Research Round up ADRs

Introduction

Last month the research round-up provided you with an overview of articles looking at prescribing in a homeless population. This month we will be reviewing article looking at adverse drug reactions (ADRs). The first article looks at the relationship between multimorbidity, polypharmacy, and ADRs in a major teaching hospital in England. The second article looks at a student run medication review scheme targeting ADRs while the final paper reviews ADR reporting and prescribing trends in drugs for Attention Deficit Hyperactivity Disorder.

Adverse drug reactions, multimorbidity and polypharmacy: a prospective analysis of 1 month of medical admissions

R Osanlou, L Walker, D A Hughes, G Burnside, M Pirmohamed. (2022) *Adverse drug reactions, multimorbidity and polypharmacy: a prospective analysis of 1 month of medical admissions.* BMJ Open 12: e055551

This piece of original research published in July 2022 aimed to elucidate the burden and associated cost of ADRs, polypharmacy and multimorbidity with a prospective analysis of all medical admissions over a one-month period but they do not state the month or year this was carried out. The admissions were to a large university teaching hospital in the Northwest of England and one of the criteria was a greater that 24-hour hospital stay. All patients who were admitted from the medical assessment unit were included in the data collection. Information was reviewed to ascertain if an ADR had occurred and notes, community drug prescriptions and investigations were all included. The main outcome measures the researchers sought to address were the prevalence of admissions due to ADR and the related mortality Where an ADR was identified as a cause of admission, a contributor to admission or as incidental, each case was assessed to determine the classification of the ADR, the causality, the severity, any interactions and if it was avoidable. All assessments were made using validated assessment tools. In total over the one-month period, 1187 admissions were scrutinised, and 218 patients were found to have one or more ADRs with 235 ADRs identified in total. This was 18.4% of the admitted population. Of those detected over 90% were deemed to be causative of admission with 45 categorised as definite, 79 as probable and 94 as possible. Additionally, 86 were or possibly were avoidable with 64 probably caused by a drug-drug interaction. There were significantly more categorised as Type A ADR as opposed to Type B, but review concluded that 4 ADRs resulted in death whilst a further 5 were implicated or contributary to death. The researchers listed the drugs implicated in the ADRs and among them were many commonly used drugs including diuretics, inhalers, antihypertensives and opiates as well as medications used in mental health. Within the ADR group the man number of medications patients were taking was 10.5 as opposed to 7.8 in the non-ADR group and they had significantly more co morbidities. Length of stay in hospital was also reviewed with the ADR group having a mean length of stay of 6 days with an associated increased cost to the trust. The authors conclude that their local prevalence was higher than in previous studies and that the factors of multimorbidity and polypharmacy could be playing a role in this. They therefore suggest that by reducing inappropriate polypharmacy this may have a knock-on effect in preventing the increasing rate of ADRs and that future efforts should be directed at reducing the burden and therefore the associated financial cost.

e055551.full.pdf (bmj.com)

An inter-professional student-run medication review programme. Reducing adverse drug reactions in a memory outpatient clinic: a controlled clinical trial

M. O. Reumerman, M. C. Richir, R. Sultan, H. E.M. Daelmans, H. Springer, E. Grijmans, M. Muller, Michiel A. van Agtmael & Jelle Tichelaar (2022*) An inter-professional student-run medication review programme. Reducing adverse drug reactions in a memory outpatient clinic: a controlled clinical trial* Expert Opinion on Drug Safety, 21:12, 1511-1520, DOI: 10.1080/14740338.2022.2069748

This piece of original research published in the Journal of Expert Opinion on Drug Safety aimed to ascertain if the establishment of a student led medication review team could increase the detection of ADRs and also to reduce the number of ADRs at a point of there months after an outpatient appointment. The team would be multi-professional in nature and a side aim was to teach future prescribers to optimise medication management and detection of ADRs. This trial was conducted in a memory clinic at a major teaching hospital in the Netherlands. Clinic attendees were mostly over 70 years of age with suspected cognitive decline. Patient were randomised to either the control group (standard care) or the intervention group with each group having 140 patients. Due to non-attendances or unsigned consent forms or losses during the trial the final number included was 142, with 76 of those control and 66 received the enhanced intervention. The students involved in the clinic were from medical, pharmacy and nurse practitioner backgrounds. At initial consultation the patients underwent medical led assessment and underwent laboratory testing to determine a full blood count, electrolytes and renal function, liver function and thyroid function as well as cholesterol testing and vitamin D and B12 levels. MRI and Ct brain were also performed. In addition, the intervention group had an interview from the student team to evaluate medication and side effects. The information gathered was a full medication list and history including any ADRs, and a structured medication review. Following this there was a discussion of findings with a clinical pharmacologist and the students would present their findings to the multidisciplinary team meeting. Three months after the meeting a clinical pharmacologist, blinded to the randomisation, conducted a telephone interview as follow up to discuss ADRs.

