around Klang Valley.

Results: At least half of the patients perceived MUR service to be beneficial, which included helping them to take medicines on time (56.8%), be in control of their medicines (51.5%), better understand the use of their medicines (54.2%), sort out medicine-related problems (55.8%), build relationships with pharmacists (52.7%) and understand the reasons behind taking their medicines (57.1%). Perceived benefits of MUR service were found to be associated with the participants education level (p=0.001), monthly income (p=0.030), frequency of pharmacy visit (p<0.001) and frequency of getting advice from pharmacist (p<0.001). 62.6% of the patient's intended to participate in MUR service. Patients who thought MUR services would help them to be in control of their medicines were 1.87 times more willing to participate, and patients who thought MUR service would help them understand their medicine better were 1.15 times more likely to participate in this service.

Conclusion: Most of the patients expressed their intention to participate in MUR service in community pharmacy, and perceived this service to be beneficial.

Factors associated with self-control of body weight and blood glucose in type 2 diabetes patients

Yoshiko Tominaga[1]*, Miyo Hasegawa[2]

[1]*Collaboration Centre for Health Promotion, Niigata University of Pharmacy and Applied Life Sciences, Niigata, Japan*

[2]*Faculty of Medicine, Niigata University, Niigata, Japan*

Background: Better medication adherence among diabetic patients is positively associated with improved glycemic control. However, this is not always achieved in patients who strictly adhere to their given regime, probably owing to the challenges involving diet and/or exercise. From a patient-centred perspective, pharmacists should pay more attention to self-care management besides drug safety and medication adherence.

Purpose: To examine knowledge of diet therapy and analyse various factors related to the control of body weight and blood glucose level in diabetic patients.

Methods: A survey was conducted among type 2 diabetic patients using a well-structured questionnaire, which was concerned with respondents' knowledge levels regarding diet therapy, experience of nutritional counselling, and educational hospitalisation, and included select clinical and socio-demographic items.

Results: There were 553 survey respondents. The average number of correct answers for the 20 questions regarding diet therapy was 72.5%; however, only 20.6% of them responded correctly to the question on the required quantity of vegetables. In the logistic regression analysis, control status of body weight and blood glucose was used as a dependent variable, while nutritional counselling experience was not observed as a significantly independent variable. Conversely, age, educational hospitalisation, night work, and understanding the difference between calories and carbohydrates, were found to be associated with the participants' risk of poor body weight and poor blood glucose control.

Conclusion: Identification of key factors related to poor control of body weight and blood glucose will equip pharmacists on how to better contribute to patients' self-care management.

References

Tominaga, Y. *et al.* (2018). Relationship between medication adherence and glycemic control in Japanese patients with type 2 diabetes. *Pharmazie*, **73**, 609-612

Prescription review of immediate-release pharmaceutical forms of fentanyl

Ana María Valle Díaz De La Guardia, Sergio Cano Domínguez*, Alberto Jiménez Morales

Servicio de Farmacia, Hospital Universitario Virgen de las Nieves, GRANADA, Spain

Background: The immediate-release pharmaceutical forms of fentanyl (IRPFF) are oral or nasal administration systems that allow the immediate action of the active ingredient. The Spanish Agency of Medicines has detected an increase in their consumption since 2010. Due to its potency and risk of addiction and overdose, it is recommended to monitor patients.

Purpose: To review all new prescriptions for IRPFF and check that they comply with the authorised indication: treatment of breakthrough pain in cancer patients treated with a base opioid analgesic. Also, to contact the prescribing doctor in case of finding cases that do not comply with the established normative.

Methods: A list of patients on active treatments with IRPFF was obtained. Data were collected from their medical history including prescription records. We checked that the patient had been previously treated with at least 60 mg of oral morphine per day, 25 micrograms of transdermal fentanyl per hour, 30 mg of oxycodone per day or with an equianalgesic dose of another opioid for a week or more.

Results: One hundred and twenty-six (126) patients were analysed. Criteria were not met in 11 of them, since the start of fentanyl was not in accordance with the approved indication. Three of these patients were not even cancer patients. Intranasal fentanyl was prescribed at the same time as the transdermal form in nine patients. In two cases, the patient started sublingual fentanyl treatment without any other base opioid. The responsible doctor in each case was contacted and informed of the situation.

