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High risk prescribing in primary care. Medication safety in primary care is an increasing health priority in many countries. It is estimated that up to 4% of hospital admissions are due to preventable drug-related morbidity; **the drug classes most commonly involved are antiplatelet agents, diuretics, nonsteroidal anti-inflammatory drugs (NSAIDs) and anticoagulants**. Also, many preventable adverse drug events that do not result in hospitalisation are managed in primary care. **High risk prescribing (HRP) is defined as prescribing which may lead to adverse clinical outcomes.** Prescribing safety indicators (PSIs), including Beers and STOPP criteria, have been developed to identify patients at risk of HRP. Limitations to use of these PSI in primary care include the fact that many indicators require information that is not recorded in electronic healthcare databases. PSI have now been developed (through consensus between general practitioners (GPs) and pharmacists) for use in primary care which can be applied to electronic databases. Evidence on the prevalence of HRP at a population level in primary care in Ireland is lacking. A repeated cross-sectional study evaluated the prevalence of HRP in **primary care in Ireland** from 2011 to 2015 using consensus validated PSI ***(Br J Clin Pharmacol 2017;83:2821-2830)***. The following were evaluated: 1) patient factors associated with HRP, 2) variation in HRP between GPs and 3) variation in dispensing of high risk prescriptions between pharmacies. The study used the Health Service Executive (HSE) Primary Care Reimbursement Service (PCRS) pharmacy claims database to identify the study cohorts, who were adults ≥16 years who had been dispensed medicines or combinations of medicines considered as HRP, based on specific PSI in each year from 2011 to 2015. PSI were applied over each year of the study and included 1) NSAIDs prescribed in patients ≥65 years co-administered with angiotensin-converting enzyme inhibitor/angiotensin receptor blocker and diuretic, 2) NSAIDs prescribed in patients ≥75 years without gastroprotection, 3) NSAIDs, antiplatelet agents (aspirin or clopidogrel), high-risk antibiotics (macrolides, quinolones or metronidazole) or oral azole antifungals prescribed to current warfarin users, 4) verapamil/diltiazem co-administered with beta-blocker, 5) digoxin prescribed at daily dose of ≥250 microgram in patients ≥65 years, 6) methotrexate 2.5 mg and 10 mg tablets co-administered and 7) patients with ≥1 HRP indicator. Multilevel logistic regression was used to examine factors associated with HRP and high risk dispensing. The study found that **there were significant reductions in the rates of most indicators for HRP in the study period**; 21.9% of patients received ≥1 HRP in 2011 compared to 15.1% in 2015 ($p<0.001$). In 2015 the indicators with the highest rate of HRP were **prescription of NSAIDs without gastroprotection in patients ≥75 years, co-prescription of warfarin and an antiplatelet agent or high risk antibiotic, and prescription of digoxin ≥250 microgram/day in patients ≥65 years**. Any HRP increased significantly with patient age in 2015 (increasing from 2.5% in patients aged <40 years to 20% in patients ≥80 years) and number of chronic medications (increasing from 10.6% of patients prescribed 0 to 2 chronic drugs compared with 19% of those prescribed ≥11 drugs). There was considerable variation in the rate of HRP between individual GPs and in the overall rate of dispensing of high-risk prescriptions between pharmacies. The authors of the study concluded that **HRP in Ireland declined over time from 2011 to 2015 however some indicators persist especially those associated with NSAIDs or warfarin prescriptions and that increasing age and the number of chronic medications are the main drivers of HRP**.

Delayed antibiotic prescriptions for respiratory infections.

