CASE REPORT

No medicine is sometimes the best medicine

Katharine Ann Wallis

Department of General Practice
and Primary Health Care,
University of Auckland,
Auckland, New Zealand

Correspondence to
Dr Katharine Ann Wallis,
k.wallis@auckland.ac.nz

Accepted 18 April 2015

SUMMARY

A 76-year-old woman was admitted to hospital from the rheumatology outpatient clinic for investigation of fatigue, malaise, emotional lability, muscle weakness, productive cough and postural hypotension. She had been taking prednisone 60–40 mg daily for 6 weeks for suspected giant cell arteritis, along with six other regular medications, and had recently finished a course of antibiotics. During her admission she underwent many investigations (mostly negative) and treatments (largely harmful). When the diagnosis of adverse drug reaction was eventually reached, her medications were withdrawn and her symptoms gradually resolved. She was discharged home 1 month after admission, vowing never to return following her 'stormy course'. Adverse drug reactions are a common cause of avoidable hospital admissions in the elderly, estimated to cost billions every year. The single greatest risk factor for adverse drug reactions is the number of medications a person takes. Deprescribing to reduce potentially inappropriate medication is a possible way forward.

CASE PRESENTATION

A 76-year-old woman consulted an on-call doctor about an episode of transient distorted and flickering vision in her left eye that lasted about 5 min. Her erythrocyte sedimentation rate was elevated (90) and giant cell arteritis was suspected. She was started on prednisone 60 mg daily and referred for temporal artery biopsy and rheumatology review.

Six weeks later, when reviewed in the rheumatology outpatient clinic, she was still taking prednisone 40 mg daily. She was taking six other regular medications including propranolol, spironolactone, frusemide, potassium, thyroxine and salbutamol, and had recently finished a course of antibiotics (a macrolide) for a productive cough. She was said to be "feeling very poorly with a cough and in fact was quite tearful." Her symptoms were noted as fatigue, malaise, emotional lability, muscle weakness, productive cough and postural hypotension. She had no headache, jaw claudication or symptoms of polymyalgia rheumatica. She was an ex-smoker and had a history of hypertension and mild airways disease. She was afebrile, her blood pressure was 110/80 and her chest was clear. The rheumatologist admitted her to hospital "mainly because she was emotionally labile and unwell and ... has multiple problems that need sorting out."

During the course of her hospital admission she was reviewed by the rheumatology, respiratory, cardiology, gastroenterology and neurology teams. She underwent a number of investigations including temporal artery biopsy, chest X-ray, sputum culture, pulmonary function tests, ECG, 24 h

holter-monitor, echocardiogram, ventilation-perfusion scan, electromyogram, lumbar, hip and knee X-rays, and blood calcium, potassium and creatine phosphokinase—all of which were normal.

The patient was treated with amoxicillin for possible chest infection. She fainted in the ward, and pulmonary embolism and/or arrhythmia were suspected. Her propranolol was switched to sotalol and she was started on heparin. She then developed haematemesis and melena. Gastroscopy revealed a bleeding gastric ulcer; a biopsy was negative for malignancy. Heparin was stopped and she was given a blood transfusion and started on omeprazole. Neurological opinion for her muscle weakness suggested possible nerve compression and/or steroid induced proximal myopathy.

Once adverse drug effects were suspected her medications including prednisone, spironolactone and sotalol were withdrawn and the salbutamol dose decreased. Her symptoms gradually resolved and she was discharged from hospital 1 month after admission following what was described as 'a stormy course'. Her discharge medications were prednisone (15 mg reducing dose), thyroxine, frusemide (20 mg), potassium and omeprazole. She vowed never to go back to hospital and lived a further 15 years, having kept her word.

This case illustrates one of the more pressing problems facing modern healthcare systems: avoidable adverse drug reaction admissions in the elderly. As this case illustrates, adverse drug reactions may be vague and non-specific, and for this reason easily overlooked, resulting in a cascade of further investigation and prescribing; withdrawing medication is an under-utilised therapeutic option, while giving medication 'just-in-case' is common (prednisone, heparin); doctors may be reluctant to stop drugs started by colleagues; polypharmacy is a leading risk factor for adverse drug reactions (this patient had been taking eight medications prior to admission); and recognising the tipping point when once-appropriate medications become inappropriate may be difficult (β -blockers, diuretics).

GLOBAL HEALTH PROBLEM LIST

- Avoidable adverse drug reaction admissions in the elderly;
- Polypharmacy;
- Potentially inappropriate medication use.

GLOBAL HEALTH PROBLEM ANALYSIS

Many years ago, Hippocrates counselled his disciples: "As to diseases, make a habit of two things—to help, or at least to do no harm."¹ Harming people when they seek help is morally wrong. The harm caused by well-intended healthcare is not

CrossMark

To cite: Wallis KA. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2014-207152

only distressing for patients and providers, it also wastes precious healthcare resources, clogging up the system and depriving others of care.