Conclusion: The work of the hospital pharmacist is essential to carry out an adequate pharmacotherapy follow-up on these patients, in order to avoid misuse of IRPFF and the risk of addiction.

Comparison of prices of medicines

Janis Vella Szijj, Emiija Kochova, Lilian M. Azzopardi*

Pharmacy, University of Malta, Msida, Malta

Background: International drug price comparisons can be used to evaluate affordability and accessibility of medicines in specific countries.

Purpose: To compare prices of generic medicines used in cardiovascular and respiratory diseases available for retail in

community pharmacies in Malta with other European countries that have comparable pharmaceutical policies and accessible retail prices of medicines.

Methods: Price data were collected from five countries: Malta, Greece, Macedonia, Slovenia and the United Kingdom for 27 generic medicines (cardiovascular diseases 19, and respiratory diseases nine). Medicine prices were converted to Euro and analysed per unit dosage form. Descriptive statistical analyses were performed.

Results: Prices of the medicines ranged from 0.17€ to 1.27€ per dosage unit for cardiovascular disease and 0.01€ to 0.92€ per dosage unit for respiratory disease. Malta had highest retail price per dosage unit for 72% of the medicines indicated for cardiovascular disease and for 89% of the medicines indicated for respiratory disease. The retail prices in Malta for amiodarone 200 mg tablet, perindopril 4mg tablets and rivaroxaban 10 mg tablet varied with standard deviation of 0.10-0.47 from the average price. The retail price for montelukast 10 mg tablet, fluticasone/salmeterol 100 µg/50 µg powder for inhalation and fluticasone furoate/vilanterol 92 µcg/22 µcg powder for inhalation varied with standard deviation of 0.09-0.34 from the average retail price respectively.

Conclusion: The size of the market is an important factor for cross country differences in prices of medicines. Differences in market size might explain higher medicine retail prices in smaller countries like Malta.

Evaluation of antibacterial drug use in an intensive care unit

Janis Vella Szijj, Julia Catania, Lilian. M Azzopardi*

Pharmacy, University of Malta, Msida, Malta

Background: Rationale use of antibacterial agents in hospitals reduces risk of antimicrobial resistance and ensures adequate anti-infective choices for patients which is particularly relevant for the intensive care unit (ICU).

Purpose: To evaluate retrospective and prospective anti-bacterial drug use in the Intensive Care Unit (ICU).

Methods: This study was carried out at the ICU at an acute care hospital. Past data from the hospital from 2009 to 2017 was retrieved. Present data were collected through patient records from the ICU using a devised 'Antibacterial Collection Sheet' over a period of four months, from February until May 2019. The Anatomical Therapeutic Classification/ Defined Daily Doses methodology was applied. Data were analysed using Microsoft Excel.

Results: From the retrospective study, meropenem and piperacillin, with a beta-lactamase inhibitor were the most commonly administered antibacterial drugs, with an average yearly DDD value of 3,577 and 1,362 respectively. From the prospective arm, piperacillin and tazobactam were the most used (28 patients) followed by carbapenems (20 patients).

Conclusion: The drug use trends indicate a rise in carbapenem use of 10.86% between the years 2009 and 2011, with a peak in 2014, and the use remained fairly stable through to 2017. This finding was identified in the ECDC 2018 report for Malta (ECDC, 2018), and the study indicates that the trend has been confirmed for the prospective arm. Reflection on clinical reasoning behind the use of carbapenems and review of the protocols is suggested.