Antimicrobials have greatly reduced morbidity and mortality over the last 70 years however the development of resistance to antimicrobials has increased substantially in recent decades. The most significant cause for the development of antimicrobial resistance is thought to be the excessive and inappropriate use of antibiotics. Recent evidence suggests that antibiotics only slightly modify the course of respiratory tract infections (RTIs). Strategies have been proposed to reduce inappropriate antibiotic prescribing in order to reduce antibiotic resistance, adverse drug reactions and healthcare costs; one strategy is whereby the prescriber assesses that antibiotics are not immediately required and provides an antibiotic prescription but with advice to delay filling the prescription. A recent systematic review evaluated the effect on clinical outcomes, antibiotic use and patient satisfaction of ***immediate*** antibiotic prescription compared to ***delayed*** antibiotic prescription or ***no*** antibiotics for people with RTIs (including sore throat, otitis media, cough and the common cold) (***Cochrane Data Database of Systematic Reviews 2017, Issue 9. Art. No.: CD004417. DOI: 10.1002/14651858.CD004417.pub5***). The review included 11 randomised controlled trials (n=3555 patients), of which 5 studies involved children only, 2 studies included adults only and 4 included adults and children. The study found that there were no differences between ***immediate, delayed*** and ***no*** antibiotics for many symptoms including fever, pain, feeling unwell, cough and runny nose; there were small differences favouring ***immediate*** antibiotics for symptoms in patients with sore throat and otitis media. There was little difference in antibiotic adverse effects and no significant difference in complications between the 3 groups. ***Delayed*** antibiotics resulted in a significant reduction in antibiotic use compared to ***immediate*** antibiotics (odds ratio (OR) 0.04, 95% CI 0.03 to 0.05), however ***delayed*** antibiotic was more likely to result in reported antibiotic use than ***no*** antibiotics (OR 2.55, 95% CI 1.59 to 4.08). There was no significant difference in patient satisfaction between ***delayed*** antibiotics and ***immediate*** antibiotics (OR 0.65, 95% CI 0.39 to 1.10), however patient satisfaction favoured ***delayed*** over ***no*** antibiotics (OR 1.49, 95% CI 1.08 to 2.06). The authors of the study concluded that for many clinical outcomes there were no differences between the three prescribing strategies and that where clinicians are not confident in using a ***no*** antibiotic strategy for RTIs, a ***delayed*** antibiotic strategy may be an acceptable compromise in place of immediate prescribing to significantly reduce unnecessary use of antibiotics for RTIs.

Healthcare-associated infection and antimicrobial resistance.

The HSE has updated its "healthcare-associated infection (HCAI) and antimicrobial resistance (AMR)" information website. This contains helpful information and resources for both healthcare professionals and the public, including information on HCAI, AMR and Carbapenemase Producing Enterobacteriaceae (CPE). Check it out at: ***http://www.hse.ie/hcai/***

Benzodiazepines and z-drugs.

The HSE Medicines Management Programme (MMP) has recently produced a guidance document which aims to support the appropriate prescribing of benzodiazepines and z-drugs (BZRA) in the treatment of anxiety and insomnia (***www.hse.ie/your medicines***). The document contains information on the initiation and review of BZRA, highlighting the potential dangers associated with long-term use and provides examples of resource materials which may support prescribers and pharmacists to manage the withdrawal of patients from these medicines. Resources available on the MMP website include **prescribing "Tips and Tools" for BZRA for the treatment of anxiety and insomnia and patient support leaflets including "The Good Relaxation Guide", "The Good Sleep Guide" and "A Guide for Patients - Stopping your medicine: benzodiazepines and z-drugs"**. [**Editor's note**: readers are reminded that the MMP website contains other useful prescribing "Tips and Tools" guides for medications including ACE inhibitors, SSRIs, proton pump inhibitors and direct-acting oral anticoagulants.]

Every effort has been made to ensure that this information is correct and is prepared from the best available resources at our disposal at the time of issue. References are available on request. This ***newsletter is produced by the National Medicines Information Centre, St. James's Hospital (SJH) Dublin 8 and Dept of Therapeutics Trinity College, Trinity Centre, SJH.*** *Tel: Direct Line (01) 473 0589 or 1850 727 727 Email: nmic@stjames.ie*