At baseline 38 mild ADRs and 20 moderately severe ADRs were detected. More ADRs were detected in the intervention group ($n = 48$) than in the control group ($n = 10$; $p < 0.001$). Of the 48 ADRs detected in the intervention group, 4 were detected by the physician and not by the student team, 5 were detected by the physician and the students separately and 44 ADRs were detected by the student team and not the physician. At the three-month follow-up fewer ADRS were detected with 13 in the intervention group compared to 48 at baseline. The authors conclude that the addition of a student led team to the standard package of care increased the detection and management of ADRs in this clinic population. They suggest this should be of interest to other prescribers across healthcare settings to help reduce ADRs and introduce students to the concept of pharmacovigilance.

https://www.tandfonline.com/doi/pdf/10.1080/14740338.2022.2069748?needAccess=true

Adverse Drug Reaction Reporting and Prescribing Trends of Drugs for Attention Deficit Hyperactivity Disorder in Primary Care England, 2010–2019

S. Shahzad Hasan Nimrata Bal, I. Baker, C. Siang Kow, & M. Umair Khan *Adverse Drug Reaction Reporting and Prescribing Trends of Drugs for Attention Deficit Hyperactivity Disorder in Primary Care England, 2010–2019* 26: 3, 467-47

This research paper published in the Journal of Attention Disorders aimed to investigate current prescribing trends in Attention Deficit Hyperactivity Disorder (ADHD) to establish insight into the use of stimulant and non-stimulant medication to see if there has been a change from previous prescribing habits as well as to assess ADHD drug related ADRs in a primary care setting in England between 201 and 2019. Data was gathered from the prescription Cost Analysis (PACT) database from NHS Business services to access prescribing data from GPs and Non-medical Prescribers such as nurses and pharmacists. Any community dispensed prescriptions form hospital-based prescribers could also be accessed. Data extracted from these prescriptions included the medication name and form, strength and quantity, and net cost of the medication. For information on ADRs, the research team accessed information collected by the Medicines and Healthcare Products regulatory Agency (MHRS) Yellow Card Scheme. The data included patient deaths as well as life threatening reactions, reactions requiring hospitalisation, reactions involving congenital abnormalities, reactions leading to persistent or significant disability and any other reactions deemed medically significant.

The findings showed that there was an overall increase in drugs prescribed for ADHD with the exception of dexamphetamine. The commonest medication for this indication was methylphenidate and it showed the most significant year on year increase between the years of study. The prescription items dispensed for ADHD showed an average of an 11.07% increase per year and there was a mean 11.54% increase per year in the costs of the items. There was a variation in prescribing by geographical area noted, with he lowest prescribing regions being North Yorkshire and the East Riding of Yorkshire, whilst the highest prescribing regions were Durham, Hertfordshire and Worcestershire. The ADR data showed that methylphenidate had the highest reporting incidence for serious and fatal ADRs with peak reporting noted in 2011. In contrast dexamphetamine had the lowest number of reports. The overall reporting of serious and fatal ADR was reduced by 1.79% per year for ADHD drugs.
The authors conclude that the prescribing trends for ADHD medications is on the increase and that this was deemed significant for the period studied. They speculate that this could be due to an increased population, an increase in the diagnosis of ADHD or an increase in those diagnosed going on to receive pharmacological treatment, or indeed a combination of those factors.

https://journals.sagepub.com/doi/epub/10.1177/1087054721997556

Conclusion

Prescribing is a complex process and even more so in challenging patient populations or in groups with comorbidities and polypharmacy. Medicines optimisation and monitoring should be part of all prescribers routine practice to enhance the detection and management of ADRs and to improve prescribing habits to minimise the risk of adverse events.