References

ECDC [European Centre for Disease Prevention and Control]. (2018). Antimicrobial consumption in the EU/EEA, annual epidemiological report for 2018. Stockholm: ECDC. Available at: https://www.ecdc.europa.eu/en/publications-data/surveillance-antimicrobial-consumption-europe-2018

Physical activity promotion in Portuguese pharmacies: Pharmacists' knowledge, attitudes and behaviours

Ruben Viegas[1]*, Cristina Godinho[2], Sonia Romano[3], Pedro Teixeira[1]

[1]*Faculdade de Motricidade Humana , Universidade de Lisboa, Portugal*

[2]*Católica Research Centre for Psychological- Family and Social Wellbeing, Universidade Católica Portuguesa, Portugal*

[3]*Centro de Estudos e Avaliação em Saúde (CEFAR), Associação Nacional das Farmácias (ANF), Lisboa, Portugal*

Background: Despite abundant evidence on the benefits of physical activity to fostering health and its treatment role in many chronic diseases, high levels of physical inactivity persist. Healthcare professionals, such as pharmacists, can play a key role in the promotion and maintenance of behaviours contributing to higher levels of physical activity.

Purpose: The present study aimed to characterise pharmacists' physical activity promotions and its barriers and facilitators taking place in the Portuguese community pharmacies.

Methods: An observational study including a questionnaire was developed based on the COM-B model. Respondents rated different barriers on a scale ranging from 1 (not likely to be a barrier) to 5 (frequently a barrier). The questionnaire was distributed among 95% of the Portuguese pharmacies by the National Pharmacies Association (ANF).

Results: In total, 396 complete questionnaires were obtained, representing about 5% of Portuguese community pharmacists (≈8700). The main identified barriers were related to opportunities for promotion, such as lack of time (3.06) and lack

of coordination with other healthcare professionals (3.35). Regarding motivation, two important barriers referred were being afraid of the health risks (2.77) and lack of incentives (2.68). Pharmacists lacked capacity, especially in relation to technical knowledge in the area (2.84) and knowledge regarding opportunities for referral in the community (2.98).

Conclusion: Pharmacists seem to be motivated to engage in different physical activity promotion actions, acknowledging their importance. However, there is a need to increase their training and opportunities to stimulate physical activity promotion.

Risk of anticholinergic effects estimated in nursing home residents

Angela M Villalba-Moreno[1], Raquel Sanchez-Del Moral[2], Ana Belén Guisado-Gil[2], Olalla Montero-Pérez[2]*, Ignacio García-Giménez[2]

[1]*Pharmacy, Hospital Riotinto, Huelva, Spain*

[2]*Pharmacy, Hospital Juan Ramón Jiménez, Huelva, Spain*

Background: Medications with anticholinergic and sedative effects carry significant risks for older people. Impaired physical function and cognitive decline has been attributed to the use of these medications.

Purpose: The aim was to estimate the Risk of Anticholinergic Effects (RAE) in nursing home residents based on their pharmacotherapy.

Methods: Cross-sectional study of RAE in a cohort of patients resided in a nursing home (30% dependents and 70% in social exclusion). \Anticholinergic exposure was calculated using the Anthicolinergic Risk Scale (ARS), Anthicolinergic Cognitive Burden (ACB) and Drug Burden Index (DBI). Higher scores are associated with increased RAE. We collected age, sex and pharmacotherapy for each patient. We measured the RAE (patients treated with at least one anticholinergic drug according to ARS, ACB and DBI) and frequently prescribed anticholinergic drugs.

Results: We included 64 patients (mean age 74±9 years and 76.6% men). The mean number of medications was 10±5. The ACB identified 46 (71.9%) patients with RAE: 21 (45.7%) with ACB level=1, 13 (28.3%) with level=2 and 12 (26.1%) with level≥3. The ARS identified 31 (48.4%) patients with RAE: 22 (71.0%) with ARS level=1, 6 (19.4%) with level=2 and three (9.7%) with level≥3. 57 patients (89.0%) had DBI score>0: 25 (43.9%) at low risk (DBI<1) and 32 (56.1%) at high risk (DBI≥1). The most common drugs were furosemide (28.1%) with ACB level=1 and lorazepam (21.9%) included in DBI.

Conclusion: There is a high rate of nursing home patients with a certain degree of anticholinergic burden due to treatment. The detection of patients with RAE can be an important strategy to optimise drug therapy in nursing home patients.