Medication is a leading source of harm, and adverse drug reactions a common cause of avoidable hospital admissions, especially in the elderly.^{2–9} The most common reactions are falls, postural hypotension, heart failure and delirium. However, adverse reactions may also present with vague, non-specific symptoms such as fatigue, drowsiness, muscle aches and weakness, making them difficult to recognise. The scale of polypharmacy-related harm is likely under-appreciated.¹⁰ Every year, adverse drug reaction admissions are estimated to cost the UK £466 m; in the USA, ambulatory care adverse drug reactions cost an estimated US\$177 billion; and adverse drug events account for more than 10% of all direct healthcare costs among affected patients in Sweden.^{11–12} The elderly are more vulnerable to adverse drug reactions because of age-related changes and also owing to the complexity of their care: they take more medications for more chronic conditions and comorbidities.^{13–14} As the population ages, living longer with more comorbidities and taking more medications, the risk of adverse drug reaction admissions is likely to increase, making optimising medication use in the elderly an important public-health issue worldwide.¹⁵

The single most important risk factor for adverse drug reactions is said to be the number of medications a person takes.^{16–17} This risk has been estimated at 38% for four drugs, and 82% for seven drugs or more.¹⁸ To reduce polypharmacy-associated harm, we need to reduce polypharmacy and the use of potentially inappropriate medications (medicines that should generally be avoided because they are either ineffective or pose unnecessarily high risk).^{16–19} Deprescribing is the process of tapering and withdrawing drugs. The primary aim of deprescribing is to reduce polypharmacy-associated harm and improve patient outcomes, but deprescribing may also reduce healthcare costs by reducing the cost of medication and adverse drug reactions.²⁰

While it is obvious that patients should take a medicine only when the potential benefits outweigh the potential risks, the use of potentially inappropriate medications is common. This is likely because of the myriad of factors driving the culture of prescribing in medicine. The factors driving polypharmacy and presenting a barrier to deprescribing include the many disease-specific guidelines, often aligned to financial performance incentives, that tell doctors when to start medication but not when, or how, to stop it. Further, doctors may be reluctant to stop medication for a number of reasons, including fear of sanction or approbation.^{21–23} Doctors perceive less risk in maintaining the status quo, or in adding rather than withdrawing medication; potentially inappropriate medications are often not stopped, and new medications may be added ‘just-in-case’. Doctors may also be reluctant to withdraw medication for fear of upsetting the patient. Patients tend to favour treatment: more healthcare is associated with greater patient satisfaction, despite also being associated with increased mortality.²⁴ Many patients do not ask, and do not know to ask, whether they still need a drug.²⁵ Further, even if doctors and patients both agree to trial deprescribing, it may be difficult to know which drug to stop, and when and how to stop it. Deprescribing is a complex and time-consuming process; one that is usually poorly remunerated and scarcely incentivised.

A number of tools have been developed to help doctors optimise prescribing and overcome the barriers to deprescribing, including the use of a third party pharmacist medication review.^{26–32} But for deprescribing to be effective, it will need to

become a routine part of everyday practice, accepted by doctors and by patients as integral to optimising prescribing. For this to happen, doctors and patients both need to be educated about the scale of polypharmacy-associated harm and the potential benefits of deprescribing. Further, if polypharmacy-associated harm is to be reduced and patient outcomes improved, policies and incentives will need to be aligned to support deprescribing.