Evaluation the effect of methotrexate on psoriasis based on specialised patient education by pharmacist

Lan Wang*, Chien-Tai Mao, Chao Ai

Department of Pharmacy, Beijing Tsinghua Changgung Hospital, Beijing, China

Background: Methotrexate is still the gold standard therapy for moderate to severe psoriasis. There is a marked interpersonal variation in the therapeutic response and toxicity profile of MTX which brings difficulty for clinical application.

Purpose: We considered it of interest to establish the specialised patient education (SPE) mode for psoriasis administrated with MTX and assess the therapeutic effect between cases received SPE and usual health care in the real-world.

Methods: In this retrospective cohort study, patients of usual health care received prescription as proof of properly taking medicine and being required return to the hospital every four weeks. Patients of SPE intervention were referred to the pharmaceutical clinic for SPE. Body surface area (BSA), psoriasis area severity index (PASI) at zero, four, eight and twelve weeks, PASI 75 of twelve week and times of self-adjusting dosage were observationally noted and analysed.

Results: Twelve (12) cases of usual care and 16 cases of SPE were included in the final analysis. The decline range of BSA of SPE was higher than that of usual care at four weeks, and the difference was statistically significant (p=0.043).The decline range of PASI of SPE was higher than that of usual care at eight weeks and 12 weeks with statistically significant differences separately(p=0.048; p=0.029).Times of self-adjusting dosage was zero of SPE and was statistically significantly different compared to that of usual care (p=0.026).

Conclusion: Statistically significant faster improvements on efficacy with no significant differences in safety in the SPE than usual care was concluded. The SPE conducted by the pharmacists appears suitable for real world implementation.

Dolutegravir-based ART for HIV patients at secondary care hospitals in Kwara-Central Nigeria

Felicia E. Williams[1]*, David Adje[2], Aishah Abdulkareem[1]

[1]*Clinical Pharmacy and Pharmacy Practice, University of Ilorin, Ilorin, Nigeria*

[2]*Clinical Pharmacy and Pharmacy Administration, Delta State University, Abraka, Nigeria*

Keywords: Dolutegravir, Viral Load Suppression, Undetected Viral Load, HIV Patients, Antiretroviral Therapy

Background: Current guideline from WHO recommends dolutegravir (DTG) an integrase strand inhibitor (INSTI) as a core component of antiretroviral therapy (ART) for first line treatment. The efficacy of DTG has been demonstrated in several randomized control trials (SINGLE, SPRING, FLAMINGO and STRIIVING). Dearth of information on the efficacy of DTG-based ART in Kwara-Central has attracted concerns.

Purpose: Hence, the aim of this study was to assess DTG-based ART for HIV patients at secondary care hospitals in Kwara-Central, Nigeria.

Methods: This multi-centre retrospective study involved data abstraction from 310 eligible HIV patients' medical records and HIV programme records. The pilot study was conducted in another HIV treatment centre. Data were analysed using both descriptive and inferential statistics. Ethical approval for the study was obtained from Institutional Ethical Review Committee.

Results: Of the 310 eligible HIV patients on ART, 75.5% had suppressed viral load. Study participants that were on Tenofivir+lamivudine+Dolutegravir ART were 30.4% of which 88.5% had suppressed viral load. Of those with suppressed viral load, only 45.5% had <20 copies/ml. Bivariate analyses showed that duration of illness since diagnosis, cotrimoxazole and isoniazid preventive therapies have significant associations with viral load suppression (p<0.05)

Conclusion: DTG-based ART used in management of HIV patients in the study centres had good viral load suppression. However, more patients should be placed on DTG-based ART.

References

WHO [World Health Organization]. (2018). Dolutegravir (DTG) and the fixed dose combination (FDC) of tenofovir/lamivudine/dolutegravir (TLD). Briefing note. 2018 April; 1-10. Available at: https://www.who.int/hiv/pub/arv/DTG-TLD-arv_briefing_2018.pdf?ua=1

Completion of isoniazid preventive therapy in HIV patients at a secondary hospital in North-Central Nigeria

Felicia E. Williams[1]*, Patrick Erah[2], Emmanuel Jolayemi[3]

[1]*Clinical Pharmacy and Pharmacy Practice, University of Ilorin, Ilorin, Nigeria*

[2]*Clinical Pharmacy and Pharmacy Practice, University of Benin, Benin City, Nigeria*

[3]*Department of Statistics, University of Ilorin, Ilorin, Nigeria*

Keywords: HIV-TB Co-infection, Antiretroviral Medicines, Isoniazid Preventive Therapy (IPT), IPT Completion

Background: Human immunodeficiency virus-tuberculosis (HIV-TB) co-infection constitutes a major public health challenge. Although isoniazid preventive therapy (IPT) has been shown to prevent progression of latent TB infection to active disease, there is paucity of information on completion of IPT in North-Central Nigeria.

Purpose: To assess IPT completion and their predictors in HIV patients at a secondary hospital in North-Central Nigeria.

Methods: This retrospective cohort hospital-based study involved data abstraction from patients' medical records and HIV/IPT programme records from 2013 to 2017. Data were analysed using descriptive, inferentials (Chi-square and Fisher's Exact tests) and logistic regression analyses.

Results: The hospital commenced a six-month IPT programme in 2014 until 2017; 896 patients received IPT. Their median age and weight were 38 years and 66.0 kg respectively. Majority were females (68.4%), married (90.6%), had no formal education (60.7%), unemployed (68.4%), practiced the Islamic religion (79.5%) and were on WHO HIV Clinical Stage I (68.4%). Also, 44.5% had >400 CD4+ cells/mm3 and 71.8% were on Tenofovir/ Lamivudine/Efavirenz. Their mean IPT completion rate from 2014 to 2017 was 42.08 ±17.97%. 59% of those who did not complete the six-month IPT used the isoniazid for one month. Neither demographic variables, clinical variables nor treatment variables were statistically significant predictors of completion of a six-month course of IPT.

Conclusion: Poor mean IPT completion rate calls for intensive and massive awareness campaigns about the usefulness of IPT in HIV care.

References

WHO [World Health Organization]. (2018). The Three I's for TB/HIV: Isoniazid preventive therapy. Available from: http://www.who.int/hiv/topics/tb/3is_ipt/en/

Comparative analysis of lipid profile management in ischaemic heart disease

Maia Zarb[1], Robert G. Xuereb[2], Francesca Wirth[1], Lilian M Azzopardi[1]*

[1]*Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta*

[2]*Department of Cardiology, Mater Dei Hospital, Msida, Malta*

Background: The European Society of Cardiology guidelines for management of dyslipidaemias recommend a target low density lipoprotein cholesterol (LDL-C) goal of <1.4 mmol/L or ≥50% relative reduction. Patients with documented cardiovascular disease and elevated individual risk factors are candidates for early intervention with higher intensity statins.

Purpose: To compare effectiveness and safety of statins in patients with ischaemic heart disease (IHD)

Methods: Patients with IHD on statin therapy, matched for age, gender, hypertension and diabetes, were recruited from the Cardiology Department at Mater Dei Hospital. LDL-C levels and side effects at time of recruitment (t1) and six-month follow-ups (t2) were documented. Mean LDL-C level and percentage LDL-C reduction from t1 achieved with different statins was analysed.

Results: Eighty-four (84) patients (64 male, mean age 70 years, 45 with previous revascularisation) were recruited. Statin therapy prescribed was simvastatin (n=36), atorvastatin (n=40) and rosuvastatin (n=8). Twelve (12) patients switched from simvastatin to atorvastatin at t2. Mean LDL-C t1 on simvastatin was 1.96 mmol/L and decreased by 3% to 1.90 mmol/L at t2. Mean LDL-C t1 on atorvastatin was 2.28 mmol/L and decreased by 28% to 1.64 mmol/L at t2. Mean LDL-C t1 on rosuvastatin was 3.16 mmol/L and decreased by 23% to 2.43 mmol/L at t2. Four cases of myalgia and one case of deranged liver function tests with simvastatin and no side-effects with atorvastatin and rosuvastatin were documented.

Conclusion: Mean LDL-C levels achieved with all statins after six months were higher than 1.4 mmol/L. A more intensive LDL-C lowering regime is required to attain targets recommended in the guidelines.