Learning points

- Adverse drug reactions are a common cause of hospital admission in the elderly.
- Adverse drug reactions may be vague and non-specific and easily overlooked.
- Polypharmacy is associated with adverse drug reactions.
- Deprescribing is integral to optimising prescribing.
- Withdrawal of medication may be the best therapeutic option.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Hippocrates. Epidemics, Book I, Sect XI. In: *Hippocrates, with an English translation by WHS Jones, 1923–1988*. Loeb classical library. Cambridge, Mass: Harvard University Press, 1965.
- 2 Budnitz DS, Lovegrove MC, Shehab N, et al. Emergency hospitalizations for adverse drug events in older Americans. *N Engl J Med* 2011;365:2002–12.
- 3 Wallis K, Dovey S. No-fault compensation for treatment injury in New Zealand: identifying threats to patient safety in primary care. *BMJ Qual Saf* 2011;20:587–91.
- 4 Kalisch LM, Caughey GE, Barratt JD, et al. Prevalence of preventable medication-related hospitalizations in Australia: an opportunity to reduce harm. *Int J Qual Health Care* 2012;24:239–49.
- 5 Tache S, Sonnichsen A, Ashcroft D. Prevalence of adverse drug events in ambulatory care: a systematic review. *Ann Pharmacother* 2011;45:977–89.
- 6 Kongkaew C, Noyce PR, Ashcroft DM. Hospital admissions associated with adverse drug reactions: a systematic review of prospective observational studies. *Ann Pharmacother* 2008;42:1017–25.
- 7 Howard RL, Avery AJ, Slavenburg S, et al. Which drugs cause preventable admissions to hospital? A systematic review. *Br J Clin Pharmacol* 2007;63:136–47.
- 8 Thomsen LA, Winterstein AG, Søndergaard B, et al. Systematic review of the incidence and characteristics of preventable adverse drug events in ambulatory care. *Ann Pharmacother* 2007;41:1411–26.
- 9 Pirmohamed M, James S, Meakin S, et al. Adverse drug reactions as cause of admission to hospital: prospective analysis of 18 820 patients. *BMJ* 2004;329:15–19.
- 10 Klopotoska JE, Wierenga PC, Smorenburg SM, et al. Recognition of adverse drug events in older hospitalized medical patients. *Eur J Clin Pharmacol* 2013;69:75–85.
- 11 Rodriguez-Monguió R, Otero MJ, Rovira J. Assessing the economic impact of adverse drug effects. *Pharmacoeconomics* 2003;21:623–50.
- 12 Gyllenstein H, Rehnberg C, Jönsson AK, et al. Cost of illness of patient-reported adverse drug events: a population-based cross-sectional survey. *BMJ Open* 2013;3:e002574.
- 13 McLean AJ, Le Couteur DG. Aging biology and geriatric clinical pharmacology. *Pharmacol Rev* 2004;56:163–84.
- 14 Mangoni AA, Jackson SHD. Age-related changes in pharmacokinetics and pharmacodynamics: basic principles and practical applications. *Br J Clin Pharmacol* 2004;57:6–14.
- 15 Spinewine A, Schmader KE, Barber N, et al. Appropriate prescribing in elderly people: how well can it be measured and optimised? *Lancet* 2007;370:173–84.
- 16 Scott IA, Anderson K, Freeman CR, et al. First do no harm: a real need to deprescribe in older patients. *Med J Aust* 2014;201:3.
- 17 Fried TR, O’Leary J, Towle V, et al. Health outcomes associated with polypharmacy in community-dwelling older adults: A systematic review. *J Am Geriatr Soc* 2014;62:2261–72.
- 18 Atkin PA, Veitch PC, Veitch EM, et al. The epidemiology of serious adverse drug reactions among the elderly. *Drugs Aging* 1999;14:141–52.

- 19 NHS Scotland. Polypharmacy guidance. 2012. <http://www.central.knowledge.scot.nhs.uk/upload/Polypharmacy%20full%20guidance%20v2.pdf> (accessed 10 Nov 2014).
- 20 Reeve E, Shakib S, Hendrix I, *et al.* The benefits and harms of deprescribing. *Med J Aust* 2014;201:1–4.
- 21 Schuling J, Gebben H, Veehof LJG, *et al.* Deprescribing medication in very elderly patients with multimorbidity: the view of Dutch GPs. A qualitative study. *BMC Fam Pract* 2012;13:56.
- 22 Heath I. Role of fear in overdiagnosis and overtreatment—an essay by Iona Heath. *BMJ* 2014;349.
- 23 Wallis KA. *Under a system of no-fault compensation for medical injury, is fear as a driver of over-diagnosis diminished? Preventing overdiagnosis: winding back the harms of too much medicine.* Oxford, UK, 2014.
- 24 Fenton JJ, Jerant AF, Bertakis KD, *et al.* The cost of satisfaction: a national study of patient satisfaction, health care utilization, expenditures, and mortality. *Arch Intern Med* 2012;172:405–11.
- 25 Reeve E, To J, Hendrix I, *et al.* Patient barriers to and enablers of deprescribing: a systematic review. *Drugs Aging* 2013;30:793–807.
- 26 Patterson SM, Cadogan CA, Kerse N, *et al.* Interventions to improve the appropriate use of polypharmacy for older people. *Cochrane Database Syst Rev* 2014(10): CD008165.
- 27 Royal S, Smeaton L, Avery AJ, *et al.* Interventions in primary care to reduce medication related adverse events and hospital admissions: systematic review and meta-analysis. *Qual Saf Health Care* 2006;15:23–31.
- 28 Ostini R, Jackson C, Hegney D, *et al.* How is medication prescribing ceased? A systematic review. *Med Care* 2011;49:24–36.
- 29 Ostini R, Hegney D, Jackson C, *et al.* Knowing how to stop: ceasing prescribing when the medicine is no longer required. *J Manag Care Pharm* 2012;18:68–72.
- 30 Iyer S, Naganathan V, McLachlan A, *et al.* Medication withdrawal trials in people aged 65 years and older. *Drugs Aging* 2008;25:1021–31.
- 31 Le Conteur DG, Banks E, Gnjjidic D, *et al.* Deprescribing. *Aus Prescriber* 2011;34:182–5.
- 32 O'Mahony D, O'Sullivan D, Byrne S, *et al.* STOPP/START criteria for potentially inappropriate prescribing in older people: version 2. *Age Ageing* 2014;44(2):213–8.

Copyright 2015 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow