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WHAT
WE
CAN'T
SEE

In This Issue

In the popular psyche, many illnesses, ailments and diseases come with visual assumptions, which prompt visceral reactions.

In childhood, viral infections such as pox and measles are easy to comprehend (and fear) while into adulthood and older age the effects of cancer and its treatments; cardiovascular disease and its sudden, dangerous symptoms; and the slow debilitation of degenerative diseases can be regarded as easy to 'spot', and can therefore provoke unspoken sympathy and concern.

But what about the conditions we can't see?

Many diseases and illnesses do not have a consistent physical manifestation, which can impact how people living with them see themselves, and complicate the work of pharmacists to reduce the effects and help patients live their lives.

In this issue of *Pharmacy GRIT*, we explore 'invisible' diseases and efforts to challenge stigma and improve care in this setting.

Alice Gilbert tackles this concept head-on, exploring the very idea of invisible illnesses, and how healthcare professionals must do more to make them visible to the healthcare system and broader society, focusing on the building epidemic in her specialty area of mental illness (pg 216).

Kerry Watts and Keti Trajcevski interview an anonymous sufferer of ulcerative colitis – a pharmacist who has undergone the journey from managing symptoms in private, to myriad ineffective treatments, to remission – to help us better understand what it's like when your external appearance belies excruciating daily pain (pg 226). In 'Talking about alcohol use', Sam Keitaanpaa et al break down how and when to introduce discussions about alcohol, and the power of long-term engagement and care that is free of judgment (pg 230).

In another area of practice rife with stigma and misinformation, Dr Jacinta Johnson et al update readers on take-home naloxone, and how to best equip patients with, and sensitively counsel patients about, this crucial tool against opioid overdoses.

Turning the focus to practitioners, Kay Dunkley looks back on 25 years of the Pharmacists' Support Service, an important presence in the profession for peer understanding, as close as your phone (pg 233).

First, however, it would be remiss of SHPA to not acknowledge the unprecedented and widespread effects of bushfires this Australia summer. Susan Trevillian's 'Watch and Act: Challenges for pharmacy amid the bushfire emergency' (pg 220) is part article, part diary and part call to action, reporting on her experiences over the last two months as a hospital pharmacist – and member of the community – near the fires' frontlines in North East Victoria.

EDITORIAL

Changing the lens on invisible illnesses

DR ALICE GILBERT

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'Don't judge a book by its cover.'
'There is more than meets the eye.'
'Beauty is more than skin deep.'

Whether we like it or not, the human is undoubtedly a visual being. Our communication style is predominately visual, with 55% of it attributed to body language.[1] We want to be able to look at something (or someone) and be able to sum things up. This is often why those with invisible illnesses hear phrases such as 'You look fine,' or, 'You don't look sick.'[2]

Beyond the lack of a visual prompt to alert us to someone's ill health, what exactly is an 'invisible illness'?

There is no medical definition; however, the term is often used to highlight certain challenges associated with conditions such as chronic fatigue syndrome, digestive disorders, endometriosis, rheumatoid arthritis, chronic pain, and mental illnesses.[3]

My work within the area of mental health has helped me understand the need to explore what makes particular diseases less visible to others. It is a critical task: what is at stake is reducing the level of stigma, the improvement of outcomes, increases in treatment options, quality of life, and survival rates.

Modern medicine has allowed for vast improvements in the area of diagnosis. Targeted pathology and radiology exams, for example, have been able to make the externally invisible, visible. Having an objective test to check a diagnosis can be validating for both clinician and patient. It is reaffirming to tell a healthcare professional that something is wrong, and then have a test confirm it. Unfortunately, mental illness, as with some of the other invisible illnesses, falls in the position of being 'double blinded'. We may not be able to see something different externally, but also, there are no objective tests to confirm how the symptoms are presenting.

The lack of medical accuracy for these conditions – which can present in different ways in different people – may delay diagnosis and treatment, prolong suffering, and demand much more of the patient in unexpected ways. Zachary Philips, a mental health advocate and writer, shares, 'Unlike many physical issues, it is not immediately obvious what I need, or that I need anything – I have to tell you,' he explains. 'This process is terribly embarrassing as it forces me to constantly explain to people that I am suffering.'[3]

Alice is a clinical pharmacist with a specialty in Mental Health. She was the previous Chair of the SHPA Mental Health Leadership Committee, and completed her PhD at the University of Queensland within her area of expertise as a clinician-researcher. The aim of her PhD was to investigate the effectiveness of an Embedded Pharmacist Researcher and their impact on the Quality Use of Medicines. Her research was conducted using the embedded researcher technique and targeted areas which were identified during clinical work as translational gaps between literature and practice.

Alice's current role is the Lead Safety and Quality Pharmacist for SA Pharmacy.

Alice's roles have inspired her to pursue research whilst continuing to practice as a clinician. Her interests are in mental health, translational research, improving the continuum of care, Aboriginal and Torres Strait Islander health and quality use of medicines.

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> Most of all, those with invisible illnesses must be validated – and be loved. It is human instinct to look for acceptance, but sometimes we need to rely on our other senses, such as hearing, to understand and treat an illness.

The term 'invisible illness' itself suggests these conditions are mysterious – this characteristic has long surrounded many mental illnesses in particular. Both the pathogenesis of disease and the mechanism of action of many medicines within the field of mental health are still unknown. Without more exposure, funding and innovation, most treatment options are based on theories of disease progression, and work only for a proportion of sufferers. This leads to many mental illnesses being seen as 'chronic conditions' without the developments of 'cures' as we have seen in other fields of medicine.

As healthcare professionals, we must do more to make invisible illnesses visible to the healthcare system and broader society. This is a major challenge of our time, because, in the case of mental illness, we are in the midst of a historic epidemic – and one that's only getting worse.

Australians are visiting their GP more for mental health issues than any other health concern. A survey of 1,200 GPs published by the Royal Australian College of General Practitioners found that two in three doctors reported 'psychological issues' as the most common condition they now treat. This has been the case for two years in a row.[4] While pharmacotherapy and psychotherapy are considered the mainstay treatment options for mental illness, there is still a big gap between the treatment goals and services delivered. With average GP visits lasting just six minutes,[5] and waiting times to see psychologists sometimes extending to months, who is there to seek out and understand the invisible? In the case of depression, a third of patients experience remission after one pharmacotherapy treatment, but the other, nearly 70%, need to trial several other antidepressants.[6] When the illness is hidden, it seems that treatment options can also be hard to find.

> As healthcare professionals, we must do more to make invisible illnesses visible to the healthcare system and broader society.

While mental illness may fall under the umbrella term 'invisible illnesses', its impact on individuals and society is strikingly clear.

Every day, at least eight Australians die from suicide – and for every death by suicide, it is estimated that as many as 30 people attempt to end their lives.[7] Suicide is the leading cause of death for Australians aged 15–44, and in 2018 accounted for one third of deaths among people aged 15–24.[8] The suicide rate amongst Aboriginal and Torres Strait Islander peoples is more than double the national rate.[9]

One stark statistic speaks volumes on why we need to shine the light on mental illness: 7.4% of government health expenditure was spent on mental health-related services in 2016–17.[10] Yup, you read that right – just 7.4%. Depression has the third highest burden of all diseases in Australia (13%) and it is third globally.[11] Burden of disease refers to the total impact of a disease measured by indicators including financial cost, mortality and morbidity, and is often expressed as the number of years of life lost due to ill-health, disability or early death.[11] Where illnesses are less visible, no matter the burden of disease they bring, it seems they also suffer from invisible

funding. As comparison, while cancer accounts for 19% of the total burden of disease[12] compared to depression's 13%, 11 times more money is donated from the private and corporate sectors to cancer research than to mental health research. In addition, cancer research receives twice as much government funding.[13]

From my readings and my experience working in the field of mental health, invisible illnesses are actually about relationships. It is about how those with particular conditions are perceived. It is about how they are acknowledged, understood, explained, heard, interpreted, and provided with treatment options. It is my hope that those with invisible illnesses stop needing to be the brave ones in our relationships, made to repeatedly explain their suffering from a place, in a sense, alone, concealed from health care's view. It is those around them that need to look outside themselves and have the courage and expertise to ask the right questions, provide a safe space, and provide funding for research to improve treatment outcomes. Most of all, those with invisible illnesses must be validated – and be loved. It is human instinct to look for acceptance, but sometimes we need to rely on our other senses, such as hearing, to understand and treat an illness. ●

REFERENCES

1. Mehrabian A, Wiener M. Decoding of Inconsistent Communications. Journal of Personality and Social Psychology 1967; 6(1): 109–114. doi:10.1037/h0024532. PMID 6032751.
2. DiversityInc Staff. 'But You Look So Good!' and 7 Other Things NOT to Say to a Person With a Non-Visible Disability. Princeton, NJ: DiversityInc; 2009. Available from <https://www.diversityinc.com/but-you-look-so-good-and-7-other-things-not-to-say-to-a-person-with-a-non-visible-disability/>.
3. Fabian R. What is Invisible Illness? (+ How to Explain it to Others). New York, NY: Talkspace; 2018. Available from < https://www.talkspace.com/blog/what-is-invisible-illness-how-to-explain-it-to-others/>.
4. The Royal Australian College of General Practitioners. General Practice: Health of the Nation 2019. East Melbourne: RACGP; 2019. Available from <https://www.racgp.org.au/general-practice-health-of-the-nation>.
5. Editorial. Still getting it wrong on mental health. The Age. 2018 Sept 23. Available from <https://www.theage.com.au/national/still-getting-it-wrong-on-mental-health-20180923-p505hd.html>.
6. Cipriani A, Furukawa TA, Salanti G, Chaimani A, Atkinson LZ, Ogawa Y, et al. Comparative efficacy and acceptability of 21 antidepressant drugs for the acute treatment of adults with major depressive disorder: a systematic review and network meta-analysis. Lancet 2018; 391(10128): 1357-1366. doi: 10.1016/S0140-6736(17)32802-7.
7. Lifeline. Statistics on Suicide in Australia. Deakin: Lifeline Australia; 2019. Available from <https://www.lifeline.org.au/about-lifeline/lifeline-information/statistics-on-suicide-in-australia>.
8. Australian Bureau of Statistics. Intentional self-harm, key characteristics. In: Causes of Death, Australia, 2018. cat. no. 3303.0. Canberra: ABS; 2019. Available from < https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/3303.0~2018~Main%20Features~Intentional%20self-harm,%20key%20characteristics~3>.
9. Australian Bureau of Statistics. Intentional self-harm in Aboriginal and Torres Strait Islander people. In: Causes of Death, Australia, 2018. cat. no. 3303.0. Canberra: ABS; 2019. Available from < https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/3303.0~2018~Main%20Features~Intentional%20self-harm%20in%20Aboriginal%20and%20Torres%20Strait%20Islander%20people~4 >.
10. Australian Institute of Health and Welfare. Mental Health services in Australia. Canberra: AIHW; 2019. Available from <https://www.aihw.gov.au/reports/mental-health-services/mental-health-services-in-australia/report-contents/expenditure-on-mental-health-related-services>.
11. Black Dog Institute. Facts and figures about mental health. Randwick: Black Dog Institute. Available from <https://www.blackdoginstitute.org.au/docs/default-source/factsheets/facts_figures.pdf?sfvrsn=8>.
12. Australian Institute of Health and Welfare. Burden of cancer in Australia: Australian Burden of Disease Study 2011. Australian Burden of Disease Study series no. 12. Cat no. BOD 13. Canberra: AIHW; 2017.
12. Batterham PJ, McGrath J, McGorry P. NHMRC funding of mental health research. Med J Aust 2016; 205(8): 350-351.

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FEATURE

Watch and Act

Challenges for pharmacy amid the bushfire emergency

We start this issue with a special feature, written by an SHPA member living and working on the edge of the bushfires in Victoria's northeast – Susan Trevillian, an active member of SHPA's Rural and Remote Leadership Committee, as well as the Leadership and Management Leadership Committee.

SUSAN TREVILLIAN
(outside Northeast Health Wangaratta's Emergency Department)

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In early January, SHPA Chief Executive Kristin Michaels contacted Directors of Pharmacy and Chief Pharmacists in the fire-affected areas of Australia, offering whatever support the organisation could provide, as their professional body.

Between evacuation alerts and under strange skies, Susan thought about SHPA's offer. She thought about the work of pharmacy – within her hospital and the broader health sector – and about volunteer community groups and firefighters, about SHPA, and about the local, state and federal government responses to the current and ongoing challenges being generated by the crisis. Then, on Monday 13 January, she wrote back.

What follows is a modified version of Susan's response. It describes some deeply considered ideas about the actions that our profession (and health care generally) must take during and after the fires, but also gives a 'real time' insight into the personal and professional impacts of the disaster. It is a powerful contribution to the conversation about what needs to change in pharmacy, as our world changes around us.

In winter, this is usually a view to snow-capped peaks, from Susan's front porch.

The view from Susan's porch a week later – a smoke column obscures Mount Buffalo.

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13 January 2020

Where to begin? I've been thinking about what role SHPA could play in response to these fires for a few days now – in between packing and unpacking and repacking the car, after my family unexpectedly found ourselves evacuating our home a week ago, for one night, when the Emergency Warning area and smoke-induced darkness got too close for comfort (Figure 1). The day prior to leaving our home, we would have hosted our daughter's 4th birthday party (Figure 2), had we not cancelled due to the hazardous air quality from bushfires nearby. I feel both grateful and guilty that we are much better off than so many affected people who live and work on the other side of the hills.

I write this from Wangaratta, where for the last week, each evening I've been assessing whether it's safe to return home from work. During our Pharmacy Department team meeting today, a dozen or so phones in pockets chimed in unison, gently informing us that the VicEmergency app had updated an alert in the local area. There's a sense of calm vigilance as we each take a moment to check whether the alert level has escalated near our loved ones. My husband works in Whitfield, in the southern end of the King Valley. When I go to work and drop off my daughter at daycare in Wangaratta, we're further from the fires. When my husband goes to work, he's heading into the higher-risk area – my co-workers have family in higher-risk areas too. The alert level in our region has fluctuated a number of times between "Evacuate Now" and "Watch and Act", with some of my husband's workmates camped at Wangaratta Showgrounds in their caravan, having been alerted to evacuate their homes on at least three separate occasions.

Our hospital has been on Code Brown Standby for over a week, but thankfully has not had to escalate this. As Wangaratta has been the major relief centre for the Ovens Valley, some alpine areas, Buckland Valley, King Valley and others, our health service has been busy providing a range of services not included in our business-as-usual: for example, providing in-reach and triage to the Wangaratta Relief centres at the Showgrounds and Performing Arts Centre; identifying those evacuees who would benefit from a trip to ED or hospital admission; and providing mental health support, to name a few. Smaller hospitals and aged care facilities nearer the fires have been evacuated during the last week or two, as have some of the community pharmacies that service them.

Amid this, I have been collecting my thoughts, and chatting with colleagues here and interstate, to better understand the issues this disaster has thrust upon rural and regional Australia's pharmacy workforce. Here are some of those thoughts [and ideas for action], loosely grouped for the consideration of the SHPA community.

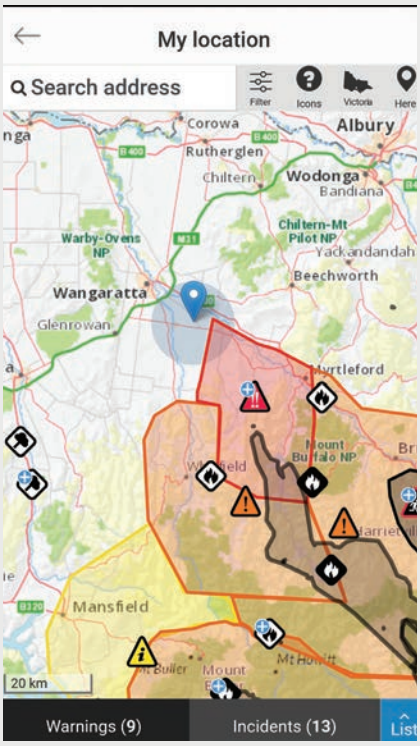

Figure 1. A screenshot from the Vic Emergency app – during the height of the bushfire crisis in Victoria's northeast, Susan's family evacuated from their home.

Figure 2. Happy 4th birthday to me – party cancelled due to hazardous smoke and nearby bushfires. (Photo by Richard Trevillian.)

Logistics & supply chain

- We've received notifications that courier companies have temporarily ceased deliveries into a large number of Victorian and NSW locations due to the fire emergency – locally, those couriers have ceased deliveries into Mount Beauty, Bright, Myrtleford, Mount Buller and Mount Hotham for now.
- An AJP article outlines the experience of an Orbost pharmacist taking his car and trailer to pick up medicines as deliveries weren't arriving ['Pharmacists on the front line', *AJP.com.au*, 6 January 2020]. The Princes Highway remains closed between Bairnsdale and further east, with no ETA on its reopening according to national media.
- An interstate colleague told me of her experience of not receiving IV fluids and pharmaceutical deliveries into her hospital, due to road closures because of bushfires. That was during MM2019 – I'm sure you'll remember the smoke that blanketed the Gold Coast. A number of frustrating phone calls to the wholesaler's customer service reps to inform them that the roads had re-opened proved ineffective – as was the offer to send a driver from the hospital to the warehouse to collect the orders.
- The Eyre Highway linking WA and SA closed due to fires for 12 days, restricting freight in both directions. Several of our medicines are manufactured in Perth, but as yet we've not been impacted.
- I'm interested in whether the Dispensing & Distribution Stream and the Emergency Medicine Stream has some thoughts, or if there is any literature recommending how many days' worth of stock should be held in excess, within hospital pharmacy inventories and budgets, for critical medicines in the event that there is difficulty with supply chain (and what that critical medicines list might be)?

Sunrise and smoke haze in the King Valley. (Photo by Richard Trevillian.)

Pharmacy workforce

- A number of our hospital's staff, including myself, have taken emergency "Code Brown Leave" during the last week, although this has so far not affected our department's business-as-usual of providing services to inpatients Mon-Fri.
- We've been delighted to host a midwife from another hospital, to cover emergency leave shifts in our Maternity Unit this week.
- AUSMAT deployed domestically for the first time in their history, and NHW hosted four critical-care trained nurses for all of last week, who provided relief in areas where nursing staff were on emergency leave.
- This all differs from the experience of an interstate colleague, who reportedly reached out to the large referral hospital within her region for workforce assistance, to find that none was forthcoming. Imagine yourself in her situation: during 2019, the number of pharmacists dropped suddenly from three to one, in a hospital that usually has four pharmacist positions. As the solitary pharmacist in the hospital, she was new to the leadership position, and the only pharmacist on-call for several months… and then the bushfire season began early. I've been in regular contact with her by phone to offer whatever support I can. She describes the recent experience of her pharmacy technicians, some of whom were unable to attend work for several days due to road closures preventing them from leaving home. On returning to work, they expressed how great it was to be back at work just doing the usual thing, and being around the people in the team, rather than having to face the fires for another day.

- Another interstate colleague has been surrounded by bushfires and experiencing hazardous air quality almost daily, for eight weeks now. She services the local hospital from a community pharmacy, and she is not only tired, but describing survivor guilt as members of her community have lost their homes while hers still stands. She recently travelled away from home to get away from the smoke just for a day, and then a new fire started – "Not here too!" – and they had to take a detour to get back home.
- I read with interest that LocumCo was offering fee-free placement of locums into bushfire-affected communities during January – a fantastic initiative. [Update: since my initial email I've read of pharmacist academics also offering their services.]
- In small departments, the loss of one pharmacist or skilled technician represents a significant percentage of the EFT, and the time to recruit a new member to the team generally takes much longer than in metropolitan areas, because the successful candidate often needs to relocate. The cost of covering the position in the interim with a locum (as well as providing accommodation if indeed a suitable locum is available), is also a frequent cost borne by rural and small health services.
- SHPA could think about establishing some guidelines to assist with facilitating secondment of skilled hospital pharmacists and pharmacy technicians from large centres, to support those in smaller/rural/remote hospitals in times of emergency, disaster, or critical workforce shortage.*
- In the rural and remote setting, it is already largely considered acceptable for hospitals to provide a diminished level of pharmacy service to patients, in comparison to metropolitan services. We all must do what we can to change such attitudes, given that a third of Australia's population lives in regional, rural and remote areas.

Primary care

- I welcomed the news last week that the NSW Ministry of Health – followed by the Victorian Department of Health and Human Services, then ACT Health – announced that in the context of the bushfire emergency situation, pharmacists could maintain a patient's supply of their usual medicines without a prescription, for longer than the usual three days (i.e. a month's supply or a usual PBS pack size).
- I also welcomed the Federal Health Minister's announcement that medicines supplied under this scheme would be subsidised by the PBS.
- [Since my initial email, TGA has also relaxed its usual advertising rules, to allow pharmacies to advertise the availability of salbutamol inhalers to the public.]
- I was disappointed to read of some GPs (and presumably community-based pharmacists) being excluded from the disaster response, particularly from providing services in evacuation centres, because these GPs were not included in the emergency operations centre's protocols. I presume that government agencies are accustomed to dealing with other government agencies and not so much with private practice. In our region, most of the small hospitals don't have on-site doctors, they have GPs who come in and provide the medical service to inpatients/urgent care patients. And so it makes sense to me that they would be providing care in a disaster. I'd argue the very same for pharmacists from community pharmacies, who provide the medicines and medicines management services to those small hospitals.
- An interstate colleague's local hospital is often staffed by locum GPs, but lately there have been many days when no locum is available – should a patient present for urgent care, no doctor would be available to call in.

Smoke haze in the King Valley with a glimpse of nearby mountain range.
(Photo by Richard Trevillian.)

*SHPA has since established the SHPA Staffing Relief Register. Read more about it and how you can involved in *nitty gritty* pg 287.

- Another interstate colleague described the impact on her hospital pharmacy when the local community pharmacies closed, as the pharmacy's staff members were forced to evacuate during the bushfire emergency. The hospital pharmacy became inundated with people from the local area seeking ongoing supplies of their regular medicines, as they could not access their usual pharmacy. Similarly, visitors to the area also found their way to the hospital pharmacy seeking medication, as road closures had kept those visitors to the area stranded for longer than they'd planned.
- P2 masks and their availability provide a useful example of communication difficulty between jurisdictions – locally, it's my understanding that masks were made available to vulnerable members of the public, via the evacuation centres and hospital emergency department. But if you didn't have to evacuate, and you stayed in a smoky environment, and you went instead to your local community pharmacy seeking a mask, it's likely that your community pharmacy hadn't been set up as a distribution point as part of the emergency response. My colleague describes different information coming from the state health department, the (nearby) interstate health department, her community pharmacy's banner group, and the media, regarding the availability of free masks.
- I'm curious as to whether SHPA could seek to understand the role of Primary Health Networks in establishing better links between community and hospital pharmacy providers, to reduce duplication of effort and streamline communication about what supplies are coming into a local area and how they can be efficiently and equitably distributed.
- [Since my initial email, I was delighted to hear from my colleague that manufacturers of salbutamol inhalers have donated supplies of these into bushfire and smoke-affected community pharmacies, for supply by pharmacists to those in need. Spacers are also coming soon.]
- I was happy to read of SHPA's commitment to donate to the Community Enterprise Foundation's National Bushfire Disaster Appeal, and to WIRES, and invite SHPA to consider donating to a third effort: well-renowned pharmacist Joyce McSwan has set up a fundraiser for community pharmacists who have lost part or all of their home, or to use to pay for non-PBS medicines that community pharmacists can then provide to their patients free of charge. Unused funds will be donated to the Pharmacists' Support Service, another worthy cause, whose services are likely to be accessed by SHPA members. The fundraiser, titled 'Bushfire Disaster Relief for Community Pharmacists', is hosted by GoFundMe (https://au.gofundme.com/f/bushfire-disaster-relief-for-community-pharmacists).

Transitions of care

- There will be patients in metropolitan hospitals across Australia, far from those bushfire-affected areas, who are anxious about returning home, if indeed they have a home to return to. Across Australia, over 2000 homes have already been destroyed by bushfires this summer.
- I'd argue that every SHPA member knows someone who knows someone directly affected by the bushfires this season, with national media attention focusing on fires in WA, SA, Vic, NSW, ACT and QLD. There are not many unaffected places left – especially if you include the impacts of the smoke. It's important to remember that this stirs up memories of previous bushfire disasters within our patients and indeed our colleagues. In 2009, 173 people died in the Black Saturday fires, but many of our early career colleagues may be unaware of the scale and impact of previous disasters. Just the other day, I heard the story of a little girl sheltering in her home with her family during the Ash Wednesday fires in 1983, running from a burning house onto burnt ground to survive. I've known her for quite a while, but I didn't know she'd had that experience until very recently.

- SHPA members engaging with rural patients being treated in large metro hospitals can make a huge difference to their patients' experience, and show kindness in their care, by acknowledging where the patient lives, and considering the potential impact of the current and previous bushfires on the patient and their friends and family.

Mental health

- This area is going to need a significant uplift in funding to meet the current needs of the community. It's my understanding that the Federal Government has released extra funding to accommodate the mental health needs of people in bushfire-affected communities. However, it's well known that there are not enough mental health practitioners and Alcohol & Other Drug practitioners in rural areas, so waiting times and access are likely to be issues.
- It's expected that there will be an increase in family violence and substance misuse in the setting of such stressors.
- Recruiting experienced mental health pharmacists to regional and rural areas remains a challenge.

Future challenges

- It worries me that so many of our pharmacy graduates tell us they want a career in hospital pharmacy. That means the best and brightest want to be in hospital, waiting for patients to come to them, akin to an ambulance at the bottom of the cliff. In situations like our current bushfire emergency, we need more great pharmacists out in the community providing primary care to all those that don't require hospitalisation or a trip to ED.
- I'm optimistic that the upcoming 7CPA will better fund the medicines management services community pharmacies and pharmacists could and should provide, that are independent from sale of medicines. An appropriately remunerated, well-resourced, thriving rural pharmacy workforce is essential, if we are to recover well from this disaster.

SHPA deeply thanks Susan for sharing her experiences and thoughts, and encourages all members to engage with this conversation. Further, Susan encourages members to consider immediate efforts to help those affected – by donating blood, or visiting and spending money in recovering communities, or for those living on urban fringe, to consider volunteering for the local fire service.

For its part, SHPA actions-so-far in response to the crisis include:

- committing 10% of all SHPA event registration fees in January and February to the Community Enterprise Foundation's National Bushfire Disaster Appeal and WIRES;
- partnering with Australian Veterinary Association (AVA) Victoria to facilitate the donation of unscheduled medications and consumables to aid wildlife rescue; and
- sharing government and NGO advice on bushfire-related short-term and mental health through SHPA member channels.

In a broader sense, 2020 will see a solar energy fit-out of SHPA's Collingwood office, mandatory offset for corporate travel, and all proceeds from internal staff fundraising events going toward bushfire relief. ●

Smoke haze in the King Valley. (Photo by Richard Trevillian.)

FEATURE

Illnesses can be invisible; medicines can be miracles

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Editorial Committee

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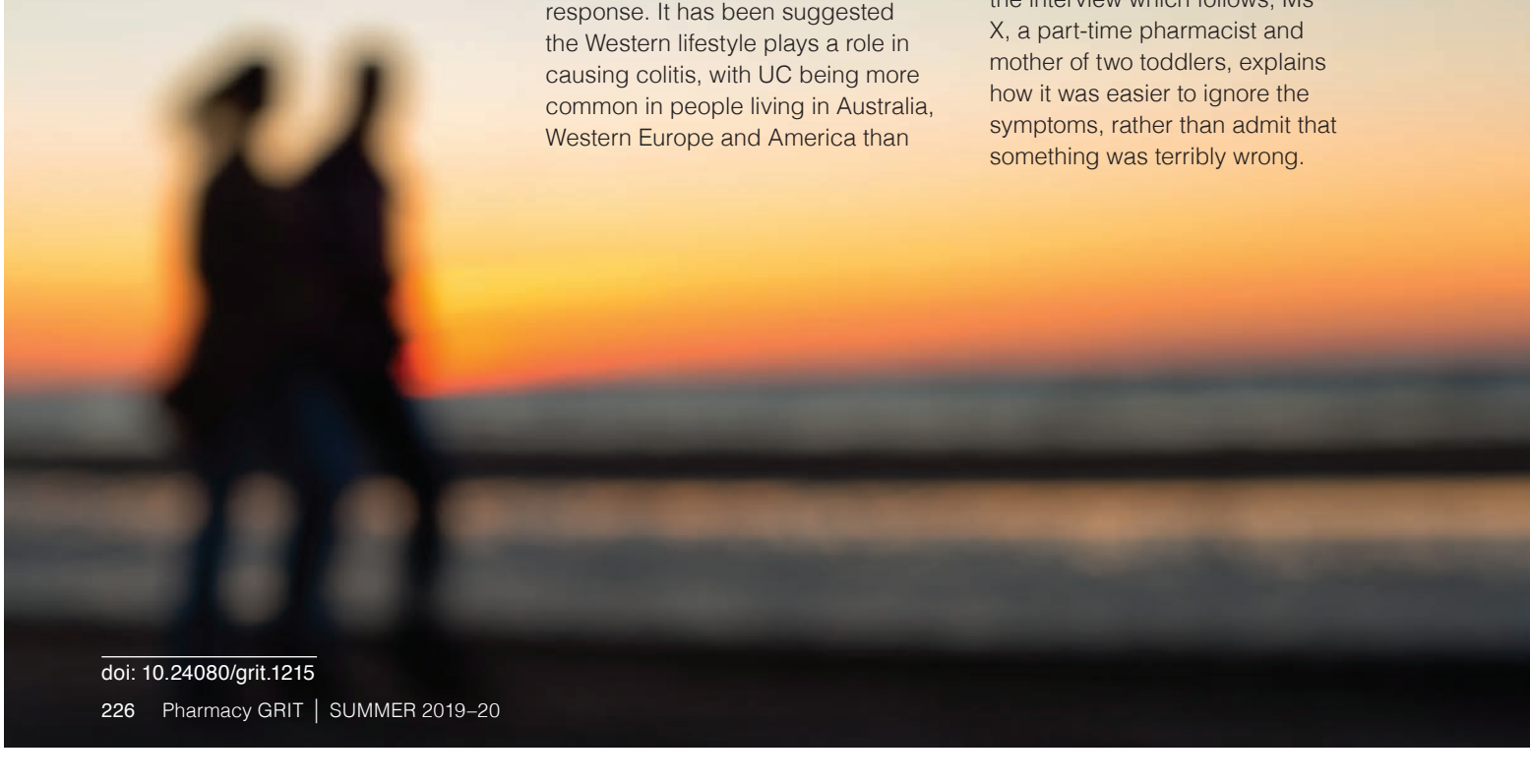
As this issue has explored, a person suffering an invisible illness often receives a very different response from the world than someone in obvious suffering. In some cases, though, even the person undergoing the private pain can deny their own need to seek help – which only makes it more urgent that we change how we identify and care for those around us who are hurting invisibly.

Here, Kerry Watts and Keti Trajcevski interview a sufferer of ulcerative colitis – a pharmacist who has undergone the journey from managing symptoms in private, to myriad ineffective treatments for daily excruciating pain, to remission – to help us all better understand what it's like when your external appearance belies the suffering inside.

Chronic diseases are long-lasting and persistent. Their social and economic implications can impact on peoples' quality of life and are a priority for action in the Australian health sector.[1] Inflammatory bowel disease is a chronic condition categorised most commonly by either Crohn's disease (CD), which affects the bowel wall throughout the gastrointestinal tract, or ulcerative colitis (UC), which affects the lining of the large bowel, colon and rectum.[2] UC is an abnormal immune response, in which the body mistakes certain foods or bacteria in the intestine for foreign substances, resulting in an inflammatory response. It has been suggested the Western lifestyle plays a role in causing colitis, with UC being more common in people living in Australia, Western Europe and America than in developing countries,[1] with an estimated 800 new cases of UC diagnosed each year in Australia.[3]

Diagnosed with UC in 2004, 46-year-old Ms X experienced daunting days prior to diagnosis and treatment, involving excessive bleeding and excruciating abdominal pain. In the interview which follows, Ms X, a part-time pharmacist and mother of two toddlers, explains how it was easier to ignore the symptoms, rather than admit that something was terribly wrong.



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What is the worst thing about having UC?

Without a doubt, the distention, excruciating pain and unexpected bleeding. In the early stages, I had to wear pads to work. The severe pain would come in waves with associated sweating attacks; I would take pain relief medication when needed, but mostly I managed the pain through deep breathing. On some occasions, the urgency was so sudden I could not attend a toilet quick enough and would bleed through my clothes, subsequently having to deal with the embarrassment.

How has UC impacted on your career and social life?

In the first instance I was in denial. Thankfully, I was working part-time; I would have really struggled managing my symptoms and exhaustion if I'd had full-time employment. On the days I was working, I packed an ample supply of pads to manage the bleeding and urgency. I knew my good and bad times of the day, and so quickly adjusted my life around these times. On the family front, when I think back now, there were a few occasions where I really should have been hospitalised, but my children were both very young and I felt I could not leave then overnight. So I just kept pushing through the pain. I lost weight but I did not look unwell. From the outside, none of my friends had any idea I was suffering.

How did you decide on treatment choice?

Finding the treatment regimen was not an easy road. At one stage, I was taking a cocktail of medications consisting of high-dose prednisolone, sulfasalazine, azathioprine and mesalazine suppositories. I reached a stage where I took control of my body and treatment and eliminated all medications. I was lucky enough to have a great specialist in Sydney and together we re-introduced one medication at a time to analyse the efficacy.

During this time, I was offered a few clinical trials, including faecal transplantation, but I refused all of them. My father is a general practitioner and said that I should not be a 'guinea pig'. I was then given the option for oral tofacitinib or subcutaneous adalimumab. To be honest, even as a health professional, I was in denial that this was actually happening to me. I was not prepared for a daily reminder and was not keen on self-injecting. Then vedolizumab become an option, an eight-weekly infusion. On reviewing the published evidence, I instantly felt it was the ideal treatment choice for me. I consider myself a static patient – that is, I work part-time and rarely travel – so committing to regular clinic appointments was not an issue for me. Mondays soon became my appointment or infusion days. Luckily for me, the staff at the Medical Ambulatory Care Unit are quite lovely and I actually enjoy my infusion days, they provide a positive impact on my life.

I realise that not everyone is as lucky as me. I know a 23-year-old who wants to try infliximab but the Pharmaceutical Benefit Scheme (PBS) will not approve treatment, and a 17-year-old who has commenced four-weekly infusions without consideration for the impact this will have on their study/work life and options of travel, etc, in the future.

Do you feel that you live a 'normal' life?

Yes. Even during the tough times, as a health professional, I never saw myself as ill compared with others with acute or chronic illness, because I was always fully functional; I knew my symptoms' patterns, my worst times of the day and I planned accordingly. Since starting on vedolizumab, my life has really changed; now I know I am well. Normal for me means no bleeding, no urgency and no pain.

How do you look at the future?

I have been in remission for five years now. I have annual reviews with my specialist and six-monthly colonoscopies. The main things I worry about are what if it (vedolizumab) stops working; what if I have a relapse; or what if I don't get approved by the PBS for further treatment?

Even during the tough times, as a health professional, I never saw myself as ill compared with others with acute or chronic illness, because I was always fully functional.

This case highlights that chronic diseases can affect anyone at any time. Chronic conditions do not discriminate. Being a health professional and well-informed are not exclusion criteria and do not mean we are equipped to admit something is seriously wrong – just like anyone else, we are not immune to the struggles of denial and fear.

Ms X shows that on the surface many people may seem okay, but in reality are living with chronic diseases impacting their health and quality of life. Colleagues of Ms X may or may not have picked up on signs of the excruciating pain and suffering she was experiencing. What should we do if we notice something different about a colleague? NSW Health promotes asking one simple question: 'R U OK?' It is our obligation as health professionals, colleagues and friends to promote a supportive team and positive work culture, which are high priorities on the agenda of health care in Australia.

In our profession we develop the knowledge and skills to help identify serious health issues, and we should encourage people to act on their symptoms and seek specialist advice. Unfortunately, this will not always be restricted to our patients and one day the opportunity to help may be closer than we expect.

Luckily Ms X discovered vedolizumab as a successful therapy for her condition. Now her symptoms are regulated by attending one 'infusion day' every eight weeks. Thanks to caring health professionals, this is a day she actually looks forward to. Medicine can be a miracle.

UC is conventionally treated with aminosalicylates, oral immunomodulators and corticosteroids,[4] and in the past 20 years the pro-inflammatory anti-tumour necrosis factor α (anti-TNF-α) has been the primary target of monoclonal antibodies in the treatment of UC, in particular infliximab and adalimumab.

In more recent years, vedolizumab has gained popularity in the treatment for UC, with infusion numbers at Wollongong Hospital increasing dramatically since 2017 (Figure 1). Vedolizumab is a selective humanised monoclonal antibody that binds to $\alpha_4\beta_7$ integrin, expressed on the surface of various leukocytes, including T lymphocytes. Vedolizumab inhibits adhesion of these T lymphocytes to mucosal addressing cell adhesion molecule-1 (MAdCAM-1).[5] A subset of T lymphocytes migrate into the gastrointestinal tract and cause inflammation. Vedolizumab is the first gut-selective integrin which inhibits adhesion of T lymphocytes to MAdCAM-1, therefore inhibiting the inflammation associated with UC.

And potentially disinhibiting a life, a career and a family. ●

REFERENCES

1. Australian Institute of Health and Welfare. Chronic Disease. Canberra: Australian Government, 2019. Available from <www.aihw.gov.au/reports-data/health-conditions-disability-deaths/chronic-disease/overview>. Accessed 27 December 2019.
2. Buer LCT, Høivik ML, Warren DJ, Medhus AW, Moum BA. Combining Anti-TNF-α and Vedolizumab in the Treatment of Inflammatory Bowel Disease: A Case Series. Inflamm Bowel Dis 2018; 24(5): 997-1004. doi: 10.1093/ibd/izx110.
3. Health Direct. Ulcerative Colitits. Canberra: Australian Government, Department of Health, 2019. Available from <www.healthdirect.gov.au/ulcerative-colitis>. Accessed 27 December 2019.
4. Sands B, Peyrin-Biroulet L, Loftus E, Danese S, Colombel JF, Törüner M, Jonaitis L, Abhyankar B, Chen J, Rogers R, Lirio R, Bornstein J & Schreiber S. Vedolizumab versus Adalimumab for Moderate-to-Severe Ulcerative Colitis. The New England Journal of Medicine 2019; 381 (1215-1226). doi: 10.1056/NEJMoa1905725.
5. Entyvio (2020). In eMIMS. Available from <www.mimsonline.com.au.acs.hcn.com.au/Search/FullPI.aspx?ModuleName=ProductInfo&searchKeyword=vedolizumab&PreviousPage=~/Search/QuickSearch.aspx&SearchType=&ID=2380001_2>. Accessed 6 January 2020.

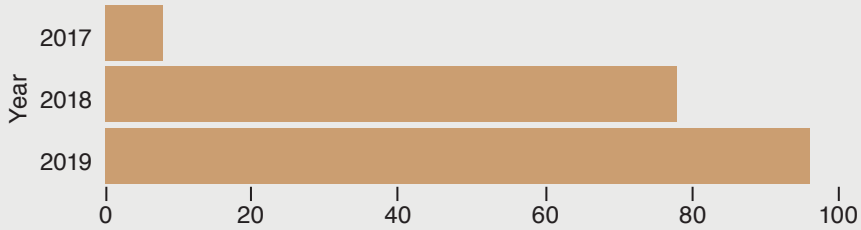

Figure 1. Number of vedolizumab infusions dispensed per year.

shpa Mentoring Program

The SHPA Mentoring Program fosters one-to-one connections, enabling pharmacists to build confidence, sharpen focus, dismantle barriers and grow job satisfaction.

SCHOLARSHIPS AVAILABLE!

Through the support of HESTA as Scholarship Supporter for the 2020 SHPA Mentoring Program, the following scholarships are available:

- 10 x $1,000 scholarships toward Platinum Partnership mentor positions
- 10 x $500 scholarships toward Platinum Partnership mentee positions

SUPPORTED BY HESTA

DEADLINES

Scholarship applications:

5.00pm AEDT Monday 30 March (outcomes advised mid-April)

Mentoring Program registrations:

5.00pm AEDT Thursday 30 April.

shpa.org.au/mentoring

Talking about alcohol use

Hospital pharmacists looking out for unseen suffering


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Australia has a love/hate relationship with alcohol. While we love to crack a cold one at the footy, or raise a glass of bubbly at a birthday, one in five Australians aged 14 or older drink at harmful levels,[1] some areas of Australia drink more per capita than any country in the world, and almost all of us have stories of a night on the grog gone wrong. While we as health professionals have moved forward in advocating the harms of smoking and second-hand smoke – assessing people for nicotine dependence and recommending ways to reduce cigarette use – we don't often do the same for alcohol, with alcohol-related harm and suffering often not recognised at all in healthcare settings.

When we think of the clinical implications of alcohol use, the most common examples are high-risk situations, such as acute cases of severe intoxication from alcohol intake or acute alcohol withdrawal. Yet consideration must also be given to long-term patient management where alcohol use can complicate the clinical outcomes for common conditions such as diabetes and cardiovascular disease.[2,3] Similarly, as ethanol is metabolised predominantly by CYP2E1, acute intake can reduce metabolism and excretion of medicines metabolised by CYP2E1 (such as paracetamol) while, paradoxically, chronic intake means that acute withdrawal can increase the metabolism of the same drugs now that ethanol is not present to compete for CYP activity.

How and when to introduce discussions about alcohol

As pharmacists in the hospital setting, we are already well-placed to help identify and support patients regarding alcohol use, withdrawal management, and supporting abstinence where requested. We are tasked with screening for potential signs of medicine-related problems which may be going unnoticed – the same task can apply to alcohol use. For example, a patient's regular use of sedatives or ongoing PPI use may sound innocuous, but further questioning might show the sedative use is offsetting withdrawal symptoms from decreasing alcohol intake, or the PPI use is offsetting gastric damage from ongoing high-level alcohol consumption. These discussions can often be valuable opportunities to explain how alcohol use is impacting their health outside of inebriation, or to offer ways to be better supported in efforts to reduce their alcohol intake.

Like any engagement we have with people who are using substances in a harmful way, taking a person-centric approach that focuses on the goal of reducing the harms to the person (from their consumption of alcohol) rather than placing blame or judgement on that person is key. Many people may not see their drinking as problematic, or are unaware of emerging information showing that even low to moderate alcohol consumption can significantly elevate cancer risk.[4] This can lead to people feeling accused and becoming defensive, or not understanding why

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a health professional may be asking about their alcohol use. However, if we help patients identify the negative health effects of alcohol on disease or areas that are important to them, and the benefits from reducing alcohol use, we can create positive discussions rather than ones which leave patients feeling blamed.

Patients may also not be aware of the interactions alcohol can have with medications, so asking people about their alcohol use when counselling about medicines (where appropriate) might help in providing the relevant information. For example, antibiotics handed out on a Friday may possibly be taken with alcohol over the weekend, posing a risk of potential interactions, as well as the risk of alcohol's adverse effects on recovery/wound healing. Similarly, the combined effect of opioids for pain with alcohol might mean that driving could be dangerous even at legal blood alcohol limits, and increase the risk of overdose with opioid medicines. These routine discussions about the adverse effect of alcohol in specific situations can help to normalise a discussion about drinking and offer opportunities for people to ask more questions around their level of alcohol use in a non-judgemental way.

Another ideal time to ask about regular alcohol use is where pharmacists are completing medication histories prior to surgical admissions. Undetected alcohol dependence can be life-threatening when it leads to severe alcohol withdrawal (see below). However, even less severe alcohol dependence can lead to agitation on the ward or early discharge against medical advice. Asking patients whether they think it might be difficult to go without their regular drink while in the hospital might be a non-confrontational way of determining if additional support is needed to reduce alcohol use prior to a planned admission.

Heavy alcohol use can also impact the family, friends and carers of the individual. Alcohol use disorder is not an isolated problem and those close to the patient can experience significant mental health stress, or be witnesses to traumatic events. As pharmacists, we should always be mindful of those who may be affected peripherally by any illness, and ensure they are aware of services that can provide support them, as well as being ready to offer direct support ourselves if asked.

Screening and conversations around alcohol

Similar to screening for nicotine use and providing motivation to make changes, brief interventions for alcohol use involve assessing the amount of alcohol a person is using and offering individualised advice on how to reduce the associated health risks. Brief (i.e. five minute) interventions provided by healthcare clinicians are as effective as longer interventions for reducing risky drinking,[5] with moderate quality evidence that brief interventions can reduce alcohol consumption in hazardous and harmful drinkers compared to minimal or no intervention[6] Brief interventions are less effective for those who are drinking at dependent levels, where referral for more intensive treatment is warranted. Exploring patients' knowledge and perceptions and providing brief advice in a motivational interviewing framework can be appropriate in inpatient settings, particularly where alcohol may have contributed to the admission (e.g. alcohol-related falls and other injuries, or admissions related to diabetes or cardiovascular conditions which may be worsened by alcohol use).

'Audit-C' questionnaire

1. How often do you have a drink containing alcohol?
   a. Never..... (0)
   b. Monthly or less .....(1)
   c. 2–4 times a month ..... (2)
   d. 2–3 times a week ..... (3)
   e. 4 or more times a week ...(4)
2. How many standard drinks containing alcohol do you have on a typical day?
   a. 1 or 2 ..... (0)
   b. 3 or 4 .....(1)
   c. 5 or 6 ..... (2)
   d. 7 to 9 ..... (3)
   e. 10 or more .....(4)
3. How often do you have six or more drinks on a single occasion?
   a. Never ..... (0)
   b. Less than monthly .....(1)
   c. Monthly ..... (2)
   d. Weekly ..... (3)
   e. Daily or almost daily .....(4)

A score of 4 or more for men and 3 or more for women is considered positive – generally, the higher the score, the more likely that the patient's drinking is affecting their safety.

Using screening tools

Screening should help clinicians begin an open discussion about substance use with the client and explore ways to provide support. A range of validated tools exist to screen for risky alcohol use and possible alcohol use disorders. One brief (three-question) tool is the Audit-C, which is considered a reliable way to identify patients who are hazardous drinkers or have active alcohol use disorders.[7,8] Scores of 4 or more in men, and 3 or more in women, is considered a positive screen which should trigger a review of recent alcohol use patterns to see if brief advice is appropriate (i.e in the case of lower levels of alcohol use that might be associated with longer-term health harms) or if more severe dependence is likely, in which case treatment would be warranted. If a patient reports drinking at risky levels, a conversation to understand the patient's reasons for drinking and any concerns they have about their alcohol use may assist in identifying what would motivate them to reduce their drinking. Where patients drink regularly at higher levels, a more detailed assessment of alcohol use patterns will help to decide if withdrawal management might be required as an inpatient. Hospital drug and alcohol services can often be involved to assist in this area, as well as during any follow up referrals to support the patient in achieving goals around reducing alcohol use following discharge. Motivational interviewing is an ideal skill to support patients in identifying their own reasons for reducing alcohol use, and developing a plan to achieve their goals – an excellent example of how motivational interviewing is available here: www.youtube.com/watch?v=bTRRNWrwRCo.

Conclusion

We hope that this article identifies a range of ways in which hospital pharmacists can improve patient safety and health by talking about alcohol. With increasing awareness and emphasis of the health impacts of alcohol use, discussing alcohol use as a relevant and important part of healthcare is becoming normalised, and hospital pharmacists are ideally placed to be part of the discussion. ●

Case Example

Janice is admitted with a badly fractured ankle after falling off a stool at home. She lets you know that she had had a glass or two of wine and lost her balance when trying to reach something in the kitchen. She thinks that she may not have fallen, if not for the wine, but describes herself as 'a bit clumsy'.

You ask her about her recent drinking, and she lets you know she has been drinking one or two glasses of wine most nights, though occasionally that might be 3–4. She has been stressed at work, and says that on reflection, she thinks she has probably been drinking more often than usual, and more often than she would like. You ask her if she would like to change anything about drinking and she says it would be good to drink less as she often feels guilty about drinking too much, especially with the news in the media about alcohol and cancer. You provide her advice that if she could lower her alcohol consumption, she could reduce her risk of alcohol-related harm. You ask her if she has any ideas about how she might start reducing her alcohol use and, after a few moments thinking, she remembers that she used to enjoy a herbal tea in the evenings when she felt stressed. You ask her a bit more about her plans and she says she will buy herself some herbal teas, so when she gets home from a stressful day, she can make a habit of having a tea and sitting down to relax rather than opening a bottle of wine.

FURTHER READING

Motivational interviewing: www.racgp.org.au/afp/2012/september/motivational-interviewing-techniques

Brief interventions for alcohol and other drug use: www.nps.org.au/australian-prescriber/articles/brief-interventions-for-alcohol-and-other-drug-use

REFERENCES

1. Australian Institute of Health and Welfare. National Drugs Strategy Household Survey 2016: detailed findings. Drug Statistics series no. 31. Cat. no. PHE 214. Canberra: AIHW; 2017.
2. Engler PA, Ramsey SE, Smith RJ. Alcohol use of diabetes patients: the need for assessment and intervention. Acta Diabetol 2013; 50: 93-99.
3. Mostofsky E, Chahal HS, Mukamal KJ, Rimm EB, Mittleman MA. Alcohol and Immediate Risk of Cardiovascular Events: A Systematic Review and Dose-Response Meta-Analysis. Circulation 2016; 133: 979-987.
4. Winstanley MH, Pratt IS, Chapman K, et al. Alcohol and cancer: a position statement from Cancer Council Australia. Med J Aust 2011; 194: 479-482.
5. A cross-national trial of brief interventions with heavy drinkers. WHO Brief Intervention Study Group. American Journal of Public Health 1996; 86: 948-955.
6. Kaner EFS, Beyer FR, Muirhead C, et al. Effectiveness of brief alcohol interventions in primary care populations. Cochrane Database of Systematic Reviews. 2018.
7. Bradley KA, DeBenedetti AF, Volk RJ, Williams EC, Frank D, Kivlahan DR. AUDIT-C as a Brief Screen for Alcohol Misuse in Primary Care. Alcoholism: Clinical and Experimental Research 2007; 31: 1208-1217.
8. Dawson DA, Grant BF, Stinson FS, Zhou Y. Effectiveness of the Derived Alcohol Use Disorders Identification Test (AUDIT-C) in Screening for Alcohol Use Disorders and Risk Drinking in the US General Population. Alcoholism: Clinical and Experimental Research 2005; 29: 844-854.

We understand, and we're as close as your phone

25 years of the Pharmacists' Support Service

KAY DUNKLEY

Executive Officer,
Pharmacists' Support Service

Stress. Chronic stress. Burnout. And worse. Less visible suffering can gather in both patients and healthcare professionals alike – pharmacists carry out high pressure work under huge responsibility, and the profession is not immune to workplace problems such as bullying and sexual harassment. But the pharmacy profession can also be proud of the Pharmacists' Support Service – now 25 years old, and, for pharmacists, technicians and students, an excellent first step towards resolving matters with which you're struggling. Here, the PSS's Kay Dunkley provides some insights into the history and daily workings of the service, as well as some advice for all of us in the industry to help us better look after ourselves and each other.

Help from within:

the origins of a service by pharmacy professionals, for pharmacy professionals

In 1995, several pharmacists 'in difficulty' called what was then known as the Doctors' Health Advisory Service in Victoria (now the Victorian Doctors' Health Program). Recognising that a service dedicated to the pharmacy profession was required, the Doctors' service reached out to the Victorian Branch of the Pharmaceutical Society of Australia (PSA), suggesting they establish a service to support to pharmacists experiencing health issues, including those related to mental health and substance misuse. Valerie Constable – then a PSA Councillor (Victoria) – subsequently established the Pharmacists' Support Service (PSS), with the assistance of a support group of pharmacists volunteering their time out of concern for their fellow pharmacists. Indeed, PSS works on the principle of pharmacists supporting pharmacists, and would not exist without the significant generosity of its team of volunteers who have continued to provide support to their peers every day, of every year, since 1995.

Over the last 25 years, the PSS has grown to be a national service for all pharmacists, pharmacy interns and students, including international graduates seeking registration in Australia. PSS now has an Executive Officer with an EFT of 0.5, but the volunteers are the ones taking all the calls.

The Pharmacists' Support Service is supported financially and with in-kind support by the major pharmacy organisations, including the SHPA, the PSA, the Pharmacy Guild of Australia (PGA), Pharmaceutical Defence Limited (PDL), Professional Pharmacists Australia (PPA), Australian Friendly Societies Pharmacy Association (AFSPA) and the National Australian Pharmacy Students' Association (NAPSA). PSS is a charity and has been granted deductible gift recipient status (DGR) and taxation concessions by the ATO. We welcome donations from the broader pharmacy profession.

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The gritty details of operating the service

In the 2018–19 Financial Year, PSS received 371 calls for assistance. The calls come to a phone held by the volunteer on duty at any time during the hours of operation, which are 8.00am to 11.00pm AEDST. At present, PSS has volunteers based in the Eastern States of Australia; Queensland, New South Wales, Australian Capital Territory, Victoria and Tasmania. Volunteers from any State or Territory are welcome but time zone differences can be a challenge. All volunteers undertake two full days of training (16 hours) with a psychologist before participating in the roster. Most of the rosters are one week in length, and during that time the volunteers go about their normal routine but carry a mobile phone linked to the 1300 244 910 telephone number. The timing of calls is unpredictable, with 69% occurring between 9.00am and 6.00pm (in the 2019–20 year so far), and 48% of calls lasting between 10 minutes and 30 minutes, but 27% lasting longer than 30 minutes.

When a pharmacist or intern or student calls the PSS, the call is answered by the PSS volunteer on duty. If they are not available, the caller can leave a message to indicate their preferred call back time and phone number. All callers can remain anonymous, and all calls are confidential unless there is an immediate risk of harm to the caller or someone else. Callers are welcome to ring back whenever they need to, and, if a matter is ongoing, the need for follow-up support will be discussed.

The aim of PSS is to provide each caller with a listening ear and the opportunity to discuss their situation with an independent person who understands pharmacy. The PSS volunteers also aim to empower the caller by talking through the options available to resolve a situation and weighing up the pros and cons. PSS volunteers avoid giving direct advice and support each caller to make their own decisions. PSS does not provide clinical information or legal advice but may assist callers by signposting them to where they can get further assistance – for example, identifying which pharmacy organisation, or what other service, can help them further. The significant benefit to those calling PSS is that they are speaking with a pharmacist colleague who understands the unique aspects of pharmacy practice and can relate to the scenario described by a caller. In addition, PSS volunteers are aware of the pharmacy organisations and what they offer and the legal and ethical aspects of pharmacy practice which must be addressed.

What comes down the line

A common feature of calls to PSS is that the caller is experiencing stress – this can relate to workload issues, legal and ethical dilemmas, workplace relationships and bullying, clinical and dispensing errors, mental health and wellbeing, and industrial relations matters – or a range of other issues including exposure to trauma, being a victim of a crime, personal affairs and career direction. In addition, PSS gets a few calls each year which relate to substance misuse and also callers who are having thoughts of suicide. Most calls include more than one issue. A high proportion of callers are in their early career years and there are more female callers than male, which reflects the gender ratio in the pharmacy profession. Callers are primarily from hospital and community pharmacy practice.

Research has shown that Australian pharmacists experience greater levels of stress than do the general public, and many do not have appropriate coping mechanisms to manage stress.[1] There are a number of notable stressors in a pharmacists' work environment: the need for accuracy, the potential consequences of error, dealing with people who can be demanding and aggressive, the responsibility for medicine security, and the risk of hold-ups and violence. For some pharmacists, stress also arises from a sustained workload that does not allow time for quality work, rest or reflection. On occasion, dealing with very ill or dying patients, the work environment, the workload and responsibilities, work-based relationships, or factors external to their work, lead some pharmacists to experience such an overwhelming level of stress that it may impair their actions and affect public safety.

Burnout can result from being exposed to stress over the long term. In health care, burnout commonly results from experiencing a workload which exceeds our capacity over a long time, and which is outside our control to address. It follows that, healthcare professionals are particularly at risk of burnout if they are not well-supported in the workplace. While we may all have days when we feel exhausted, the symptoms of burnout include irritability, dreading going to work, feeling frustrated (and expressing our frustrations), loss of compassion for our patients and being cynical. In a workplace with high levels of burnout among staff, there will be high rates of absenteeism as well as presenteeism and the standard of

care provided will be reduced, more errors will occur, and medication safety issues will increase. When callers who are experiencing burnout contact PSS, our main role is to acknowledge their distress and validate their experience. We always talk about the next steps to be taken, which usually include seeking treatment through consultation with the person's GP and developing a recovery plan. It is usually necessary to take time out from the workplace. These steps need to be commenced before making decisions about addressing the situation in the workplace or seeking a new role.

Bullying and harassment in Australian pharmacy – help is available

The pharmacy profession and the healthcare environment are not immune to bullying and harassment, including sexual harassment. Bullying is defined as repeated unreasonable behaviour directed towards an employee or group of employees, which creates a risk to health, both mental and physical, and safety. Psychological and social bullying are more common than physical bullying in a professional workplace such as a pharmacy or healthcare organisation. Bullying today can involve technology, such as text messages, emails or social networking websites. Examples of psychological and social bullying are given in Box 1.

When the recipients of bullying or sexual harassment contact PSS, it may be the first time they have spoken about what they are experiencing and it can be an emotional phone call.

Bullying can result in decreased self-confidence, a loss of self-worth, anxiety and depression. It can lead to serious mental health issues including suicide.

Sexual harassment is not just touching – it can also be spoken words, particularly comments about appearance or propositioning, leering, inappropriate jokes, posters in common areas which are of a sexual nature, computer images, unwanted text messages and use of social media. Those who are experiencing sexual harassment often feel ashamed and feel as if they are to blame, and also find it very hard to speak up.

When the recipients of bullying or sexual harassment contact PSS, it may be the first time they have spoken about what they are experiencing and it can be an emotional phone call. All workplaces must have clear policies about bullying and sexual harassment and also procedures to be followed to report the situation. Following through with a claim of bullying or sexual harassment can provide a degree of resolution and will protect others from the same experience. However, it can also take a toll on the person

WHAT CONSTITUTES PSYCHOLOGICAL AND SOCIAL BULLYING

- verbal abuse or making fun of your work or you (including your family, sex, sexuality, race or culture, education or economic background)
- yelling, screaming or offensive language
- excluding or isolating you from people or situations
- psychological harassment (playing mind games, ganging up on you)
- intimidation (making you feel less important)
- excessive supervision and/or criticism
- giving you pointless tasks that have nothing to do with your job
- giving you impossible jobs that can't be done in the given time or with the resources provided
- deliberately changing your work roster to make it difficult for you
- undermining work performance by deliberately holding back information you need for getting your work done properly
- interfering with your personal effects or work equipment.

lodging the complaint. Each individual needs to make their own decision and this is best done with the advice of a workplace relations advisor from your employee association or union.

Final words of advice for everyone in the profession

We hope that readers of this article never have these experiences, and we hope you never have to call PSS – but we are there if you need to talk.

As health professionals, it is important to take care of ourselves so that we can care for others. Self-care needs to be built into our routines and not just instituted when things are going wrong. Leading a healthy lifestyle with adequate sleep and rest and relaxation as well as eating nutritious food are essential. Avoid skipping meals, and do take breaks during the workday. It is also important to participate in interests outside of work and have hobbies which enable us to de-stress. Building up a support network of colleagues, friends and family is important. Have someone you can debrief with and talk about how you are feeling. This person needs to be a good listener who will focus on you rather than retelling their own experiences. Have regular medical check-ups with your GP. Don't be fearful of seeking expert help from a counsellor or a psychologist – take time to find someone you feel comfortable with. As high achievers, we can put ourselves under a lot of pressure and be very hard on ourselves, so it is important to acknowledge what you have done well each day. Self-reflection is very useful to enable growth and learning and rather than being self-critical, look for opportunities to improve.

Please pass the PSS phone number on to any colleague who is struggling. PSS is available every day of the year on **1300 244 910** between 8.00am and 11.00pm AEDT – we are as close as your phone.

More information about PSS can also be found on our website, **supportforpharmacists.org.au**.

REFERENCES

1. Colin Chapman, Sally Wilson, David Wilson & Kay Dunkley. 2017. National Stress and Wellbeing Survey of Pharmacists, Intern Pharmacists and Pharmacy Students (in press).

Take-home naloxone

A proactive response to the hidden harms of prescription opioids

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The past two decades have seen a dramatic increase in the prescribing of opioids,[1,2] in particular formulations of strong and long-acting opioids.[1] Coinciding with this, there has been increased opioid-related harms, including increased treatment seeking for prescription opioid dependence,[3] and increased mortality.[4] In Australia, opioid overdose fatalities almost doubled over a ten year period, from 3.8 per 100 000 people in 2007, to 6.6 per 100 000 people in 2016.[5] Most (59%) opioid-related deaths involve prescribed opioids, with smaller numbers involving heroin alone (34%) or recorded to involve an 'unclear' opioid (7%).[6] Given the dominance of prescribed opioids in these statistics, there is a clear need for pharmacists, who are involved in the supply of opioids, to take a key role in opioid overdose prevention, including the provision of take-home naloxone.

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Who is experiencing harms from prescription opioids?

A common assumption is that these deaths are occurring among people who inject drugs who are using diverted opioids, yet the data do not support this. Among these decedents, few (33%) have any history of injecting drug use documented, with mental health problems being more common in this group (48%).[6] Data from the Australian Bureau of Statistics show that most drug-related deaths are opioid-induced, involving middle-aged males using pharmaceutical opioids, often in the presence of other substances.7

Identifying people who may benefit from take-home naloxone

Hospital pharmacists can play a key role in identifying those who may benefit from naloxone training and take-home naloxone supply.[8] Any person at risk of experiencing or witnessing an opioid overdose is a candidate for take-home naloxone training, regardless of whether the opioid use is licit or illicit. In the hospital setting, this may include patients admitted due to, or with a history of opioid toxicity, as well as those prescribed high-dose opioid analgesia and those prescribed opioids where concurrent medications, alcohol use and/or comorbidities further increase risk (Box 1).

Box 1. Factors which may increase risk of opioid toxicity[9–11]

- Current or recent medical care for opioid toxicity
- Loss of opioid tolerance due to change in therapy, detoxification, rehabilitation or prison release
- Suspected or confirmed history of heroin or non-medical opioid use, particularly by injection
- Prescribed high doses of opioids (≥ 50 mg[9] – 100 mg[11] morphine equivalent per day) or long-acting opioids
- Need for opioid analgesia in an individual with a history of substance use disorder
- Opioids prescribed for patients with comorbid respiratory (e.g. COPD, sleep apnoea), renal, hepatic or mental health conditions
- Commencing (or re-commencing) opioid substitution therapy with methadone or buprenorphine
- Concurrent use of opioids with other central nervous system depressants, particularly benzodiazepines or alcohol

Recognising opioid toxicity

The symptoms of opioid toxicity are primarily related to central nervous system (CNS) depression. These include drowsiness and loss of consciousness, miosis and respiratory depression. Respiratory depression is the most significant symptom as it is associated with mortality related to opioid toxicity. Other symptoms of opioid toxicity include nausea and vomiting, ventricular arrhythmias, acute mental status changes, peripheral vasodilation leading to hypotension and seizures. However, these presenting symptoms are less easy to discern in an emergency situation.

Box 2. Signs to look out for in opioid toxicity

- Slowed breathing
- Bluish or grey tinge to the skin (in particular lips and fingertips)
- Floppy, limp body
- Snoring
- Gurgling/choking sound
- Can't rouse
- Pinpoint pupils
- Clammy skin
- Slow or no heartbeat

Counselling points

Don't be afraid to start the conversation about naloxone. Evidence has shown that people who use opioids for pain aren't offended, and in fact expect and/or appreciate pharmacists discussing take-home naloxone.[12] An example of how to broach the topic may be, "This is a new prescription for a pain medication called an opioid. We should talk about things that might go wrong. Have you heard of naloxone?"

Naloxone works to reverse respiratory depression caused by any opioid and has no abuse liability or potential for misuse. There are three formulations currently available in Australia on the PBS: nasal spray (Nyxoid®), pre-filled syringe (Prenoxad®) and ampoules. The nasal spray is probably the most acceptable and easiest to use formulation for the general opioid-using community, in particular in a stressful situation such as witnessing opioid toxicity in a loved one. In a comparative study looking at intramuscular and intranasal formulations, it was found that while onset of action of the intranasal formulation was slightly slower than intramuscular, concentrated 2 mg intranasal naloxone is well absorbed and

provides early exposure comparable to 0.4 mg intramuscular naloxone, following the 0.4 mg intramuscular curve closely in the first 10 minutes post-dosing and maintaining blood levels above twice the intramuscular reference for the next 2 hours.[13]

Naloxone is generally very well tolerated, and side effects are minimal. Opioid withdrawal is the most common side effect if the person is opioid dependent.

It is important to not just counsel the person taking opioids about naloxone, but to also counsel friends and family, as they are likely to be the ones responding to signs of opioid toxicity. The main points that should be covered include:

1. How naloxone works – competitive central nervous system opioid antagonist with a high affinity for mu-receptors. In patient terms, it knocks the opioids off the receptors so they can no longer exert their effects, allowing the person to breathe again.
2. How to recognise the signs of opioid toxicity.
3. To call triple zero (000) for an ambulance immediately.
4. How to administer the dose of naloxone using the chosen formulation.
5. How to put the person in the recovery position and the need to wait with the person and monitor until medical help arrives.
6. If necessary, and if the respondee feels comfortable in doing so, how to assist the person with rescue breathing.
7. That a second dose may need to be administered if the person is not conscious or breathing easily after 2–5 minutes.

It is advisable for the person with opioid toxicity to go to hospital or to seek medical advice – even if naloxone is administered with good effect – as there may be relapse, especially if long-acting opioids have been used as naloxone works for only about 30-90 minutes.

As this is a lot of information, be sure to provide written information too. Suggestions for language which can be used when discussing take-home naloxone are presented in Box 3.

Box 3. The importance of language

- Always remember to take the person's health literacy into account
- Avoid stigmatising and judgmental language like 'addict' and 'overdose'
- People associate the term 'overdose' with illicit drug use or doing the wrong thing; consider using 'opioid toxicity', 'opioid-reduced breathing' or 'opioid poisoning' instead
- It could be useful to explain as you would for an EpiPen® for allergies

Common misunderstandings about naloxone

Isn't teaching people how to use naloxone complicated and time-consuming? No. In fact, research has demonstrated that non-medically trained people (laypeople) can be effectively trained in as little as 5-10 minutes.[14]

If we provide people with naloxone, will they view it as a 'safety net' and take more opioids? Research shows that providing naloxone is not associated with greater risk-taking by patients or any increase in drug use – in fact, two studies which examined opioid use following training with naloxone found a reduction in risky behaviours.[15]

Will naloxone work with fentanyl and other high-potency opioids? Yes. Naloxone will work with more potent opioids like fentanyl. Research shows that higher doses are not necessarily required, although standard doses of 800 mcg IM (two standard doses of 400 mcg naloxone) were the average dose needed.[16]

Won't people be aggressive after naloxone is administered? No. This is one of the biggest naloxone myths. Decades ago, when higher doses were administered as a standard dose (e.g. 2 mg IV), this did occur, but with the standard doses used today (400-800 mcg IM) this is rare.[17]

Research shows that providing naloxone is not associated with greater risk-taking by patients or any increase in drug use – in fact, two studies which examined opioid use following training with naloxone found a reduction in risky behaviours.

CASE STUDY

You are the pharmacist for the orthopaedic team. This morning you are reviewing Mr Phillip, a 76-year-old male, who will soon be discharged following recent hip replacement surgery. On discharge Mr Phillip will be continuing his regular medications, including pregabalin for sciatica, vilanterol and umeclidinium for COPD, and mirtazapine for depression. Mr Phillip also has a history of sleep apnoea and moderate alcohol consumption. During the past 24 hours he has required 40 mg of oxycodone to manage his hip pain, and will be discharged with a supply of oxycodone for 'as required' use.

You speak with Mr Phillip and his partner about the use of oxycodone, including the signs of opioid toxicity. You provide a pain management plan and discuss non-pharmacological and non-opioid strategies to minimise his need for oxycodone. You outline the potential additive effects of alcohol consumption while taking oxycodone and encourage Mr Phillip to limit his drinking, particularly during his recovery.

Given Mr Phillip has a number of risk factors for opioid-induced respiratory depression, you discuss the possibility of supplying take-home naloxone nasal spray to have on hand in case any serious side effects occur. Mr Phillip feels it would be a good idea to keep some naloxone nasal spray at home while he is taking the oxycodone. You talk through opioid toxicity first aid (calling an ambulance and rescue breathing) and how to administer naloxone nasal spray with Mr and Mrs Phillip. You provide them with a written opioid overdose action plan, which recaps your discussion, to keep with the naloxone.

Time to take action!

Pharmacists across all settings have an ethical obligation to facilitate access to take-home naloxone for patients at risk of opioid toxicity. Increased provision of take-home naloxone could be a game-changer in reducing opioid-related harm across Australia, and hospital pharmacists are ideally positioned to implement this key harm minimisation strategy.

REFERENCES

1. Blanch B, Pearson SA, Haber PS. An overview of the patterns of prescription opioid use, costs and related harms in Australia. Br J Clin Pharmacol 2014; 78(5): 1159-66.
2. Karanges EA, Blanch B, Buckley NA, Pearson SA. Twenty-five years of prescription opioid use in Australia: a whole-of-population analysis using pharmaceutical claims. British Journal of Clinical Pharmacology 2016; 82(1): 255-67.
3. Nielsen S, Roxburgh A, Bruno R, Lintzeris N, Jefferson A, Degenhardt L. Changes in non-opioid substitution treatment episodes for pharmaceutical opioids and heroin from 2002 to 2011. Drug and Alcohol Dependence 2015; 149: 212-9.
4. Australian Institute of Health and Welfare (AIHW). Opioid harm in Australia and comparisons between Australia and Canada. Cat. no. HSE 210. Canberra: AIHW. 2018.
5. Amanda Roxburgh, Timothy Dobbins, Louisa Degenhardt, Peacock A. Opioid-, amphetamine-, and cocaine-induced deaths in Australia: August 2018. National Drug and Alcohol Research Centre National Drug and Alcohol Research Centre 2018.
6. Roxburgh A, Hall WD, Gisev N, Degenhardt L. Characteristics and circumstances of heroin and pharmaceutical opioid overdose deaths: Comparison across opioids. Drug and Alcohol Dependence. 2019; 205: 107533.
7. Australian Bureau of Statistics. 3303.0 - Causes of Death, Australia, 2018 2019 [Dec 09, 2019]. Available from <https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/3303.0~2018~Main%20Features~Opioid-induced%20deaths%20in%20Australia~10000>.
8. Johnson J. Recognising and managing opioid overdose in the community: A key role for pharmacists. Australian Journal of Pharmacy 2019; 100(1185): 62-6.
9. Centers for Disease Control and Prevention. Opioid overdose prevention programs providing naloxone to laypersons – United States, 2014. Morb Mortal Wkly Rep 2015; 64(631-635).
10. Jauncey M, Nielsen S. Community use of naloxone for opioid overdose. Australian Prescriber 2017; 40(4): 137-40.
11. World Health Organization. Information sheet on opioid overdose: World Health Organization; 2018 [Available from: https://www.who.int/substance_abuse/information-sheet/en/.
12. Nielsen S, Peacock A, Lintzeris N, Bruno R, Larance B, Degenhardt L. Knowledge of Opioid Overdose and Attitudes to Supply of Take-Home Naloxone Among People with Chronic Noncancer Pain Prescribed Opioids. Pain Med 2018; 19(3): 533-40.
13. McDonald R, Danielsson Glende O, Dale O, Strang J. International patent applications for non-injectable naloxone for opioid overdose reversal: Exploratory search and retrieve analysis of the PatentScope database. Drug Alcohol Rev 2018; 37(2): 205-15.
14. Behar E, Santos G-M, Wheeler E, Rowe C, Coffin PO. Brief overdose education is sufficient for naloxone distribution to opioid users. Drug and Alcohol Dependence 2015; 148: 209-12.
15. Bazazi AR, Zaller ND, Fu JJ, Rich JD. Preventing opiate overdose deaths: examining objections to take-home naloxone. Journal of health care for the poor and underserved 2010; 21(4): 1108-13.
16. Carpenter J, Murray BP, Atti S, Moran TP, Yancey A, Morgan B. Naloxone Dosing After Opioid Overdose in the Era of Illicitly Manufactured Fentanyl. J Med Toxicol 2020; 16(1): 41-48.
17. Chronister KJ, Lintzeris N, Jackson A, Ivan M, Dietze P, Lenton S, et al. Findings and lessons learnt from implementing Australia's first health service based take-home naloxone program. Drug and Alcohol Review 2018; 37(4): 464-471.

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OPINION

Psychotropic drug use in aged care, and the potential for unintended consequences of change

DR CHRIS ALDERMAN

BPharm, PhD, FHSP, FASCP, BCPP, BPCG, DipProjMan. Director, Australian Medication Safety Services. Former Editor-in-Chief, *Journal of Pharmacy Practice and Research*

This article was first published at medsafetyaustralia.com.au in November 2019 and is reproduced here with permission.

As this issue of *Pharmacy GRIT* has explored invisible illnesses, we've found that 'invisibility' often means a lack of human connection or communication – and especially a lack of capacity within the current medical system to 'see' beyond immediate and clearly evident problems. In the case of the overuse of psychotropic drugs in aged care, the combined effects of these shortcomings can be devastating.

Recognising this, here, Dr Chris Alderman makes the case for careful, systematic forethought before implementing the required changes, in an attempt to make visible any unintended consequences that could otherwise harm the very people at risk of unjustified chemical restraint.

The findings expressed in the interim report of the Australian Royal Commission into Aged Care Quality and Safety have challenged practices that are widespread in the aged care setting. In particular, there has been a great deal of attention in relation to the use of chemical restraint in aged care. The findings have included assertions of widespread overuse of psychotropic drugs in nursing homes and related settings. Let it be absolutely clear: there can be no doubt that the indiscriminate use of psychotropic drugs (or indeed any medications) in aged care is not consistent with best practice and must be challenged.

Influential individuals have testified to the Royal Commission, expressing their opinions that it is their belief that psychotropic drugs are vastly overused for older people in residential care. Notwithstanding this, not everything that has been asserted in the Royal Commission hearings is indisputable.

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Where systems reforms are necessary, systematic thought is necessary

It is worth pointing out that there are situations in which the use of medications may be required to protect a specific resident from physical harm and psychological distress, and moreover there are instances whereby this is necessary, not only in the interests of an individual, but in the interest of other residents who may be affected by the actions of a person whose behaviour creates potential danger for others. It is also the case that behavioural and psychological symptoms associated with disorders affecting cognition (including primary psychiatric illnesses) can create danger for the staff involved in caring for these people. In essence, at times it is absolutely appropriate to prescribe and administer psychotropic drugs for people who live in aged care facilities.

In response to the findings of the Royal Commission, it is laudable that Australia's Federal Government has announced intentions to implement significant systems reforms; nested within these reforms are measures proposed as a mechanism to address over-use of chemical restraint in the aged care system. The advantages of this approach are self-evident, and no one would argue that efforts to improve the quality of psychotropic drug use in Australia's aged care facilities would not be welcome. Even so, to implement sweeping changes without careful consideration of the potential downstream consequences of these actions is unwise.

Before seeking to effect very significant modifications to the way in which psychotropic drugs are prescribed and administered in aged care, the range of potential downstream consequences must be carefully considered. Some of these are summarised below.

What shouldn't be forgotten

As is the case for all Australians, there are many people living with significant mental illness amongst the residents of aged care facilities. Firstly, then, it is critically important that the treatment provided for these people should not be altered or withdrawn without appropriate input from qualified mental health specialists involved in their care. To indiscriminately withdraw psychotropic drugs used in the treatment of serious psychiatric conditions will result in significant morbidity and also potentially loss of life, in addition to exerting significant duress upon public health systems and incurring a large associated cost.

The use of non-drug interventions should really be regarded as the first line approach for the management of behavioural and psychological symptoms secondary to the effects of cognitive disorders. However, the configuration of the current aged care system in Australia is not currently compatible with ready access to staff that would need to be available to deliver these interventions. To circumvent access to pharmacological measures (particularly those that would be used in cases where behavioural and psychological disturbance is most severe) before facilitating staffing structures that would underpin the use of non-pharmacological strategies – which would entail comprehensively overhauling the fundamental structures for the staffing of aged care in Australia – would be potentially damaging.

An indiscriminately applied strategy that seeks to curtail the use of specific psychotropic drugs in aged care may simply have the effect of channelling treatment toward the use of alternative medications that have other serious adverse effects, and which may be less effective than the pharmacological strategies that are currently used. There is evidence to suggest this kind of phenomenon has already occurred in other areas – for example, the steep rise in prescribing of gabapentinoids that has occurred in the context of the opioid crisis.

An investment in the deployment of staff to support high-quality prescribing in the aged care sector is welcome, but it is not the case that the workforce required to provide specialist oversight of psychotropic drug prescribing in this setting is necessarily available to immediately deploy. This being the case, it is potentially unhelpful to suggest that this specialised oversight can be provided by people without extensive training and experience – and when it is to be provided in a highly specialised area of medication use from generalist practitioners (pharmacists, doctors and nurses), it may prove to be contrary to the best interests of the elderly people who stand to be affected.

There also needs to be some consideration of the effects of interventions upon the human resource dynamics of servicing the needs of elderly people living in aged care settings. If the changes that are mooted create downstream effects that discourage general practitioners from choosing to provide services in nursing homes, the effects will quickly be manifested in a generalised crisis of medical care. Likewise, if proposed changes to workplace practices present difficulties in attracting and retaining experienced nursing staff to the aged care sector, the effects of this would be potentially catastrophic.

A systems problem inside a social problem

Much of this discussion cuts to the very heart of the nature of aged care services in Australia and around the world. As the population ages and the proportion of people requiring care in residential settings increases, the issues will rapidly magnify. The average age of residents living in aged care facilities has increased dramatically during the past 25 years and this is a trend that can be expected to continue. There needs to be consideration of some broader philosophical questions relating to the extent of public sector involvement in the management of aged care, the effective governance and oversight the aged care sector, and the extent to which Australians are comfortable with a model of practice that involves care for profit. If the care of the elderly in aged care facilities is to become largely or exclusively managed in the public sector, it will be necessary to fund this through taxation or levies. If the current model, which includes privately run facilities that operate for profit, is envisaged to continue as a future option, there needs to be one of two outcomes: either there will need to be greater regulation (impacting upon the principles of private trade and profitability), or the costs of providing care for the people living in these settings will need to be properly reflected in the charges that are levied. It would appear that each of these options alluded here are relatively unpalatable to at least some of the Australian public, but nevertheless it is clear that the status quo cannot continue.

Change to the way in which psychotropic medications are used in the aged care sector is inevitable and is welcome: it would be best if this change is carefully considered, implemented and monitored for impact. ●

Oration

SHPA Australian Clinical Pharmacy Award 2019: Matthew Rawlins

Matthew Rawlins delivers his oration at *Medicines Management 2019*, the 45th SHPA National Conference.

The Australian Clinical Pharmacy Award recognises the outstanding contribution of a member at the forefront of clinical pharmacy practice, strengthening the crucial role clinical pharmacy plays in the patient journey. It is a highly-esteemed honour that may be bestowed annually by the SHPA Board of Directors upon a member, considering their contributions to knowledge relating to clinical pharmacy practice or knowledge of therapeutics, through research, clinical teaching, service on expert panels/committees, or publications in peer-reviewed pharmacy/medical/scientific journals.

The recipient for 2019, Matthew Rawlins, is being honoured for his contribution to leadership in the crucial field of infectious diseases (ID) and hospital antimicrobial stewardship (AMS). He brings great enthusiasm to both data-driven practice as well as the education and training of early career pharmacists and technicians.

Matthew is Infectious Diseases Pharmacist at Perth's Fiona Stanley Hospital, and Sessional Lecturer at Monash University's School of Pharmacy in Melbourne. Dr John Dyer, the Head of the Infectious Disease Service at Fiona Stanley Hospital, says of Matthew, 'I believe his outstanding professional leadership in the field of infectious disease pharmacy and antimicrobial stewardship – as illustrated by his broad participation on numerous expert panels and initiatives concerning the best antimicrobial prescribing – to be unparalleled in Australia.' And in presenting the award to Matthew at Medicines Management 2019, SHPA President Peter Fowler noted, 'With 30 years' experience in pharmacy practice, Matthew is at the forefront of clinical pharmacy practice in his field and has made an outstanding contribution to improving antibiotic prescribing and reducing the risk of the emergence of antimicrobial resistance.'

Congratulations to the recipient of the 2019 Australian Clinical Pharmacy Award, Matthew Rawlins.

> "I believe his outstanding professional leadership in the field of infectious disease pharmacy and antimicrobial stewardship – as illustrated by his broad participation on numerous expert panels and initiatives concerning the best antimicrobial prescribing – to be unparalleled in Australia.
>
> Dr John Dyer, the Head of the Infectious Disease Service at Fiona Stanley Hospital

It will soon be time again to recognise excellence and reward dedication and innovation in Australian hospital pharmacy with our annual SHPA honours, including the 2020 SHPA Australian Clinical Pharmacy Award. Visit www.shpa.org.au/awards to see all the 2019 winners, and to stay abreast of selection criteria and nomination periods for this year's awards.

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The 2019 Australian Clinical Pharmacy Award Oration

Matthew Rawlins

Thank you very much Peter, and thank you to the Board of Directors for their deliberations for this prestigious award – I feel extremely honoured to have been recognised in this way. I wish to thank a number of people on both a professional and personal level, without the support of whom I would not be standing here today. Firstly, my nominators from the Infectious Diseases Leadership Committee – Kelly, Jason, Yvette, Sean, David, Minyon and Vaughan, as well as, in the past, Duncan and Sharmila – who have been a fantastic and motivated group of pharmacists to work with. It was with great pride that I accepted their nomination for this award. I'd also like to thank my referees, John Dyer from Infectious Diseases, and Rachel Thorson from Pharmacy at Fiona Stanley for their kind and strong support.

Janice Main and Steve Barrett from Infectious Diseases and Microbiology as well as the Pharmacy Department at St Mary's Hospital in Paddington, London, provided me with the initial opportunity and support to start my own journey in ID pharmacy back in 1999. I have John Pearman, former Head of Clinical Microbiology and ID and Andrew James, former Chief Pharmacist at Royal Perth Hospital to thank for starting the ball rolling in Western Australia.

I'm also indebted to the various Heads of AMS from Royal Perth, Helen van Gessel, Ronan Murray and Owen Robinson who have all provided me with inspiration and direction. I also acknowledge the Royal Perth Hospital Departments of Pharmacy and Clinical Microbiology and ID, for their backing in establishing the specialist pharmacy role and the stewardship service at Royal Perth.

It is a pleasure to work in AMS at my current hospital. Barry Jenkins and John Dyer and the pharmacy and ID teams encouraged me to start the service with a blank canvas.

On a personal level, I thank my family: my mother, father and sisters, my partner Suzanne, and my daughters Georgia, Scarlett and Poppy for being engaged and supportive of my efforts. One of my overriding aims is to make you guys proud.

To my knowledge, I am only the second Western Australian recipient of this award and would acknowledge our strong clinical pharmacy heritage in that state and the solid foundation I received in this area.

I'd like to make some observations and acknowledge the good fortune I've benefitted from in my journey to date in ID and AMS pharmacy. Number one: being in the right place at the right time. While doing a fixed eight-month contract at the Western Eye Hospital in London – which is affiliated with St Mary's, pharmacy and ID – unbeknownst to me, the hospital had been working on an Antibiotic Pharmacist position for some years at the main campus. Luckily it happened to be approved during this eight-month period, and I was encouraged to apply.

Number two: take your opportunity. After returning to Australia, John Pearman, Head of Clinical Microbiology and ID, came back from the North American conference, ICAAC in 2002, reporting on the evolving discipline of antimicrobial stewardship, and this was the genesis of our program at Royal Perth. After a further couple of years of political negotiation with the executive, and also, fortuitously – aided by the fallout from Australia's biggest vancomycin resistant enterococcus (VRE) outbreak at the time, in Perth 2001 – our AMS program was established during 2003, and the ID Pharmacist post came to fruition in 2004.

To my knowledge, I am only the second Western Australian recipient of this award and would acknowledge our strong clinical pharmacy heritage in that state and the solid foundation I received in this area.

I've been gratified to see, in recent years, more pharmacists becoming aware, interested and engaged in our key role as pharmacists in promoting appropriate antimicrobial use and protecting our dwindling armamentarium.

Number three: find your niche. This advice was provided to me by an industry representative at the 'Antimicrobials Scientific Meeting' in 2001. We presented our initial AMS program results at the 2005 meeting. I thought everyone else was already doing AMS, but there was incredible interest in our program, especially in the idea of combining the need for up-front approval for restricted antimicrobials with post-prescription ward rounds where a pharmacist and ID physician reviewed the ongoing appropriateness of these prescriptions once further microbiology and diagnostic testing results were available.

Earning your stripes is number four. It doesn't have to be anything major. I joined the respiratory team's post-take medical ward round at St Mary's in Paddington in 1999 as the newly appointed Antibiotic Pharmacist. We encountered an overweight young woman with a lower-leg cellulitis and a significant penicillin allergy. They commenced clarithromycin, the only non-beta-lactam they were familiar with. I suggested changing to clindamycin – she got better, and I became embedded on ward rounds and on the medical intern education program.

Number five: get out and tell your story. Be honest, say what worked, and just as importantly, what didn't. Don't omit the negatives; humility is appreciated. Being an early AMS program, we encountered our share of opposition from some consultants, as well as even difficulty in securing engagement from some ID staff, along with our success stories in reducing broad spectrum antimicrobial use. It's actually a fault in our publishing system that our successes are sought more than what didn't succeed.

Finally, I would like to finish with a few thoughts on antimicrobial stewardship. It is an umbrella term which applies to all areas of pharmacy practice, and as such applies to every pharmacist. I've been gratified to see, in recent years, more pharmacists becoming aware, interested and engaged in our key role as pharmacists in promoting appropriate antimicrobial use and protecting our dwindling armamentarium. This has been evidenced by sell-out, nation-wide Introductory Seminars in Infectious Diseases, organised by AMS and ID pharmacist colleagues, under the auspices of SHPA, as well as plenty of contributed stewardship content at this meeting.

Antimicrobial stewardship, like most disciplines of medicine, requires time to be performed effectively. In my view, the time-saving efficiencies made using electronic platforms such as Decision Support, ePrescribing and Medical Records, should be used to increase face-to-face engagement with prescribers at the front line in order to optimise antimicrobial prescribing.

The Australian Commission for Safety and Quality in Healthcare published a 289-page document on antimicrobial stewardship last year. This, and the AURA program – which documents antimicrobial use and resistance across the hospital and community sector nation-wide – are evidence that a systematic, national approach to combat antimicrobial resistance is underway under the One Health banner. This also includes monitoring antimicrobial use in the important veterinary and agricultural sectors.

Other influential organisations, such as the Queensland Statewide Antimicrobial Stewardship Program, the National Centre for Antimicrobial Stewardship, and the University of Queensland's Centre of Research Excellence in Redefining Antimicrobial Use to Reduce Resistance, also contribute strongly to this domain. The Australian Society for Antimicrobials – a multidisciplinary society of ID physicians, clinical microbiologists, pharmacists and scientists – through its annual scientific meeting, 'Antimicrobials', has become a principal player in spreading the AMS agenda in Australia and has been a strong advocate for pharmacist involvement.

This infrastructure, combined with a strong and engaged pharmacy profession will help us combat the increasing threat of antimicrobial resistance and I urge you all to continue your efforts in the antimicrobial stewardship sphere.

Thank you all once again.

Oration

SHPA Medal of Merit 2019: Tom Simpson

Tom Simpson delivers his oration at *Medicines Management 2019*, the 45th SHPA National Conference.

The SHPA Medal of Merit may be awarded by the SHPA Board of Directors annually, to a member of SHPA, in recognition of an outstanding recent contribution and exemplary effort involving a particular activity or activities relating to hospital pharmacy practice. Many outstanding pharmacists have been presented with the medal at key points in their careers, and in 2019, Tom Simpson was recognised as a worthy recipient of this respected award, for his pursuit of the advancement of hospital pharmacy and healthcare informatics.

In an entertaining reference for the nomination, Tasmania's Department of Communities Secretary Michael Pervan notes '[Tom's] boundless energy, eclectic mind, robust intellect and deep commitment to improving patient care.' Improving patient care in Tasmania is indeed Tom's passion, which has resulted in a legacy of greatly improved care and access to hospital pharmacy services.

Upon being presented the award by SHPA President, Peter Fowler, Tom noted his attendance at our National Conference 18 years prior. 'A key moment for me was at Medicines Management 2001,' he said, 'when I won the Best Paper Award. That's when it all came together and I realised I had a real passion for this profession.'

Congratulations to the recipient of the 2019 SHPA Medal of Merit, Tom Simpson.

> Tom Simpson has been recognised as a worthy recipient of this respected award, for his pursuit of the advancement of hospital pharmacy and healthcare informatics.

It will soon be time again to recognise excellence and reward dedication and innovation in Australian hospital pharmacy with our annual SHPA honours, including the 2020 SHPA Medal of Merit. Visit www.shpa.org.au/awards to see all the 2019 winners, and to stay abreast of selection criteria and nomination periods for this year's awards.

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Get involved and follow opportunity – The 2019 SHPA Medal of Merit Oration | Tom Simpson

Thank you Peter, and thank you to the Society for bestowing this great honour upon me.

And thank you all for being here today. I'd like to thank my family in the audience: my children Jack and Evelyn, two of the sparkiest sparks you'll ever meet, my sister Jess, my stepdad Pete, and my mum Cate. Because even when you're a 42-year old man, you still want to make your mum proud.

My team and I continually strive to provide Tasmanian hospital patients with the best pharmacy service and the highest level of medication safety they might find anywhere in the country. Over the past several years we've been rolling out the Tasmanian hospital pharmacy roadmap – a program of work that includes extending clinical services, SHPA ClinCAT state-wide, outpatient clinic roles, SHPA Residency, pharmacy educators, a multi-disciplinary safe medication practice unit, the expansion of tele-pharmacy services into our rural hospitals, partnered charting, smart-pumps, and ward technicians. It's been fun.

I've been so lucky to assemble a team of people around me who share that objective and share the drive to achieve it. I'd like to acknowledge a few who are here today: Camille Boland, whose contribution to clinical pharmacy in Tasmania, as well as nationally through the development of National Standards of Practice cannot be under-estimated; Duncan McKenzie, our Deputy Conference Convenor, one of the most naturally gifted leaders and clinicians you can imagine, and who's been integral to everything we've achieved; Liza D'ettorre, our Pharmacy Operations Manager, who just gets shit done; Kelly Beswick, whose natural gift for managing people I'm in awe of; and Amber Roberts, who I've worked with in partnership for most of the past decade.

What I hope I share with previous recipients of this award, is the inability to accept the status quo as being good enough. We have a passion for improvement, and a conviction that medication safety and pharmacy practice are important and worthy of dedicating a career to.

For me it wasn't always this way. When I graduated from uni, I wondered what on earth I'd done. I had no interest in being a pharmacist, let alone any passion or conviction for the profession, or anything much at all really. The idea back then that I would find myself as someone who had contributed to pharmacy practice, let alone receive the Medal of Merit, was unthinkable. Clearly between then and now something changed.

What I would like to share today is are the five lessons I would give myself back then in 2001, that I wish I could've learned more quickly and less painfully. After all, it's probable that the 2036 recipient of the Medal is in the audience today, and dammit, I'm going to be the one who inspires them.

Lesson one: get involved. The single most transformative lesson that I've learned is getting involved in something that's bigger than your individual practice. Getting involved in SHPA sweeps you along in this current of passion and innovation from across the country. And this was particularly spurred at that 2001 National Conference which Peter convened, and which I attended as an intern. I got to meet amazing people

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from across the country who would otherwise just be author names in the JPPR. I won a Best Presented Paper prize that year and for the first time in my pharmacy career I had something I could be really proud of – and I also felt part of a wider community.

After that conference I really threw myself into not just my work, but into SHPA, joining the Tasmanian Branch Committee, convening numerous state branch symposia, as well as Medicines Management 2011 along with Amber Roberts. This involvement has given me a network of friends and colleagues, regular exposure to new ideas, and the inspiration I've needed to continue advancing pharmacy in Tasmania.

My second lesson to my younger self is to follow opportunity, even if it takes you outside your comfort zone. Since I registered as a pharmacist, I've spent two-thirds of my career in pharmacy, but I've also weaved in and out. And it's the development opportunities in the other third that have kind of made my pharmacy career possible.

I worked as an eHealth pharmacist at the RHH for a couple of years, and I was approached then by the hospital's Deputy CEO to take over as eHealth Director for the hospital.

When you're tapped on the shoulder to do something bigger and better, you're meant to say yes, but I hadn't learnt that lesson yet. The Deputy CEO, Andrew George-Gamlyn, was a man with a fierce reputation. He was feared, he was literally referred to as the Toe Cutter, and he was spoken of in these hushed tones as someone who could end your career. Even the doctors were afraid of him. So whilst it sounded like a great opportunity, it also sounded scary. I didn't think I could work with someone like that, so I made an appointment with him to tell him my answer and I nerved myself up to tell him. He said, 'So, are you going to do it?' and I said, 'Sorry, but the answer's no'. He fixed me with a hard stare and said, 'Why don't you think about that until you've made the right decision?'

And he was right – it turned out to be a great opportunity. I took the role on, I got experiences I could have never otherwise had, and Andrew turned out to be a kind manager, and a generous mentor. I got to see all the moving parts of the hospital, from the kitchen through to the cath lab. I got to see pharmacy as an outsider, just like our colleagues and our executives see us. Later on in my career, I got the chance to work on the hospital executive in a strategic planning role, getting involved in things like negotiations around ABF funding and planning for new facilities. One of the fun ones was the business case for Tasmania to have a PET scanner. The CEO just came to me one day and said, 'Do you reckon you could do a Cabinet submission for a PET scanner? I keep asking the radiologists, and they keep saying, "We just need one", and I keep saying, "That's not a business case", and they stare blankly back.' So I said, 'Sure, I'll give it a bash.' Which I did, and we got one.

These opportunities have all led to great experiences, and it's their intersection with pharmacy that has made me a better pharmacy leader and practitioner.

My third lesson is that mentors make or break a career. I have been so lucky to have had the mentors that I've had. Without exception, they've been generous leaders who've actively wanted to share the knowledge that they've accumulated. I've already mentioned Andrew George-Gamlyn from whom I learned the business of how hospitals run. My first director of pharmacy was also someone who mentored me; I was lucky enough that they were willing to look past the brash loud-mouthed oddball that I was back then (not anymore, obviously) and see the promise and skill in me that was worth nurturing.

I was also lucky enough to be mentored by Michael Pervan, who was CEO of the Royal Hobart Hospital and Secretary of Health for a number of years. Michael is an amazing man. He was personal friends with the inventors of medication safety – Lucian Leape and David Bates. Michael mentored me in not just how hospitals work, but in how to hold leadership positions in hospitals whilst

> The single most transformative lesson that I've learned is getting involved in something that's bigger than your individual practice. Getting involved in SHPA sweeps you along in this current of passion and innovation from across the country.

There is great joy in working in a team of people who are smarter than you are, they bring new ideas and improve your own.

being a good person. He taught me that your staff can't care for patients if they don't feel cared for themselves.

A few months ago I shared on Facebook a list that I'd stolen from somewhere of 'Ten things you can do to be good at your job that don't just come down to technical ability'. And they were things such as turning up on time, work ethic, attitude, doing extra…all the usual stuff. Michael Pervan, Secretary for Health, saw the post and added three things of his own: Being kind. Being courteous and civil. Being respectful. His list was better than mine.

I've been so fortunate to have these people as my mentors, and I'd like to absolutely commend the SHPA for the development of their mentor program.

My fourth lesson is that it's not always easy or rewarding. There is a temptation when you're talking about your career, to just talk about the highlights, as though it's continually rewarding; as if, despite the challenge, the outcome's always worth it. But that's not always true. I've had more knock-backs than I've had pats on the back.

Sometimes it gets you down. Sometimes the work leads nowhere. Sometimes good work is blocked because other people have more power. Sometimes it's our own fault because the work isn't good enough. And not everyone we encounter will be kind and nurturing. There are bullies.

But you survive it all, play some Xbox, find a bosom for a pillow, and keep on going. I think the best thing you can do is to look after yourself, look after your team, and build a team of people around you who will also look after you when things aren't going that well.

My fifth and final lesson is to build the best partnerships you can in life. There is great joy in working in a team of people who are smarter than you are, they bring new ideas and improve your own. My team is comprised of people that I respect and look up to; I get to work with my best friends.

Working in partnership is the only way to work well.

One of the most fortunate partnerships also came about in 2001, when at the Royal Hobart Hospital I started sharing an office with pharmacist Catherine Drake. Catherine was amazingly knowledgeable, very driven and was heavily involved with SHPA; she was our Federal Councillor for a number of years. She was kind of ambitious on my behalf – she could see I had skills I wasn't using and she pushed me on. This external ambition on my behalf was more of a driver than my own ambition at that point in my career, and Catherine has been an enormously influential driver on my development as a practitioner and a person since then.

We've been married for 15 years now and this continues to be very true. I talk through all my work with her; there isn't a project or initiative that I've ever worked on that hasn't been improved through Catherine's involvement and advice.

No worthwhile achievements in work happen without sacrifice at home. My work can be all-consuming and it sees me on the road a lot, and Catherine sacrifices my time at home, as well as her own ambitions, in order to allow me to do this, and I'm extremely grateful for this.

But Catherine's role in my story isn't just a passive person whose contribution is to make a sacrifice to allow me to have a career; it's been a partnership of ideas and support, and I want to acknowledge the contribution that she has made to both my work and to Tasmanian hospital pharmacy.

Whoever you partner with in life, and whatever their field of work, I hope you find someone who enriches, teaches and supports you and makes you happy. It's been the most important thing to me.

So there you have it. Those are the five lessons I've learnt that have taken me from aimless loser to passionately engaged: get involved, take opportunities, get out of your comfort zone, find the best mentors, it's not always going to go your way, and partner with people who you admire and adore.

Thank you all for listening and thanks again to the Society for this award.

Medicines Management 2019

Medicines Management 2019 (MM2019), the 45th SHPA National Conference was a runaway success on the Gold Coast, 14–16 November, with more than 1,100 delegates energised and entertained through a blockbuster program of clinical excellence, leadership awards and, of course, hours of networking!

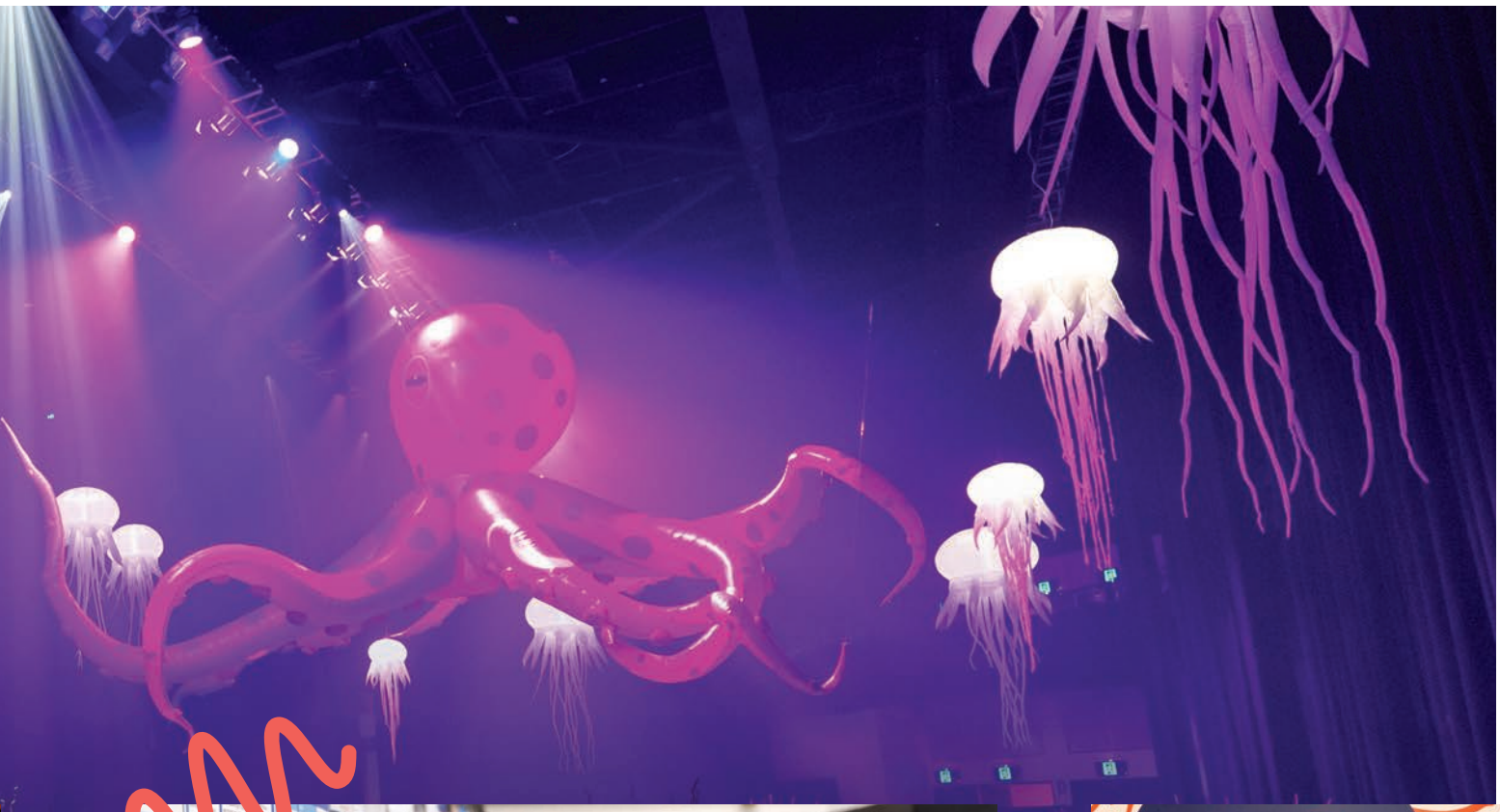
Among the conference's many highlights was the bestowment of the prestigious SHPA Awards, which recognised excellence in leadership and commitment to advancing Australian pharmacy practice and improving patient care. Announced on the plenary stage and giving stirring orations were Adjunct Associate Professor Steve Morris (SA), 2019 Fred J Boyd Award; Matthew Rawlins (WA), 2019 Australian Clinical Pharmacy Award (see oration, pg 245); and Tom Simpson (Tas), 2019 Medal of Merit (see oration, pg 248).

The conference also revealed the winners of the inaugural SHPA Members Awards, for which members voted in droves for the achievements of their peers. SHPA Vice President Dr Jacinta Johnson (SA) was awarded 2019 Emerging Leader of the Year, Gemma Kemsley (Vic) received the 2019 Technician of the Year Award, while the TOPCare Cardiology Project team (Vic) received the 2019 Hospital Team of the Year Award.

The 2019 SHPA Resident of the Year final was hotly contested in a conference session for the first time, with SHPA Vic Jacinta Castello taking out the award for her research into opioid use following surgery, undertaken during the two-year program; Jacinta will share an account of her experience in the Residency Program in an upcoming issue of *Pharmacy GRIT*.

A full list of award winners can be viewed at **shpa.org.au/awards**.

And of course, it wouldn't be Medicines Management without the Gala Dinner! The fabulous theme 'Octopus' Garden' saw members truly let down their hair for a night of fun and frivolity!




MAKING WAVES
MEDICINES MANAGEMENT 2019
#MM2019SHPA
shpa
MAKING WAVES
Restrooms

Foundation Residency

The story so far

DAN GUIDONE

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SHPA Foundation Residencies were introduced in 2017 to provide a reliable and consistent introduction to hospital practice for early career pharmacists and those new to hospital practice.[1] Nationwide uptake has been strong and, with our first residents having now completed their two-year pathways, it's time for SHPA to reflect upon this journey. With Advanced Training Residencies launching in December 2019, gathering data from Foundation Residency participants and program leads will also allow SHPA to plan for the future with our accredited partners around the country.

Foundation Residency 101

Residents undertake a structured pathway of work, with regular feedback and reflection, with the aim of achieving Advancing Practice Stage 1 practice at the end of the two-year program. Activities have been designed to advance practice across all relevant domains: expert professional practice, communication and collaboration, leadership and management and education and research.[2,3] The program features standardised rotations in core generalist aspects of contemporary hospital practice: medicine, surgery, operations and a breadth (or elective) rotation. The residents also undertake longitudinal activities such as audits, acting as clinical educators and participating in institutional committees. SHPA designed Foundation Residencies to be the gold-standard early career introduction to a changing and challenging hospital practice setting.

Residents are assessed formatively throughout the program with a variety of tools including regular clinical evaluations and multi-source feedback. Their final activity is to provide a portfolio to SHPA comprising the breadth of their experience throughout the program. Over 300 pharmacists have enrolled in the program with 63 of the first cohort completing their requirements and receiving certification thus far.

Measuring success

In late 2019, SHPA conducted a survey of our key partners in the Foundation Residency: residents who completed, and their program managers. We wanted to gauge their opinions on three key themes: did the residents' practice advance over the two years? If so, how much was their development accelerated by participation in the Residency? Finally – what are their attitudes towards the program – its value, its ease and, all things considered, would they do it again if they had the chance?

The resulting survey was branched: one set of questions for the 63 completed residents, and an analogous set for their 22 program leads. The response was pleasing, with 39 responses received in full: 25 of 63 residents and 14 of 22 program staff.

Who responded?

Thirty-five (89.7%) of the respondents selected 'Metropolitan' as the best descriptor of their hospital, with the remainder selecting 'Regional'. Twenty respondents (51.3%) were from larger pharmacy departments with over 70 employees. This matches the pattern of uptake of the program, with most accredited sites being either in large metropolitan hospitals, or in a network with a large metropolitan hospital.

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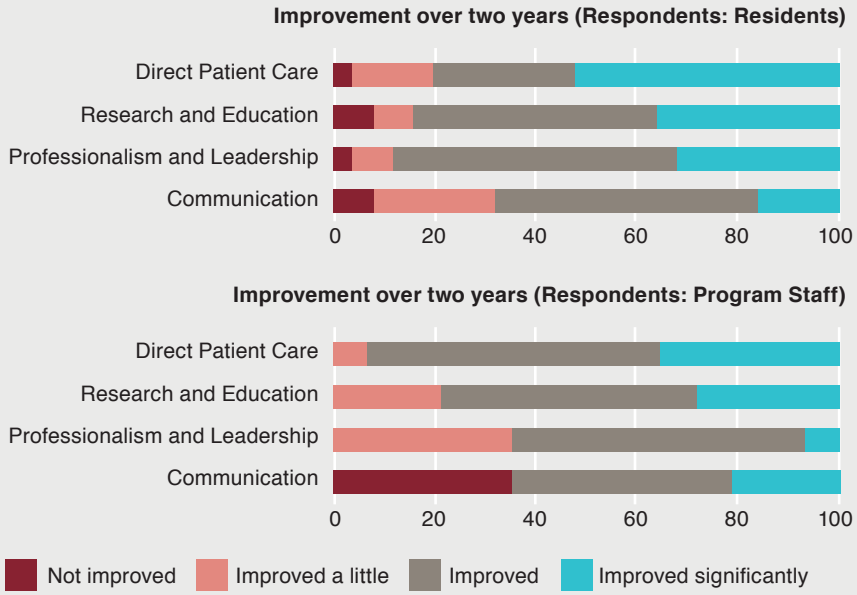
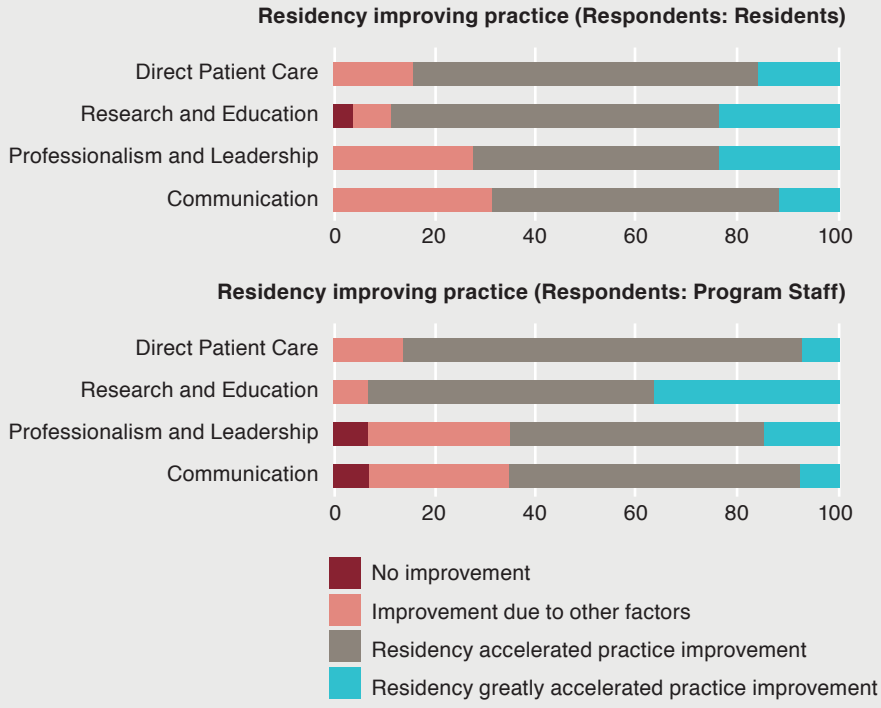
Tables 1 and 2: Attitudes toward professional development and the contribution of the Foundation Residency.



Tables 3 and 4: Contribution of the Foundation Residency to improving practice.



Residency improving practice

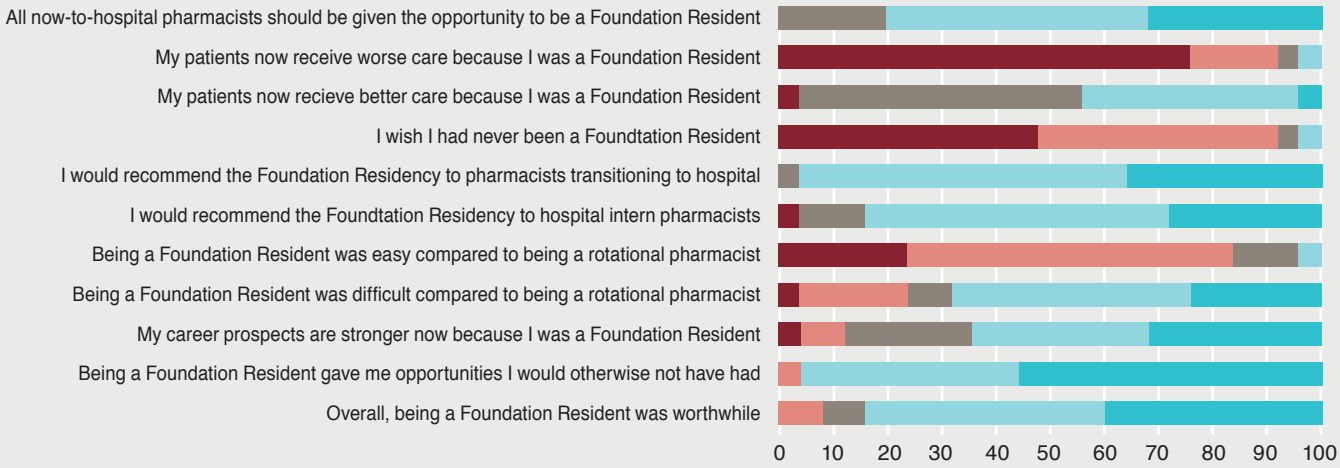
Unsurprisingly, both residents and program staff were almost unanimous in saying residents improved over the two years, across all domains of competence (Tables 1 and 2): Direct Patient Care (96% of Residents, 100% of program staff), Research and Education (92% and 100%), Professionalism and Leadership (96% and 100%), and Communication (92% and 92.9%).

This corresponds with positive anecdotal feedback received during the program's first few years as well as the practical reality that experience builds competence.

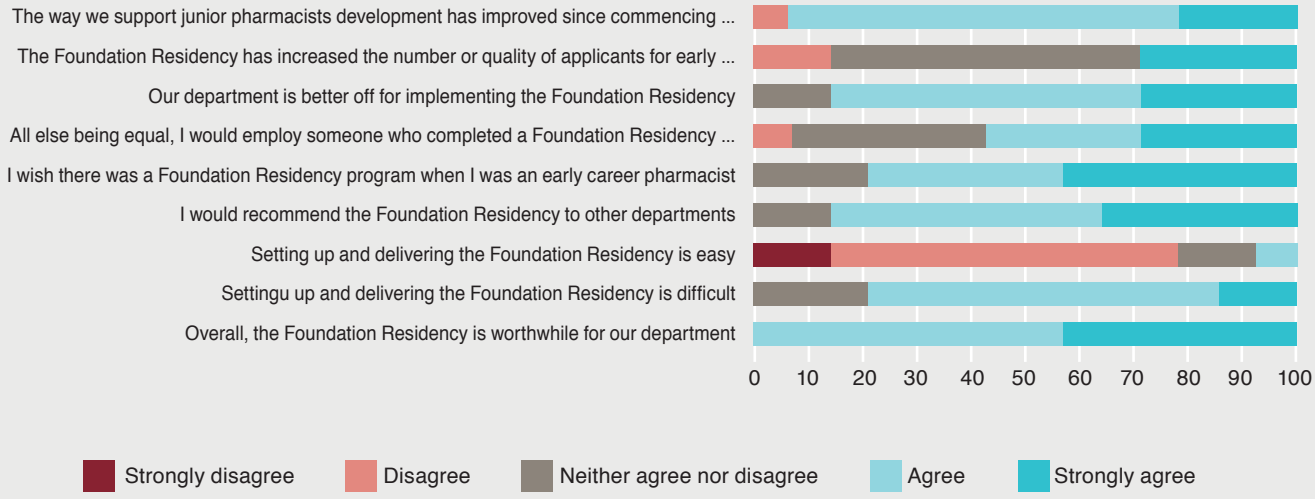
However, we were very pleased to see that a majority of residents and a majority of program staff felt the Foundation Residency *accelerated* the attainment of competency, in all domains (Tables 3 and 4). This acceleration was most strongly reported in Direct Patient Care (84.0% of residents, 85.7% of program staff) and Research and Education (88.0% and 92.9%), which are strong focus points for the program. While we also saw a majority reporting acceleration due to Foundation Residencies in the other domains – Professionalism and Leadership (72.0% and 64.3%) and Communication (68.0% and 64.3%) – the response was less emphatic. This might be because these domains are harder to measure, and it has been harder for SHPA to identify specific activities for residents to undertake in these areas.

Tables 5 and 6: Attitudes toward the Foundation Residency program.

Residents' attitudes towards SHPA Foundation Residencies (n=25)



Program staffs' attitudes toward SHPA Foundation Residencies (n=14)



Views on Foundation Residencies

Overall, the feedback we received from residents and program staff was positive. Eighty-four per cent of residents agreed or strongly agreed that the residency was worthwhile for them (Table 5) and 100% of program staff agreed, or strongly agreed that the program has been worthwhile for their department (Table 6).

Program staff told us the program is beneficial for individual learners as well as the workplace, with a large majority agreeing that they wished there had a been a foundation residency when they were junior pharmacists (78.6%) and they would recommend the residency to other departments (85.7%). Pleasingly, they also agreed their support for junior pharmacists has improved since the program commenced (92.8%). A majority of residents also agreed or strongly agreed the residency has improved their career prospects (64.0%), and that they would recommend the program to intern pharmacists (84.0%%) and pharmacists transitioning into the hospital setting (96.0%).

These benefits did come at a cost to the departments and staff involved, however: 84% of residents disagreed or strongly disagreed with the statement that the residency was easy, compared to similar non-program positions, and 78.6% of program staff disagreed or strongly disagreed that the program was easy to set up.

Where to now?

We were pleased to see high levels of satisfaction with SHPA Foundation Residencies, from both program staff and residents and, more importantly, very pleased that program staff and residents think the residency is accelerating practitioner development. This tells us the residency its achieving its objective, and that patient care and safety at Australian hospitals is being improved with this initiative.

We also noted that program staff and residents felt that it wasn't easy setting up Foundation Residencies, or being a resident. To some extent, this is expected, and we at SHPA are listening, and working to make sure accreditation is as smooth as possible, and looking at ways to improve the experience for residents. For example, 2019 saw the building of better online support to track completion of the program, and finding novel and convenient ways to bring residents together.

Overall, we are proud the SHPA Foundation Residency appears to be delivering on its key objectives of better patient care, better competency attainment, and more supportive departments. We thank our accredited partners for their support on this journey, and look forward to working with them on the next steps in advancing the pharmacy profession in Australia. ●

SHPA accepts applications for Residency Program accreditation year-round. For more information visit: **shpa.org.au/residency**.

REFERENCES

1. The Society of Hospital Pharmacists of Australia. Residency Programs. The Society of Hospital Pharmacists of Australia. [Online] 2019. Available from <https://www.shpa.org.au/residency>.
2. Pharmaceutical Society of Australia. National Competency Standards Framework for Pharmacists in Australia 2016. Canberra, ACT, Australia : s.n., 2017.
3. Pharmacy Development Australia. Portfolio Building Guide. Melbourne, Victoria, Australia : s.n., 2019.

> Eighty-four per cent of residents agreed or strongly agreed that the residency was worthwhile for them and 100% of program staff agreed, or strongly agreed that the program has been worthwhile for their department.

Container and closure system integrity testing – where to start?

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INTRODUCTION

This report gives an up-to-date overview of Container Closure Integrity Testing (CCIT), an assay used to validate and verify the adequacy of container and closure systems in maintaining a sterile barrier against potential contaminants. Contaminants that could potentially cross a container closure barrier system include microorganisms, reactive gases, and extraneous matter.[1,2] This assay should not to be confused with a process simulation or media fill which validates that a product consistently meets quality standards, validates operator aseptic technique and the quality of the environment.[3] A process simulation simulates the routine aseptic operations performed and is one part of the validation of an aseptic manufacturing process.[4] CCIT specifically verifies the effectiveness of the final container and closure system and not the aseptic operator, who, nevertheless, must be validated before undertaking the process.

CCIT is an important part of pharmacy practice: pharmacists have to document evidence that compounded medicines will remain physically, chemically and microbiologically stable when stored under specific storage conditions during the assigned beyond use date (BUD), which includes the time to complete administration of the medicine to the patient.[5,6] Products labelled as sterile are expected to be free from microbial contamination throughout this period.[7] For sterile products, sterility is considered a stability characteristic and as a result, in-house stability data must include confirmation of continuing sterility. CCIT is an integral part of building this evidence and must be performed for all final container and closure systems – including syringes, infusion bags, CADD Cassettes and elastomeric devices – if applying extended BUDs, i.e. greater than that specified in USP-NF 797. Some containers, such as ampoules, require 100% integrity testing.[1,7]

CCIT methods can be classified as either probabilistic or deterministic. Probabilistic methods are based on probability or chance variation and rely on qualitative information, including human judgement. Deterministic methods utilise quantitative assays and are less subject to error.[8] CCIT may be performed via various methods;[1] however, the two methods currently readily accessible to hospital pharmacy aseptic production units in Australia are the microbiological immersion and the dye intrusion methods, both of which are available from Eurofins Scientific,[9] and both of which are probabilistic methods. For reasons discussed below, this paper will particularly focus on the microbiological immersion method.

CCIT METHODS

The dye intrusion method involves immersing the sample container and closure systems, which are filled with water, into a dye solution under pressure for a specified period of time and observing for the intrusion of dye.[9]

The principle of the microbial immersion test is to fill the container and closure system with sterile broth and then insert it into a broth containing approximately 10^6 colony-forming units per millilitre of an actively growing small-sized motile monotrichous microorganism. This challenges the outside of the container and closure system. The container is removed after submersion for a specified period of time, rinsed and then incubated for 14 days.[9,10] Growth in any of the samples indicates a failure of the container and closure system.[10] In comparison with the dye intrusion test, this method has the benefit of confirming an aseptic fill prior to sending off for CCIT through the in-house incubation of samples.

We have found the microbial immersion method to be more reliable and easier to interpret and will concentrate on this method. It is also discussed in PIC/S 007-6.[10]

Disposable syringes are routinely used as final containers for the preparation of paediatric doses. When selecting these container and closure systems, the following points should be taken into account:

- Luer-lock closures provide a more secure and integral closure than luer-slip syringes and are preferred. Where luer-slip syringes are used, a documented risk assessment is advised and a strictly limited BUD should be applied. Ideally, they should be avoided where ever possible.[11]
- Flexing or bending of the extended plunger after filling, for example during storage and transport, should be avoided. This is known to produce problems with pack integrity. Therefore, syringes should

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not be filled to their full extent, in order to help minimise the potential for leakage due to excessive sideways pressure applied to the plunger during storage or transport. A 'rule of thumb' is that the syringe, when used as a storage container, should not be filled to more than 85 % of its nominal capacity,[11] e.g. 8.5 ml in a 10 ml syringe, 25 ml in a 30 ml syringe, and 50 ml in a 60 mL syringe.

When developing and undertaking the preparation of broth-filled container and closure system samples for CCIT (i.e. using the microbial immersion method), the following points should be considered:

- A suitable number and statistically significant (e.g. a batch or at least 20 syringes or containers) should be prepared containing sterile Tryptone Soya Broth in place of the product.[11]
- Containers should be filled according to normal procedures and sealed with the appropriate closure.[11] The process does not need to be complicated, as operator aseptic validation is not being assessed. The details of the container and closure manufacturer and batch numbers should be recorded and meet appropriate specifications.[11] This also applies to injection port seals.
- The filling method should be clearly defined for each container and closure system being investigated. This should not be complicated or a worse-case scenario, as this is captured during aseptic operator validation and routine media fills. The filling method must capture the daily operation processes[11] and capture the number of entries through the injection port using a specific gauge needle. The process may differ from one hospital aseptic production site to another depending on the functions being performed.
- Multiple aseptically validated operators can perform the same filling task and pool all the containers and closures together for statistically significant numbers. This also introduces operator variability which occurs in daily practice. This may be used for more time-consuming processes, such as filling empty infusion bags, elastomeric devices or CADD cassettes. The preparation and validation method should include a check to ensure a firm fit of syringe and closure for each individual item.[11]
- Evidence of environmental quality and control, as well as competence of the personnel performing the compounding and a continual state of control of clean room environment with validated operators, must be demonstrated.
- To ensure that the aseptic fill has been carried out correctly and absent from growth before being sent for CCIT, the broth-filled containers should be pre-incubated at 20–25°C for 7 days, then 30–35°C for 7 days. Any growth at this stage would indicate failure.[11]
- CCIT must be repeated if there is a change in brand of the container or closure used, or if the manufacturer's specifications change. This is applicable for all containers and closures used.

If a container and closure unit fails CCIT at any point, then the validation verification test must be repeated. If the container and closure system fails again, then a documented risk assessment must be conducted reviewing operator practice, the filling process, practice setting, the container and closure used and ensuring that procedures are followed. An alternative type of container or closure may be required, which would need to be validated.

DISCUSSION

Sterility testing at the initial time point is not considered sufficient to demonstrate the ongoing microbial integrity of a container-closure system throughout its shelf life or BUD.[7] Sterility testing is not recommended as a component of a stability assessment for confirming and generating evidence of the continued sterility of a product. CCIT methods are more reliable in detecting a breach of the container and closure system prior to product contamination.[7] CCIT must be performed on sample containers after a period of time equal to or greater than the proposed BUD. Currently, there is no gold standard method for CCIT;[12] however, deterministic methods are more reliable than probabilistic methods and will most likely be a future requirement.[1] A probabilistic method – such as either the microbiological immersion method or the dye intrusion method – suffice for locating leaks; however, deterministic methods such as high voltage leak detection, laser-based gas headspace analysis, and the pressure and vacuum

decay methods are less subject to error and provide quantitative results.[1] These test methods are also non-destructive in nature.

It should be noted that data generated for a particular type of container and closure system is not transferable to a different brand of the same type of container or closure. Data from one syringe or infusion bag size from a particular manufacturer may be extrapolated to other volumes of the same brand and type if filled in a facility under the same conditions. For example, the whole range of BD Platipak® syringes do not need to be tested if specific volumes have already been validated and passed. Data generated for a container and closure system from one aseptic production site is also not transferable to another even within the same organisation. This is due to the data generated being site-specific, due to local variables (including aseptic operators and environmental test results).

CONCLUSION

The ability of the container-closure system to maintain the integrity of its microbial barrier, and hence the sterility of a sterile product throughout its BUD, must be demonstrated[2, 8] – container and closure integrity testing is mandated to ensure aseptically compounded products will remain microbiologically stable over their BUD. Establishing a proper container closure system configuration is extremely important to product and consumer safety, the integrity of which should be demonstrated and assured.

REFERENCES

1. Booth C. Understanding Container Closure Integrity Testing. American Pharmaceutical Review. Fishers: American Pharmaceutical Review, 2016. Available from <https://www.americanpharmaceuticalreview.com/Featured-Articles/239498-Understanding-Container-Closure-Integrity-Testing/>. Accessed 17 June 2019.
2. First Supplement to USP 39–NF 34 General Information / <1207> Package Integrity Evaluation—Sterile Products. United States Pharmacopeia and National Formulary (USP 39-NF 34). Rockville, MD: United States Pharmacopeial Convention; 2016.
3. Media Fills for Validation of Aseptic Preparations for Positron Emission Tomography (PET) Drugs. Center for Drug Evaluation and Research (CDER) Current Good Manufacturing Practices (CGMP). Silver Spring; U.S. Department of Health and Human Services Food and Drug Administration: April 2012. Available from <https://www.fda.gov/media/81974/download>.
4. Sigward E, Fourgeaud M, Vazquez R, Guerrault-Moro M-N, Brossard D and Crauste-Manciet S. Aseptic simulation test challenged with microorganisms for validation of pharmacy operators. Am J Health-Syst Pharm 2012; 69: 1218.
5. Pharmacy Board of Australia. Guidelines on Compounding of Medicines. Pharmacy Board of Australia; 2017. Available from <https://www.pharmacyboard.gov.au/documents/default.aspx?record=WD15%2f16205&dbid=AP&chksum=3QlnioMt0DhI0PsjaoB83A%3d%3d>.
6. Pharmaceutical Compounding – Sterile Preparations (General Information Chapter <797>). United States Pharmacopeia and National Formulary (USP 39-NF 34). Rockville, MD: United States Pharmacopeial Convention; 2016.
7. Ewan S, Jiang M, Stevenson C, Henderson O, Klohr S, Wessel M, et al. White Paper: Container Closure, Integrity Control versus Integrity Testing during Routine Manufacturing. PDA J Pharm Sci Technol 2015; 69(3): 461-5.
8. Ensuring container closure integrity (CCI). Manufacturing Chemist [online]. 16 March 2017. Available from <https://www.manufacturingchemist.com/news/article_page/Ensuring_container_closure_integrity_CCI/127056 >. Accessed 02 January 2020.
9. Eurofins Australia. Container Closure Integrity or Seal Integrity Test. Silverwater: Eurofins ams Laboratories Pty Ltd. Available from <https://www.eurofins.com.au/biopharma-services/testing-solutions/sterile-products-testing/container-closure-integrity/>. Accessed 24 November 2019.
10. Pharmaceutical Inspection Convention, Pharmaceutical Inspection Co-operation Scheme. PIC/S Validation of Aseptic Processing 2011 [PIC/S PI 007-6]: 9.1.2. Geneva: Secretariat of the Pharmaceutical Inspection Convention; 2011. Available from < https://www.picscheme.org/layout/document.php?id=153>.
11. NHS Pharmaceutical Quality Assurance Committee. Protocols for the Integrity Testing of Syringes (2nd Edition). National Health Service (UK); 2013. Available from <https://pasg.nhs.uk/downloads.php?did=266>.
12. Brown H, Mahler HC, Mellman J, Nieto A, Wagner D, Schaar M, et al. Container Closure Integrity Testing – Practical Aspects and Approaches in the Pharmaceutical Industry. PDA J Pharm Sci Technol 2017; 71(2): 147-162.

JPPR News

The *Journal of Pharmacy Practice and Research* is SHPA's flagship research journal, and has been proof, for over fifty years, that SHPA members value their profession as an evidence-based one. In this section, *Pharmacy GRIT* keeps members up to date with Australia's premier scientific pharmacy publication as it continues to represent Australia and beyond in a changing research landscape.

Impact and momentum – introducing the Fast Track Author Pack

Misinformation and disinformation are more powerful than ever before, with crises of consensus in many Western democracies, and responses of panic and anxiety to the novel coronavirus emerging from Wuhan, China as two enormous and challenging examples.

Even as falsehoods surrounding the pathogen 'go viral' at an even faster rate than the coronavirus itself, health care's response must rely on a stable, scientific evidence base – one that can evolve as quickly as possible without compromising that stability.

Even putting this dramatic example aside, researchers and healthcare professionals already need to publish their research swiftly, amid increasingly complex therapeutic and clinical developments, and to meet the demands of collaborations and individual careers.

To this end, *JPPR* has introduced the *Fast Track Author Pack*, an expedited review and publication option for leading translatable research to find faster publication in SHPA's flagship journal. For research that is of high quality within its discipline or field and/or pertinent to dominant or emerging issues in pharmacy practice, *JPPR Fast Track* authors will experience timelines of 4–6 weeks from submission to first decision and from acceptance to online publication.

The pack is available to articles editorially deemed to meet the following criteria:

- Research is of high quality within its discipline or field
- Research has significant potential to translate into improvements in pharmacy practice and patient care
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Further, in a world when showing the impact of your research is more important than ever, the pack also includes access to premium promotional support from SHPA. As a *JPPR Fast Track Author*, your published article will be available via Wiley Publishing Free Access for 12 months and receive full journal and SHPA promotional support, including a media release, social media push via SHPA's Twitter and Facebook channels, a feature article in SHPA's member eNews, a direct post and link in relevant SHPA Specialty Practice forums, and an online article on shpa.org.au with links to *JPPR*.

The *JPPR Fast Track Author Pack* sees SHPA responding to the evolving publications landscape, as we focus on delivering a contemporary, competitive and cutting-edge society journal while advancing the profession.

Systematic reviews – improve the evidence base, and get published faster

As described above, original research meeting the *JPPR Fast Track Author Pack* criteria are now eligible for expedited review and publication – however, the *Journal* is now also seeking to fast-track systematic reviews that focus on the leading edge of contemporary pharmacy research and practice. High-quality systematic reviews will also gain access to expedited review, publication and promotion to help you show your impact, with preference shown to:

- Research that reflects national and international healthcare priorities
- Research that focuses on new and evolving therapies
- Research that advances high priority medicines safety initiatives.

A systematic review can be a powerful contribution to the evidence-base – this thoughtful, careful and often creative work is tailor-made for pharmacists interested in research.

Medication Safety

EDITED BY PENNY THORNTON | BPharm | CertHealthEcon | FSHP

This series brings you up-to-date information about medication safety issues and strategies to prevent medication errors. It draws on Australian incidents and US experience, including (with permission) material from ISMP Medication Safety Alert! – a bulletin published by the US Institute for Safe Medication Practices (www.ismp.org). This series is coordinated by Penny Thornton, BPharm, FSHP, CertHealthEcon (Consultant, Quality Assurance in Medication Safety) in consultation with the SHPA Medication Safety Leadership Committee. Contributions to Australian incident reports are welcome and should be sent to medsafety@shpa.org.au. All incidents are de-identified prior to publication.

AUSTRALIAN INCIDENTS

Tramadol and Tapentadol confusion

In two instances in one month at the one facility:

- Tramadol was administered instead of the prescribed Tapentadol, and
- Tapentadol was administered instead of the prescribed Tramadol.

Although Tapentadol is a schedule 8 drug and therefore sourced from a different location, the fact that they are both relatively strong analgesics may explain the confusion for a patient needing pain relief. No adverse effects were noted in the patients.

As a result, the pharmacy has relabelled all Tramadol and Tapentadol with "Check Product" stickers and initiated a specific education initiative about this potential confusion.

[Australian Incident No 211, Feb 2019]

Paediatric aminoglycosides present a dose challenge

A paediatric patient received 88 mg of gentamicin instead of the prescribed 18 mg. Supratherapeutic gentamicin levels resulted and extra monitoring was required.

It was suggested that moving to the most current version of the Australian Paediatric National In-patient Medication Chart, which contains mg/mL calculations for stat orders, may have prevented this incident.

Nurse education about normal paediatric aminoglycoside doses and their corresponding volumes was undertaken.

[Australian Incident No 212, Mar 2019]

Unlabelled syringe sent from theatre

In one hospital, a patient was sent from theatre to recovery with an unlabelled morphine syringe in place in a syringe driver.

On checking with theatre staff and receiving oral advice, staff were concerned that they were unable to verify that it was, in fact, morphine in the unlabelled syringe.

- Was a word of mouth confirmation sufficient in such a case?
- What was the drug in solution in the syringe?
- Could this be evidence of drug diversion?
- If accepted, could this encourage future drug diversion?

Not only should no intravenous drug solution ever be unlabelled in a practice area, and particularly during administration, in the case of a drug classified as a drug of dependence or addiction, this is a dangerous practice for a patient requiring post-operative analgesia.

In this case, involved Theatre staff received a reminder regarding best practice and the national labelling standards.

The patient did not suffer any harm.

[Australian Incident No 213, Mar 2019]

doi: 10.24080/grit.1222

A resourceful patient?

In one hospital medical ward a patient accessed an unsecured medication trolley, self-administering 5 mg Olanzapine. It is unknown if the tablets had, in fact, been dispensed specifically for her. Perhaps she was attempting to save nurse time but in so doing was potentially vulnerable to an additive effect if the drug was subsequently administered correctly by nursing staff.

When staff became alert to this occurrence, the trolley was then moved to a secure location.

Even though nurses are called away for a variety of reasons during a medication administration round, it is recommended that in these situations a process should be in place to secure or lock the trolley or at least keep it in line of sight until the round is resumed.

[Australian Incident No 214, Mar 2019]

Morphine allergy unrecognised

A patient had a recorded allergy to Morphine. However, in theatre, he was given Morphine intrathecally during his total knee replacement. The patient continued vomiting post operatively. He was monitored and survived this unpleasant experience.

It is considered that although perhaps his Morphine allergy was actually a severe side-effect, his anaesthetist ought to have noted this and considered its necessity and the potential use of alternative analgesia if feasible.

[Australian Incident No 215, Apr 2019]

Oxycodone allergy unrecognised

On admission to hospital, a patient was documented with "Endone allergy" – rash. During the admission, she was given multiple doses of Targin 10/5 and Oxycontin 10 mg.

This is a timely reminder that use of generic drug names is really important, notably when recording allergies. Nurses administering medicines may not always be aware of brand names – particularly for combination drugs, however the generic drug names ought to have been clarified, if not by the pharmacist, at least through the checking process prior to administration.

[Australian Incident No 216, Apr 2019]

INTERNATIONAL INCIDENTS

Published review of independent double checks shouldn't dissuade providers from using them judiciously

A recent systematic review of the effectiveness of double checking to reduce medication administration errors, published by Australian researchers in BMJ Quality & Safety, clearly demonstrates an overall lack of high-quality studies on the subject.[1] However, the authors also conclude that there is insufficient evidence that double versus single checking of medications prior to administration is associated with lower rates of medication errors or reduced harm. After careful examination and thorough consideration of the recent systematic review, ISMP respectfully concludes that little evidence was provided that should cause healthcare providers to abandon the use of judicious and well-placed independent double checks for selected high-alert medications. Instead, ISMP continues to believe that the selective and proper use of manual independent double checks plays an important role in medication safety.[2]

ISMP's primary concerns with the recent systematic review are outlined below and are largely associated with limitations in the reviewed studies and disagreement with some of the conclusions drawn by the authors from these studies. Many of the study limitations are described by the authors. Yet, without careful consideration of the findings, ISMP worry that the authors' conclusion – that there is insufficient evidence to support the double-check processes – may incorrectly dissuade healthcare providers from the judicious and proper use of independent double checks, as described in our June 6, 2019, newsletter[2] and summarised in Table 1.

Limitations in the studies

Quality of the studies reviewed
Thirteen studies spanning 1992 to 2018 met the authors' inclusion criteria for the systematic review and were part of the analysis. However, the authors point out that study quality varied, and 10 of the 13 studies reviewed were rated as poor- or fair quality studies based on criteria from the National Institutes of Health.[3] Many were underpowered and failed to provide meaningful results. Five of the studies had small study populations and/or low error

rates, making it difficult to assess the association between double checking and medication error prevention. Five studies also relied completely or in part on self-reports or incident report data to measure medication errors, likely resulting in a large number of undetected and uncountable errors. Only 3 of the reviewed studies were determined to be good-quality studies based on criteria from the National Institutes of Health. One of these studies only reported double checking compliance rates. The two other good-quality studies that evaluated effectiveness found a positive association between double checking and a reduction in medication errors. In one, an international observational study, double checking was significantly associated with a lower odds of any medication error.[4] In the other, a US randomised controlled simulation study, the use of a double check was found to be superior to a single check for detecting a relatively straightforward wrong vial error.[5] The double check was also more effective than the single check at detecting a more complex, weight-based dosing error, although this effect was less pronounced. All 3 good-quality studies used direct observation to identify medication error rates and/or compliance rates.

Almost half of the studies evaluated only compliance rates

Six of the 13 studies included in the systematic review provided double-checking adherence rates but did not test for an association between double checking and medication administration errors. Thus, almost half of the studies included in the systematic review could not inform an evaluation of the effectiveness of double checking – they could only inform the question of whether double checks were being done, as required.

Independent versus primed double checking

As the authors pointed out, most of the studies investigating double checking did not differentiate between independent and primed double checking. Independent double checking requires two people to separately check the targeted components of the work process, without knowing the results of their colleague. Primed double checking involves two people working together or influencing the checking process by suggesting what the checker should find. Independent double checks are recommended since, if the checker is primed, an error may not be detected due to confirmation bias.[2] Only 3 of the 13 reviewed studies reported if and how independent and primed double checking were differentiated. One of those studies only looked at double checking compliance rates. The other 2 studies, both of good quality, specifically described the double checking performed as independent and found a positive correlation between the independent double check and reduced medication error rates. None of the studies provided rates of medication errors comparing independent versus primed double checking.

More than half of the studies investigated double checks for all types of medications administered in a hospital. For example, one study required double checking of all medications administered; another study required double checking of all oral, inhaled, and topical medications; and several other studies required double checking of all intravenous medications. Very few studies investigated double checks for only selected high-alert medications, as recommended by ISMP. With workflow issues ever present, lack of time to carry out the checking process properly is a strong, recurrent theme of failed double checks and staff resistance to this strategy. Fewer independent double checks strategically placed at the most vulnerable points of the medication use process will likely be much more effective than an overabundance of independent double checks. However, only 2 studies in the systematic review tested selective double checking for only the most vulnerable high-alert medications (i.e. subcutaneous insulin injections; high-risk drugs).

Table 1. ISMP Recommendations for Manual Independent Double Checks[2]

Use Independent Double Checks Judiciously

- Independent double checks should only be used for very select high-risk tasks, vulnerable patients, or select high-alert medications that most warrant their use.
- ISMP does NOT recommend the use of an independent double check for all high-alert medications, all vulnerable patients (e.g. paediatrics), or all high-risk tasks.
- Lack of time to carry out the checking process properly is a strong, recurring theme in studies of failed independent double checks and staff resistance to this strategy
- Fewer independent double checks strategically placed at the most vulnerable points of the medication use process will be more effective than an overabundance of independent double checks.

Conduct Double Checks Independently

- An independent double check requires two people to separately check the targeted components of the work process, without knowing their colleague's results.
- If the double check is conducted independently, it reduces the risk of confirmation bias that may occur if the same person prepares and checks a medication.
- Two people working independently are less likely to make the same mistake; if they work together or suggest what the checker should find, both could follow the same path to an error.

Avoid Sole Reliance on Independent Double Checks

- Independent double checks can sometimes fail, especially since the process depends on one fallible person assessing another fallible person's work; thus, avoid sole reliance on this strategy.
- Do not use independent double checks as a means of fixing problems when more fundamental system redesign is needed to prevent errors.
- Higher leverage strategies (e.g. use of barriers, computer alerts with hard stops, standardisation, barcode scanning) should be considered first.

Conduct a Cognitive Review of the Medication

- Analysis of failed independent double-check processes suggest that double checking often becomes a superficial, routine task, and people may lose sight of its importance.
- What is often missing in the independent double-check process is the firm belief that everyone – even the most trusted and reliable staff member – is fallible, and a more cognitive review of all components of the medication is necessary.
- Effective checking requires critical thinking beyond verification of the "5 rights." Is the drug appropriate for the patient? Does the drug's indication match the patient's diagnoses or conditions? Is the dose appropriate for this patient? These questions and more need to be answered independently.

Standardise the Process and Provide Tools

- Variations in how independent double checks are carried out abound, and compliance with all the steps in the process is often inconsistent.
- To reduce inconsistencies, establish a standard process for carrying out an independent double check and ensure that adequate resources are available to follow this process.
- Educate staff about the importance of independent double checks and how to carry them out properly, not as a superficial task or "cosigning" requirement, but as a vital cognitive task.
- Make it easy for practitioners to follow and document the independent double-check process without relying on vigilance and memory (e.g. checklists [electronic or paper]) as a reminder of the components of certain critical processes and/or medications that should be checked.

Areas of disagreement with conclusions

Evidence to support double checks

The authors suggest that their review reveals there is no solid evidence base to support the use of double checks. They also raise the question as to whether a lack of association between double checking and drug administration errors is due to an actual lack of effect or a lack of compliance with the intervention itself, a cursory double check, or lack of a truly independent double check. While the latter question is certainly valid, please note that all 7 (2 of which are good quality) of the reviewed studies that actually tested for an association between double checking and medication administration errors demonstrated a reduction in medication errors when a double check was used. Although methodological weaknesses were present in some of the studies, all 7 studies failed to show that single checking led to fewer errors than double checking. While one of the good-quality studies identified situations in which a second more experienced nurse dissuaded the first inexperienced nurse from acting on a suspected error, the overall effect of double checking increased error detection with both complex weight-based dosing errors and a straightforward wrong vial error.5While we agree with the authors' conclusion that there is a lack of high-quality studies on the subject of double checking (perhaps this is what the authors meant by "no solid evidence-based support"), we disagree that there is no evidence to support its judicious and proper use.

Speculation about the potential prevention of harm

None of the studies included in the review assessed patient harm as an outcome. Thus, the authors hypothesise as to the potential effect of double checks on actual patient harm, concluding that even a large risk ratio in favour of double checking may not result in a substantial reduction in harm. They go on to question the potential value in using double checks to prevent actual harm, particularly from rare, catastrophic errors. The authors base this conclusion on the fact that, overall, there is a low proportion of medication administration errors that result in actual patient harm. However, ISMP has long recommended reserving double checks for the most vulnerable high-alert medications, which carry a much higher risk of causing catastrophic patient harm when used in error than most other medications. Thus, we respectfully disagree with speculation that the potential value of double checks in preventing actual harm is low; instead, appropriately placed double checks for the most vulnerable high-alert medications can prevent devastating patient harm, and thus offer great value.

Areas of agreement with conclusions

ISMP concurs with the authors about the methodological concerns with many of the studies on double checking and the need for future, high-quality research that focuses on:

- Clearly linking independent double checks for select high-alert medications to fewer errors reaching patients and harmful outcomes using measures that do not rely on self-reports of medication error rates or incident report data
- Robust trials measuring the frequency and severity of errors identified and prevented during the double-checking process, and potential and actual outcomes of errors
- Closer attention to the details of the double-checking process used, in particular the extent to which checks are performed independently and whether all steps in the process are completed as specified
- The fundamental questions about when and where double checking, using humans and/or technology, is beneficial to patient safety outcomes

ISMP conclusions

In general, we disagree with the authors' conclusion that the evidence shows an absence of effectiveness in reducing medication error rates with double checking. In fact, all the studies included in this review that tested for effectiveness showed a reduction of medication error rates with double checking. While we agree that the quality of many of the studies was poor or fair, with methodological weaknesses, this review does not present enough evidence to abandon the use of independent double checks for the most vulnerable high-alert medications. On the contrary, the review should encourage healthcare providers to evaluate their current double check systems to ensure they are designed for success, as outlined in our newsletter article[2] and summarised in Table 1. Given the extent to which double checks are embedded as part of routine nursing practice, and the considerable costs involved, we agree there is a compelling reason to establish a sound evidence-base for its ongoing use and to inform decisions about when and how it might be most effective to improve medication

safety. While one may argue that the current evidence for independent double checking is imperfect, ISMP stands behind our recommendation that, when employed judiciously, conducted properly, and bundled with other strategies, manual independent double checks can be part of a valuable defence to prevent potentially harmful errors from reaching patients.[2]

REFERENCES

1) Koyama AK, Maddox CSS, Li L, Bucknall T, Westbrook JI. Effectiveness of double-checking to reduce medication administration errors: a systematic review. BMJ Qual Saf 2019 ;0: 1-9.

2) Institute for Safe Medication Practices (ISMP). Independent double checks: worth the effort if used judiciously and properly. ISMP Medication Safety Alert! 2019; 24(11): 1-6. www.ismp.org/node/8884

3) National Heart Lung and Blood Institute. Study quality assessment tools. www.ismp.org/ext/308

4) Härkänen M, Ahonen J, Kervinen M, Turunen H, Vehviläinen-Julkunen K. The factors associated with medication errors in adult medical and surgical inpatients: a direct observation approach with medication record reviews. Scand J Caring Sci 2015; 29(2): 297–306.

5) Douglass AM, Elder J, Watson R, et al. A randomized controlled trial on the effect of a double check on the detection of medication errors. Ann Emerg Med 2018; 71(1): 74–82.

[ISMP Medication Safety Alert! 26 Sep 2019]

Disposable standard pen needles and patient education

Some patients who use insulin pens have not been educated about proper use of disposable standard pen needles, as we have pointed out more than once. It is such a problem that the US Food and Drug Administration (FDA) asked pen needle manufacturers to update the labelling and improve patient instructions for use (www.ismp.org/ext/155). The request was issued to help inform patients that it is necessary to remove the inner needle cover on standard pen needles to successfully administer the intended dose. Unlike safety needles used most often in inpatient settings, standard pen needles used in the home have outer and inner needle covers, both of which must be removed prior to injection.

Despite these labelling changes, we have learned of yet another patient who was not aware of the need to remove the inner needle cover for more than a year! The patient was admitted to a hospital with gait change, slurred speech, blood glucose of 57 mg/dL, and a haemoglobin A1c of 13.9%. During medication reconciliation it was discovered that, until the day before admission, the patient had not been removing the inner needle cover of his LANTUS SOLOSTAR (insulin glargine) and NOVOLOG FLEXPEN (insulin aspart). He described administering an entire Lantus SoloStar pen per day and using a napkin to soak up the excess insulin that leaked onto his skin when injecting himself.

The day before presenting to the hospital, the patient had attended a diabetes self-management educational course and learned that he had not been removing the inner cover of the pen needle. After this realisation, he removed the inner cover and injected the prescribed amount of insulin, which his physician had continually increased over the course of the year (Lantus 150 units in the morning and 156 units at bedtime; NovoLOG 80 units before each meal) to control the patient's blood sugar. The patient developed hypoglycaemia after injecting the prescribed amount, which was much higher than required had he been administering each dose correctly from the start of treatment. During admission, the patient required significantly less insulin (Lantus 15 units at bedtime and NovoLOG 4 to 6 units before each meal) than prescribed before his admission.

Although it may seem improbable that this misadministration happened for more than a year, it did! And, it ultimately resulted in patient harm, illustrating the significance of patient education and correct device demonstration. When dispensing an insulin pen and standard pen needles, educate the patient about proper use and employ the teach-back method to ensure patient understanding. Contact pen needle manufacturers for demonstration devices to physically show patients which covers to remove prior to administration. If a patient's blood glucose level remains elevated after insulin administration, prescribers should suspect misuse of the device as a possible cause before increasing the dose. If suspecting improper use, ask the patient to demonstrate the administration process or to explain, step-by-step, how they are using the device.

[ISMP Medication Safety Alert! 20 Jun 2019]

Bridion and light sensitivity

BRIDION (sugammadex) is packaged and supplied as 10 clear single dose vials per carton. There is a statement on the carton that mentions the medication must be discarded after 5 days when it is not protected from light. This has led some healthcare staff to discard the vials when they are found out of their carton on top of anesthesia carts exposed to light for an unknown period. Sugammadex is indicated for routine reversal of rocuronium- or vecuronium-induced neuromuscular blockade post-procedure, or immediate reversal after a full dose of rocuronium. For example, reversal may be needed in situations when intubation was unsuccessful, making rapid response of the essence. If an anesthesia provider administers the contents of a vial that supposedly has lost potency due to light exposure greater than 5 days, the drug may be ineffective after the specified waiting period. Also, product labelling mentions that recurrence of neuromuscular blockade can occur, usually due to suboptimal dosing. Thus, there would be no way of knowing if the recurrence was due to reduced potency of the drug or suboptimal dosing. Understanding the cause of the recurrence would be important.

We contacted Merck, the company that sells Bridion, asking for additional information about photostability of the product. Merck found a significant decrease in content over time in a light-exposed group, as compared to dark controls, which were wrapped either in the carton box or in black polyethylene foil. However, the lighting conditions used in the photostability study were extreme conditions, which do not correspond to light exposure during normal expected use of sugammadex. The findings from the photostability study were then used to estimate the degree of degradation of sugammadex products in usual hospital lighting conditions. It was estimated that over a 5-day period under normal hospital lighting, the expected degree of degradation would be no more than 0.2%, which is considered to be within acceptable limits. For all samples tested, the colour of sugammadex did not change with exposure to ultraviolet (UV) radiation or cool white light.

Knowing the 5-day loss was only 0.2%, it seems like more extensive testing should be required for out-of-the-carton vials, say at 10 days, 30 days, and beyond. Otherwise, we will not know the true significance of any degradation over longer periods of time, and the label will continue to lead healthcare staff to discard any vial they see that has been exposed to light for an unknown amount of time. Marking vials with a date removed from the carton would be useful, although compliance with this type of strategy tends to be very low. Keeping the vials in an amber pharmacy bag might be helpful. However, visualising the label through the bag would be challenging and could lead to errors if the wrong product is accidentally placed in the bag labelled as sugammadex.

The company should conduct additional testing or package the drug in amber vials. The US Food and Drug Administration (FDA) has also been contacted about these recommendations. Unfortunately, short of these actions, it does not seem that other recommendations for handling the product will be impactful.

[ISMP Medication Safety Alert! 15 Aug 2019]

Nearly identical methotrexate and folic acid tablet appearance

We do not usually highlight errors due to the look-alike colour of the tablets, but in the case of methotrexate and folic acid, which are often used together to lessen toxicity of the former, there is reason to do so. We recently received a report involving an accidental mix-up between these two medications. The mix-up resulted in the patient taking methotrexate daily for 6 days of the week and only taking folic acid once a week. It should have been the opposite. The prescriber had reminded the patient to take the methotrexate once weekly using the mnemonic, “Take methotrexate on Monday.” However, in this case, a friend helped set up the patient’s medications in a weekly pill container. The friend did not realise the difference between the methotrexate and folic acid because both tablets looked similar; both were round and yellow (Figure 3). The friend accidentally interchanged the days the patient was supposed to take the methotrexate and folic acid. That led the patient to take the folic acid on Mondays and the methotrexate tablets daily.

Figure 3. Methotrexate 2.5 mg tablets (left) and folic acid 1 mg tablets (right) may look almost identical.

The error continued until the patient presented to an emergency department with severe thrombocytopenia. The patient was hospitalised for treatment and monitoring and was later discharged. Google image searches show that many methotrexate and folic acid tablets are various shades of yellow, with some looking essentially identical.

For years, ISMP has written about the potential for error when weekly methotrexate doses are accidentally administered daily (www.ismp.org/node/1141; www.ismp.org/node/394). Preventing the inadvertent daily dosing of oral methotrexate for non-oncologic conditions has been one of the *Targeted Medication Safety Best Practices for Hospitals (TMSBP)* since 2014, and the International Medication Safety Network (IMSN, www.intmedsafe.net/) recently published a similar global TMSBP earlier this year (www.ismp.org/ext/289). Despite these efforts, errors with oral methotrexate used for the treatment of non-oncologic conditions continue to occur, and multiple root causes have been identified.

It is critical to provide clear instructions for weekly dosing of methotrexate, utilising auxiliary labels to draw attention to the once-weekly frequency. Also, practitioners could provide patients with a copy of ISMP's free high-alert medication consumer leaflet on oral methotrexate (www.ismp.org/ext/290).

Dispensed quantities should always be limited to a 4-week supply, and patients should be encouraged to keep methotrexate tablets in their original packaging rather than combining them with daily medications in pill containers. If patients are taking concurrent folic acid, additional education about the purpose of folic acid and the differences between the medications is necessary. Practitioners should also be aware of the potential for errors where patients confuse "Monday" with "morning." That may lead patients to take a dose of methotrexate every morning if written as an abbreviation (e.g. "q Mon" may be seen as "q Morn" [or q month]).

[ISMP Medication Safety Alert! 12 Sep 2019]

BD 60 mL syringes will soon measure only 50 mL

BD announced a measurement scale change for its 60 mL plastic disposable syringe. The scale mark is being reduced to 50 mL, and the product will be sold as a 50 mL syringe. No other changes to syringe components are being made. This involves BD Luer-Lok Tip, Luer Slip Tip, Eccentric Tip, and Catheter Tip syringes, in both oral and enteral syringe categories. According to BD, one reason for the change is to help drive safe sterile compounding practice by preventing overfill of medications. These changes will occur before the end of the year, with the revised catheter tip syringes becoming available as soon as late September. Additional information can be found at: www.ismp.org/ext/305.

Many facilities, especially paediatric facilities, use syringe pumps and may have built drug dilutions based on a total syringe volume of 60 mL. This change may require modifications in syringe pump drug libraries (e.g. dispense volumes, size of syringes). The total volume may be in the drug library or with the drug name as a default setting. The change may also require modifications in recipe listings or compounding formulas, and may impact adult dosing. Other areas where protocols might need to be rebuilt include your intravenous (IV) workflow system.

We do not have any information from other syringe vendors regarding possible changes.

[ISMP Medication Safety Alert! 12 Sep 2019]

Speaking up about patient safety requires an observant questioner and a high index of suspicion

Healthcare practitioners are expected to speak up about patient safety concerns to help intercept errors and avoid adverse patient outcomes. By 'speaking up,' we mean raising concerns for the benefit of patient safety and quality of care upon recognising or becoming aware of a risk or a potential risk. Such risks may include concerns about the safety of an order or treatment modality, a possible missed diagnosis, questionable clinical judgment, rule breaking, dangerous shortcuts, incompetence, and disrespect. Healthcare practitioners, especially frontline staff, are well positioned to observe unsafe conditions and bring them to the attention of those who can remediate them.

ISMP conclusion

ISMP is not discounting the fact that many complex factors influence whether healthcare practitioners speak up about

patient safety concerns. We also do not discount the extraordinary courage it may take for many to step up to these conversations.

However, tolerance of risk that goes unchallenged is a serious patient safety concern, and to combat that, all who interact with patients must become an observant questioner and raise their index of suspicion of errors. Healthcare practitioners need to ensure that patient safety concerns are not only raised but also properly investigated and addressed. You can be sure that those involved in serious and fatal errors wish that they had taken the opportunity to do just that.

[ISMP Medication Safety Alert! 10 Oct 2019 – readers are referred to the full article for ISMP's in-depth analysis]

Hepatitis C vial contamination despite using sterile needles and syringes

A study published last month in Anesthesiology suggested an interesting alternative theory on how healthcare-acquired hepatitis C infections may be transmitted between patients – not through the reuse of needles or syringes when accessing vials for multiple patients, but through inadvertent contamination of the vial diaphragm followed by access with a sterile needle and syringe *(van Vlymen JM, Magnus J, Jaeger M, et al. Hepatitis C contamination of medication vials accessed with sterile needles and syringes. Anesthesiology. 2019; 131(2): 305-14)*. The study examined this theory in anesthesia environments after the means of contamination with several patient-to-patient hepatitis C outbreaks could not be explained. In their investigation of a potential source for the transmission, all anesthesia staff and other practitioners claimed to have used sterile needles and syringes for each patient. In other studies, inadvertent contamination of anesthesia workspaces (e.g. anesthesia machine surfaces, anesthesia carts, the outer surfaces of syringes, injection ports) has been demonstrated, and the hepatitis C virus has been shown to remain infectious for up to 6 weeks at room temperature on inanimate surfaces. Thus, the authors tested if hepatitis C virus can be transferred via a sterile needle and syringe if a vial diaphragm is contaminated; if hepatitis C virus remains viable in medications; and if cleaning with 70% isopropyl alcohol eliminates the transmission risk.

The authors were able to demonstrate that, when caring for hepatitis C virus–infected patients, practitioners may inadvertently contaminate a medication vial diaphragm, and that subsequent access with sterile needles and syringes can transfer hepatitis C virus into the medication, where it remains stable for at least 72 hours in sufficient quantities to infect subsequent patients. The medications that were examined included: dexamethasone, lidocaine with methylparaben as a preservative, neostigmine, phenylephrine, propofol, rocuronium, and normal saline. The most unsettling observation may be that wiping the diaphragm with an alcohol swab was insufficient to eliminate hepatitis C virus infectivity. No differences were observed if the alcohol was allowed to dry before vial access.

While further research into this novel theory of patient-to-patient hepatitis C transmission is needed, this risk could be eliminated by never using a medication vial, including a multidose vial, for more than one patient.

According to the Centers for Disease Control and Prevention (CDC), providers should "dedicate multidose vials to a single patient whenever possible. If multidose vials are used for more than one patient, withdraw patient specific doses in a centralised medication area and do not bring the multidose vial into the immediate patient treatment area (e.g. operating room)." The authors note that, while a remote medication preparation area may be possible in most areas, it does not always exist in the operating room (OR). Thus, they call for the use of pharmacy-prepared, single-dose syringes and elimination of multidose vials. They also call on the pharmaceutical industry to package medications in single-patient doses. Frequent hand hygiene, better environmental cleaning between cases, and removal of all used syringes and vials from the OR at the end of a case are additional strategies.

[ISMP Medication Safety Alert! 10 Oct 2019]

DrugScan

This review updates you on the international literature on therapeutics. Specialist pharmacy practitioners – via the SHPA Specialty Practice model – scan major peer-reviewed journals in areas relevant to Australian pharmacy practice and present precis on major clinical trials, important pharmacoepidemiology studies and pharmacoeconomic research, and other updates relevant to practice. Interested readers are encouraged to explore the original publications in greater detail.

CLINICAL TRIALS

GRIT Liaison for #SHPAClinTrials:
Brenda Shum

Twenty-five ways clinical trials have changed in the past 25 years

A number of facets of clinical trials have changed during the past 25 years, and 25 key changes identified by experts in this field are summarised in this article. It was noted that historically, most were conducted by academic laboratories, but in current times the majority are undertaken by multinational pharmaceutical companies and contract research organisations, with similar drugs tested, but greater focus on consideration of the molecular characteristics of a disease for trial design. Trial design has evolved to increase the efficiency of trial execution by changing fluidity and breadth of design, with the development of adaptive; basket; umbrella; and platform trials. With growing polypharmacy, de-escalation trials are emerging. Robustness of controls for procedural trials is increasing through the increasing incorporation of sham surgeries. Inclusion and exclusion criteria, and protocol design, have grown in complexity, with concerns these are hindering clinical trial conduct. With an increasing focus on collaboration and trial conduct visibility, there have been global moves to increase the registration of clinical trials through registries such as ClinicalTrials.gov, and the European Union Clinical Trials Register. Data collection and analysis has had to evolve concurrently due to the aforementioned complexity of trial design with electronic systems constructed to facilitate and manage aspects of trial conduct, data collection (e.g. smartphone apps), site monitoring and mining data for multi-site trials. Data sharing either directly or via meta-analysis continues to grow, but with it, so does the need to construct regulatory systems to enable robust data governance, thereby addressing ethical and privacy concerns.

May M. Twenty-five ways clinical trials have changed in the last 25 years. Nat Med 2019; 25: 2-11.

Sharing is caring: improving the sharing of clinical trial data and results reporting of large pharmaceutical companies

There is a growing international trend to increase data sharing of de-identified, participant level data from clinical trials, with demand for greater transparency regarding their conduct. In the absence of a framework to evaluate the data sharing performance of pharmaceutical companies, as part of the Good Pharma Scorecard project, the authors developed a set of measures to enable evaluation. Data sharing measures were developed through the review of 10 international data sharing guidelines, including those produced by the Institute of Medicines and the European Medicines Agency; multidisciplinary stakeholder review; and assessment of feasibility. These measures were applied to Phase II and Phase III clinical trials in drug applications for novel drugs approved by the FDA in 2015 which were sponsored by the 20 largest pharmaceutical companies. 75% of companies did not fully meet all data sharing measures, with the key reasons being failure to share data by a specified deadline; not reporting the number and outcome of data requests; and failure to register all data sharing trials such that data requests were facilitated. Whilst there have been improvements in data sharing over recent years – with initiatives such as the YODA Project, and Project DataSphere driven by pharmaceutical companies – as demonstrated by the results of this study, further development is still required. Although this study focussed on the US landscape, similar issues regarding data sharing of clinical trials

doi: 10.24080/grit.1223

information are prevalent in Australia. Work to establish consistent measures to assess performance will assist with supporting improvements in this area.

Miller J, Ross JS, Wilenzick M, Mello MM. Sharing of clinical trial data and results reporting practices among large pharmaceutical companies: cross sectional descriptive study and pilot of a tool to improve company practices. BMJ 2019 (Jul); 366: l4127.

Perceptions of drug-related harm in Phase 1 trials: views of healthy volunteers

The safety and tolerability of investigational drugs are key aspects reviewed in Phase 1 trials conducted in healthy volunteers. In these trials, identification of drug-related harm primarily occurs through the observation of a physiological change, through the review of key markers, or self-reporting by participants, followed by their assessment at trial closure to determine if an adverse event (AE) is a side effect of the drug. Given the key role that trial participants play in this process, the authors investigated the perceptions of healthy volunteers from seven US research clinics, one year after enrolment in this study, regarding clinical trial participation and AEs experienced by themselves or other trial participants, and changes to these over time. They observed that the majority of participants either diminished the severity of, disregarded, or re-attributed the cause of the AEs they or fellow participants experienced. Socioeconomic drivers for trial participation for subjects in this study were also reviewed, with such rationalisation by participants postulated to be partly attributed to these and also to participants' desires to continue to undertake such work. These results prompt consideration of how prospective trial participants are advised on the importance on reporting of AEs experienced, to ensure both the robustness of the results of a Phase 1 clinical trial, and their own safety, as well as consideration of alternative mechanisms for incentivisation of participation.

McManus L, Davis A, Forcier AL, Fisher JA. Appraising Harm in Phase 1 Trials: Healthy Volunteers' Accounts of Adverse Events. J Law Med Ethics 2019 (Jun); 47(2): 323-33.

CRITICAL CARE

GRIT Liaison for #SHPACritCare: **Belinda Badman**

Is early continuous paralysis in Acute Respiratory Distress Syndrome still beneficial?

Special contributor: **Ifeoma Aghanwa**

Acute Respiratory Distress Syndrome (ARDS) carries a high mortality risk, therefore implementing effective strategies is crucial to improving survival. A 2010 ARDS et Curarisation Systematique (ACURASYS) Trial reported an improvement in the adjusted 90-day survival in severe ARDS patients receiving a neuromuscular blocker (NMB) with deep sedation. Despite this finding, uptake of NMB in ARDS has been variable and is ascribed only a weak recommendation in current guidelines. This study re-examined the benefits of NMB in ARDS. Designed similarly to the ACURASYS trial, it involved recruiting 1006 moderate to severe ARDS patients on mechanical ventilation from 48 hospitals around the United States. Patients were randomly assigned to receive deep sedation and a 15mg intravenous bolus of cisatracurium followed by an infusion of 37.5mg/hr over 48 hours in the intervention group, while light sedation without significant NMB use was allowed in the control group. All patients received low tidal volume ventilation and a high Positive End Expiratory Pressure (PEEP) except where this strategy was deemed harmful. In-hospital death at 90 days occurred in 42.5% and 42.8% of the intervention and control groups respectively. The difference was not statistically significant ($p = 0.93$). More serious adverse cardiovascular effects were observed in the intervention group compared with the control group ($p = 0.02$), an effect possibly from the use of deeper sedation rather than the intervention being tested. Incidences of ICU-acquired weakness, barotrauma and recall of paralysis were similar in the two groups. The study concluded not only a lack of benefits for NMB use in ARDS, but increased risk of harm. NMB should therefore not be routinely used in this condition but may be considered in situations where patient-ventilator asynchrony can result in poor outcomes.

The National Heart, Lung, and Blood Institute PETAL Clinical Trials Network. Early neuromuscular blockade in the acute respiratory distress syndrome. NEJM 2019; 380(21): 1997-2008.

The impact of clinical pharmacists on prescribing errors in a surgical Intensive Care Unit (ICU)

Special contributor: **Rachel Fyfe**

Clinical Pharmacists (CP) have been shown to reduce medication errors, drug costs and improve clinical outcomes in ICU. This study provided qualitative data on the impact of CP on prescribing error (PE) rates, in a 12-bed surgical ICU in Germany.

A controlled interventional study was conducted, with a retrospective control phase (P0) and two interventional phases with CP in ICU: medication review only (P1) and review with ward-round participation (P2). The pharmacists identified and classified any PE; these were verified by physicians for inclusion. PEs and antimicrobial use were counted daily due to the acuity of ICU patients.

A total of 36 219 medications were reviewed. The percentage of PEs compared with medications reviewed in the intervention phases P1 (5.13%) and P2 (3.25%) was significantly reduced compared with the control phase P0 (14.12%), ($p<0.001$). The rates of potentially severe PEs were also reduced (9.87% in P0, 3.11% in P1, and 1.84% in P2). The most common PE or intervention was the need for additional medication based on standard operating procedures. Clinical Pharmacist involvement also showed a positive trend in antibiotic stewardship as evidenced by an increase in the number of days patients were without systemic anti-infective therapy.

These results support the clinical pharmacists' role in improved medication management in ICU which could be translated to Australian practice. The potential bias of CP identification of PE was minimised by requiring physician agreement. The two-stage intervention process demonstrated further benefits of the CP participation in ward rounds, highlighting the importance of CP presence at the time of medical decision-making and the benefits of multidisciplinary teamwork.

Kessemeier N, Meyn D, Hoeckel M, Reitze J, Culmsee C, Tryba M. A new approach on assessing clinical pharmacists' impact on prescribing errors in a surgical intensive care unit. Int J Clin Pharm; 2019 (Oct); 41(5): 1184-92.

VTE Prevention in severe trauma. Can we do better?

Prevention of venous thromboembolism in severe trauma patients is a challenge for Intensive Care Clinicians. Rates of deep vein thrombosis (DVT) & pulmonary embolism (PE) have been demonstrated to be as high as 18% & 11% in severely injured patients without thromboprophylaxis. The challenge with this group of high-risk patients is how to prevent these clotting events when chemical thromboprophylaxis (bleeding risk) and sequential compression devices (leg injuries) are often contraindicated.

This study, conducted in 240 patients across four Australian Intensive Care Units (ICUs), compared the early insertion (within 72 hours) of a vena cava filter post a significant trauma injury with a control group of trauma patients who did not receive a vena cava filter. Adult patients with a severe trauma score of more than 15 and an initial contraindication to anticoagulation were randomised to either the treatment or control group. Patients were excluded if death was imminent, if they were anticoagulated prior to the trauma occurring, if they were pregnant or if no interventional radiologist was available to perform the procedure.

The incidence of symptomatic PE or death was not found to be significantly lower amongst patients who received the vena cava filter than in those who didn't (13.9% vs 14.4%; P=0.98). In patients who did not receive prophylactic anticoagulation within seven days of the injury (due to bleeding risk), the incidence of symptomatic PE was 0% in the vena cava filter group vs 14.7% in the control group. This group may therefore potentially benefit from early vena cava filter insertion.

This study concluded that routine use of vena cava filters for trauma patients should not be implemented at this time. As pharmacists, it is important we review these patients daily to ensure chemical thromboprophylaxis is commenced at the earliest possible occasion.

Ho HM, Rao S, Honeybul S, Zellweger R, Wibrow B, Lipman J, et al. A Multicenter Trial of Vena Cava Filters in Severely Injured Patients. NEJM 2019 (Jul); 381(4): 328-37.

EDUCATION AND EDUCATIONAL VISITING

GRIT Liaison for #SHPAEdu: **Dr Jacinta Johnson**

Who impacts our intern pharmacists' professional socialisation?

Special contributor: **Deanna Mill**

The pre-registration year presents a critical time for professional development as intern pharmacists begin full-time practice. During this year of learning, critical thinking, clinical knowledge, communication skills and professional socialisation are on the agenda. Professional socialisation in this context includes acquiring the values and attitudes, interests, skills and knowledge of a practising pharmacist. But who is responsible for the professional socialisation of our up and coming pharmacists?

This study was a prospective, longitudinal, qualitative interview study, conducted in England. It was designed to explore professional socialisation in intern pharmacists

throughout their pre-registration year. A purposive sample of 20 interns from hospital and community pharmacy settings underwent semi-structured interviews on three occasions during their training and on one occasion four months after completion, to explore their experiences in professional socialisation and the perceived influences on their training. Results found that along with the critical role of preceptors, non-pharmacists, such as pharmacy technicians, initially played a large role in socialising interns into the workplace. Pharmacists were noted to be stronger role models toward the end of the training year. Given the large presence of both clinical and dispensary pharmacy technicians working with interns in our Australian workforce, this study highlights a need to assess the technician workforce's preparedness to assist in providing quality workplace education and role modelling for intern pharmacists.

Jee S, Schafheutle E, Noyce P. Exploring the process of professional socialisation and development during pharmacy pre-registration training in England. Int J Pharm Pract 2016; 24(4): 283–93.

How useful is the UK Advanced Pharmacy Practice Framework assessment tool?

Special contributor: **Hong Lor**

Advanced Pharmacy Practice Framework (APPF) is a structured assessment tool used in the UK to recognise pharmacists who achieve advanced-level pharmacy practice competencies. Run by the University College London (UCL), the MSc Advanced Pharmacy Practice (MScAPP) program is a 12-month, part-time course aimed at supporting pharmacists to achieve advanced-level pharmacy practice competencies. The aim of this interview-based, qualitative study was to assess the usefulness of the APPF, and to understand how the MScAPP program helped graduates in their professional development. Collected data were analysed using the matrix coding approach. 15 graduates enrolled into the study, of those 14 worked in clinical roles.

The study showed that graduates are motivated to further their career. 'Obtaining new skills' and 'doing something career-wise' were their top reasons for enrolling in the program. Graduates felt that the program helped open up new opportunities for them, such as implementing research projects in the workplace, working as clinical lead pharmacists, working for national professional bodies, or undertaking PhD studies. A higher percentage of more mature graduates took up high-level positions compared with younger graduates, however younger graduates were more likely to notice job benefits in the long-term. Challenges faced by graduates included time constraints, finding a suitable research project, and writing long assignments. Overall, the APPF proved useful in helping pharmacists identify learning gaps and prepare for advanced stage pharmacy practice. The study was limited, with graduates only from clinical sectors. Further study is required to determine if the program has similar impact for graduates from other specialities (e.g. production, dispensary).

Vitor C, Innes A, Bates I. A qualitative assessment of an education programme for advanced pharmacy practice. Pharm Educ 2019; 19 (1): 62–68.

The near-peer mentor – a worthwhile addition to an education framework?

Near-peer education models are a potential strategy for improving pharmacists' professional support and development. A near-peer is an individual who has recently gone through the experience that someone one or two stages behind them is now, or soon will be facing. A near-peer model has been piloted in medical practice and may have benefit in pharmacy settings.

This study piloted a near-peer mentorship program for first-year medical graduates (FY1; n=95) who were mentored by second year medical graduates (FY2; n=95). FY2 mentor volunteers and FY1 participants were recruited through social media and by email invitation. FY2 mentors completed one-hour of training which covered the background/purposes of mentoring, with FY1-FY2 pairs then encouraged to communicate informally, as well as meet face-to-face three times during the one-year mentorship period. An initial survey and post-program feedback questionnaire evaluated the educational impact. Overall, FY1s reported being more willing to turn to their FY2 mentor than their Education Supervisor with personal welfare issues, including work/life balance and feeling unsupported at work. The FY2 mentor was felt to be more approachable as well as more able to provide relevant, recent perspectives on common challenges. 99% of respondents indicated the program should continue (65/65 FY2s; 31/32 FY1s) with 94% reporting that having both a near-peer mentor and an Educational Supervisor was

beneficial (29/32 FY1s; 62/65 FY2s) to their professional development. This study highlighted an enthusiasm for the near-peer mentorship role in addition to Educational Supervisors, particularly in supporting personal welfare. This program is a simple, low-cost model which could be replicated and adapted to improve support to clinical training programs in the pharmacy profession.

Peterson A, Monaghan H. Near-peer mentorship: a pilot programme to improve support for new doctors. BMJ Leader 2019; 3: 11–14.

EMERGENCY MEDICINE

GRIT Liaison for #SHPAEmergMed:
Libby Currey & Amy Thomson

Is an increased time to thrombolysis on the table?

Special contributor: **Ariana McCauley**

Current practice for the acute treatment of ischaemic stroke with alteplase has a 4.5-hour window from symptom onset. The use of non-contrast CT imaging determines this window and limits the ability to identify viable brain tissue for reperfusion. By utilising perfusion imaging, this window may be extended and time to thrombolysis increased.

This study was a multicentre, randomised, placebo-controlled trial involving patients with acute symptomatic stroke who demonstrated hypo-perfused & salvageable regions of the brain on perfusion imaging. Patients were randomised in a 1:1 ratio to receive IV alteplase or placebo 4.5 to 9 hours after stroke onset or wake up stroke. 225 patients were enrolled, with 113 assigned to the alteplase arm and 112 to the placebo arm. 35.4% of patients who received alteplase met the primary outcome of a modified Rankin scale score of 0 or 1 at 90 days post-intervention, compared with 29.5% in the placebo arm (1.44 risk ratio; 95% CI, 1.01 to 2.06; P=0.04). However, a secondary ordinal analysis of this did not show a significant difference in functional improvement at 90 days. There was no significant difference between arms for mortality within 90 days post-intervention (11.5% vs 8.9%; 95% CI, 0.57 to 2.40; P = 0.67) and symptomatic intracranial haemorrhage was observed in the alteplase arm (6.2% vs 0.9%; 95%, CI 0.97 to 53.54; P = 0.053).

Despite the early termination of the study, timing of anti-thrombotic therapy for patients with a favourable perfusion-imaging profile of 4.5 to 9 hours after symptoms onset resulted in minimal neurologic deficits compared to placebo. This opens the potential for future studies of thrombolysis within this timeframe to be conducted. The standard of practice and subsequent treatment of patients with acute ischaemic stroke may be challenged by results of future studies.

Ma H, Campbell BC, Parsons MW, Churilov L, Levi CR, Hsu C, et al. Thrombolysis Guided by Perfusion Imaging up to 9 Hours after Onset of Stroke. NEJM 2019 (May); 380(19): 1795-1803.

Medication use during medical emergency team calls

Medications are a common intervention provided by medical emergency teams (MET). This study aimed to investigate medication use during MET activations by describing the type, frequency and access sources of medications with a goal of improving medication use and access. The study also aimed to assess associations between patient characteristics, MET activation criteria, and outcomes and MET medication use.

This was a single-centre, retrospective observational study from a database of MET activations in an Australian tertiary referral hospital. Analyses of consecutive adult MET activations over 12 months aimed to provide a summary to determine: (1) the frequency and type of medications used, (2) the sources used to access medications and (3) to compare patient and activation characteristics and outcomes. There were 5727 MET activations with medications used at 33.5% (n = 1920). Of 2648 medications used, cardiac system agents (n = 944; 35.6%) were the most common category, while electrolytes (n = 341; 12.9%) and opioid analgesics (n = 248; 9.4%) were the most frequently used medications. Most commonly, medications were sourced from ward stocks. High blood pressure, heart or respiratory rate, pain and multiple activation criteria were associated with MET medication use ($p < 0.001$). Medication use was positively

associated with immediate ICU admission (odds ratio = 1.90; 95% confidence interval = 1.47–2.45).

This was a large and focused evaluation of MET medication use, limited by a degree of missing data (12.6%). It provides an increased understanding of medication use and access during MET activations in an established system. These insights may be used to tailor supplies and inform functionality of the electronic medical record system to improve MET workflows and the timeliness and safety of medication use, and to improve medication management and follow-up by home team clinicians.

Levkovich B, Bingham G, Hopkins R, Jones D, Cooper D, Kirkpatrick C, et al. An Observational Analysis of Medication Use During 5,727 Medical Emergency Team Activations at a Tertiary Referral Hospital. J Comm J Qual Patient Saf 2019 (Jul); 45(7): 502–8.

Should we use phenytoin or levetiracetam for status in kids?

Status epilepticus is the most common paediatric neurological emergency worldwide. Left untreated it can lead to disability, learning difficulties, drug resistant epilepsy and even death.

Two multicentre open-label randomised controlled trials were published in the Lancet looking at levetiracetam vs phenytoin for second line treatment of convulsive status epilepticus in children. The EcLiPSE trial recruited children aged six months to under 18 years of age who had presented to ED in status and were eligible for second line treatment in accordance with the Advanced Paediatric Life Support (APLS) algorithm. The ConSEPT trial recruited children aged three months to 16 years who had presented to ED in status and had receive two doses of benzodiazepines.

In the ConSEPT trial the phenytoin group received 20mg/kg phenytoin IV or IO over 20 minutes. The levetiracetam group received 40mg/kg levetiracetam IV or IO over five minutes. Patients were assessed if seizures stopped five minutes post infusion. This occurred in 60% and 50% of patients respectively in the phenytoin and levetiracetam groups. Video recording was taken to reduce bias. If they were still seizing at five minutes then they were administered the other drug.

In the EcLiPSE trial, the same weight-based dosing, routes and rates were used for each medication. Patients were assessed to time to cessation of all visible signs of convulsive activity as judged by the clinician. Median time to cessation was 45 minutes and 35 minutes respectively in the phenytoin and levetiracetam groups. If there was ongoing seizure activity then they were treated as per APLS algorithm.

These two studies were released at the same time and indicate there is minimal difference in outcomes between the two agents. Due to the long history of use of phenytoin in status epilepticus it is unlikely that these studies will change the APLS algorithm.

ConSEPT:

Dalziel S, Borland M, Furyk J, Bonisch M, Neutze J, Doriath S, et al. Levetiracetam versus phenytoin for second-line treatment of convulsive status epilepticus in children (ConSEPT): an open-label, multicentre, randomised controlled trial. Lancet 2019(May 25); 393(10186): 2135-45.

EcLiPSE: Lyttle M, Rainford N, Gamble C, Messahel S, Humphreys A, Hickey H, et al, with support of Paediatric Emergency Research in the United Kingdom & Ireland (PERUKI) collaborative. Levetiracetam versus phenytoin for second-line treatment of paediatric convulsive status epilepticus (EcLiPSE): a multicentre, open-label, randomised trial. Lancet 2019 (May 25); 393(10186): 2125-34.*

GERIATRIC MEDICINE

GRIT Liaison for #SHPAGeriMed: **Ho Yin (Alex) Chan & Gauri Godbole**

Should we be treating hypertension conservatively in older people with lower risk of falls?

Special contributor: **Richard Bolitho**

There is a common perception that tighter control of blood pressure (BP) places older adults at greater risk of adverse outcomes such as hypotension, falls, and fractures. This prospective cohort study of 5971 older women examined the effect of BP levels and BP treatment on the risk of falls. Participants had their prescribed antihypertensives identified and blood pressure measured by nurses at the beginning of the study. They were then required to self-report falls monthly for one year. In the 3900 women with treated hypertension, controlled or uncontrolled, their respective risks of falls were significantly reduced by 18% and 27%, compared to women with no hypertension. There was no significant association between systolic BP and increased risk of falls in the treated hypertension

subgroups. For diastolic BP below 80mm Hg, there was a trend towards increasing falls risk. The study demonstrated that older women with treated hypertension had a lower risk of falls compared to non-hypertensive women. For people who are robust and tolerating antihypertensive treatment, it seems likely that the long-term benefits of controlled hypertension can be achieved without an increased risk of falls. However, it should be noted that an increased risk of falls is apparent during initiation of antihypertensive therapy or dose intensification – clinical monitoring is crucial especially in older people. Study limitations included American female-only participants, self-reporting bias and unspecified comorbidities that would contribute to falls risk (e.g. osteoporosis).

Margolis, KL, Buchner DM, LaMonte MJ, Zhang Y, Di C, Rillamas-Sun E, et al. Hypertension Treatment and Control and Risk of Falls in Older Women. J Am Geriatr Soc 2019; 67(4): 726–33.

Effect of higher intensity lipid lowering therapy after acute coronary syndrome among patients 75 years or older

This study was a pre-planned secondary analysis of the Improved Reduction of Outcomes: Vytorin Efficacy International Trial (IMPROVE-IT) trial. Authors analysed association between age and cardiovascular disease (CVD) outcomes in 18 144 patients aged ≥50 years with stabilised acute coronary syndrome (ACS) who were randomised to receive either intensive lipid lowering treatment with ezetimibe 10 mg plus simvastatin 40 mg or simvastatin 40 mg monotherapy. For patients with LDL-C levels >79 mg/dL for 2 consecutive measurements, simvastatin was increased to 80 mg until June 2011, when the FDA restricted the use of simvastatin 80 mg. The primary efficacy endpoint was a composite of CVD death, MI, unstable angina leading to hospitalization, coronary revascularization after day 30 and stroke. Safety variables included abnormal liver enzyme and creatine kinase levels, myopathy, rhabdomyolysis, gallbladder-related adverse events, and cancer. Higher-intensity therapy (ezetimibe-simvastatin combination) reduced the incidence of primary endpoint compared with simvastatin monotherapy (32.7% vs 34.7%; HR 0.94; 95%CI, 0.89-0.99; P = .02). The greatest absolute risk reduction (8.7%) was observed in patients ≥75 years (HR 0.80; 95%CI, 0.70-0.90), in whom the incidence of primary efficacy endpoint was lower with combination therapy within 12 months and the curves continued to diverge during 7 years of follow-up. The rates of rhabdomyolysis, myopathy and elevation of liver enzyme levels were low and were not increased by the combination vs. monotherapy. Rates of newly diagnosed cancer, cataracts, and neurocognitive events increased with age but were not more frequent among patients assigned to combination therapy. Limitations included only 15% of patients aged ≥75 years, limited statistical power for particular endpoints, and unadjusted P-values for multiple comparisons. Generalizability to frail, multimorbid older patients, who were excluded from IMPROVE-IT, is unknown. Since this study, the international guidelines on the management of blood cholesterol have been updated.

Bach RG, Cannon CP, Giugliano RP, White JA, Lokhnygina Y, Bohula EA, et al. Effect of Simvastatin-Ezetimibe Compared With Simvastatin Monotherapy After Acute Coronary Syndrome Among Patients 75 Years or Older: A Secondary Analysis of a Randomized Clinical Trial. JAMA Cardiol 2019 (Jul); 4(9): 846-54.

Long-term anticholinergic drug exposure and its impact on dementia risk

This nested case-control study assessed associations between long-term anticholinergic drug exposure and risk of dementia in persons aged 55 years or older. It included 58 769 patients with a diagnosis of dementia and 225 574 matched controls. The primary exposure was the total standardized daily doses (TSDDs) of 56 strongly anticholinergic drugs prescribed in the 1 to 11 years prior to diagnosis of dementia or equivalent date in matched controls (index date). The adjusted odds ratio (AOR) for dementia diagnosis associated with total cumulative anticholinergic exposure in the 1 to 11 years before the index date increased from 1.06 (95% CI, 1.03-1.09) for 1 to 90 TSDDs, to 1.49 (95% CI, 1.44-1.54) for more than 1095 TSDDs, compared with non-use of anticholinergic drugs. To address the possibility that anticholinergic drugs were prescribed to treat early symptoms of dementia (e.g. low mood) before a formal dementia diagnosis was made, associations between dementia and anticholinergic drug exposure in the period from 3 to 13 years and 5 to 20 years prior to diagnosis were also explored. Results were similar but with slightly lower ORs; for example, for the 5 to 20 years before the index date the AOR was 1.44 (95% CI, 1.32-1.57) for > 1095 TSDDs.

For TSDDs > 1095, two of the most frequently prescribed anticholinergic drug classes were also associated with significant increases in dementia risk: anticholinergic antidepressants (AOR, 1.29; 95% CI, 1.24-1.34), and bladder antimuscarinic drugs (AOR, 1.65; 95% CI, 1.56-1.75). This study does not prove a causal relationship between dementia and anticholinergic drug exposure, but it does provide further evidence that anticholinergic drugs may increase the risk of dementia and should be avoided whenever possible in older people.

Coupland CAC, Hill T, Dening T, Morriss R, Moore M, Hippisley-Cox J. Anticholinergic Drug Exposure and the Risk of Dementia - A Nested Case-Control Study. JAMA Int Med 2019 (Jun); 179(8): 1084–93.

MEDICINES INFORMATION

GRIT Liaison for #SHPAMedInfo: **Jeanie Misko**

Heart and lung transplants from Hepatitis C positive donors

Historically, organ transplants from donors infected with hepatitis C virus (HCV) have not been possible due to the risk of transmission of HCV to the recipient. With the availability of medications to effectively cure HCV, transplants from this cohort are now possible. A single centre, open-label trial of 44 patients (36 lung, eight heart) received HCV positive organs. Sofosbuvir-velpatasvir was given to the organ recipients for four weeks beginning immediately post-transplant. The timing of the regimen was aligned with that used for post-exposure prophylaxis. The primary outcome of this trial was sustained virologic response 12 weeks post sofosbuvir-velpatasvir course completion and graft survival at six months post-transplant. Most recipients (42; 95%) had a detectable HCV load immediately post-transplantation which became undetectable after two weeks post-transplant. Thirty-five patients had six months of follow-up, all alive with 'excellent' graft function and undetectable HCV load. (All patients who had less than six months follow-up had a virologic response). Unexpectedly, 49% (27) of recipients continued to have positive-HCV antibodies six months post-transplant. Sofosbuvir-velpatasvir was chosen for its effectiveness regardless of HCV genotype and its 'lack of drug interactions with immunosuppression.' (However, there may still be effects on tacrolimus concentrations, and regular monitoring is required). Sofosbuvir-velpatasvir use did not cause any serious adverse effects. As the use of HCV positive donor organs becomes more widespread, pharmacists may be asked about regimens and drug interactions with these agents in the transplant setting. Long-term data with HCV positive donor organs are also lacking, in particular, chronic lung-allograft dysfunction and cardiac allograft vasculopathy.

Woolley AE, Singh SK, Goldberg HJ, Mallidi HR, Givertz MM, Mehra MR et al. Heart and lung transplants from HCV-infected donors to uninfected recipients. NEJM 2019 (Apr); 380(17): 1606-17.

Aspirin desensitisation in acute coronary syndrome

Hypersensitivity to aspirin remains a challenge in patients with acute coronary syndrome (ACS) who require antiplatelet therapy. There are various desensitisation regimens available depending on the reaction type and the urgency to commence aspirin. A recent meta-analysis of aspirin desensitisation in ACS doesn't answer the question regarding which regimen is preferred, however, it looks at whether individual protocols were successful and if there was any discontinuation of aspirin due to hypersensitivity. Although this meta-analysis followed the PRISMA guidelines for meta-analyses, the literature search reviewed only a single database (PubMed). There were also limitations in the search terms used in the literature search; aspirin was used as a search term, but acetylsalicylic acid was not. The authors mention reviewing 'about seven screens' of results on PubMed, which raises concerns as to whether the information in the meta-analysis captures all the available literature. Some of the statistics could also be improved, such as using 'mode' instead of 'mean' or 'median' to describe frequencies. Overall, there was a successful aspirin desensitisation rate of 98.4% with no patients reporting hypersensitivity at follow-up (range 1-46 months). Protocols with more than six dose escalations had higher success rates than shorter protocols. Longer desensitisation regimens (more than two hours) showed no difference in successful desensitisation rates to those lasting two hours or less. While this paper reassures that aspirin desensitisation is generally successful, it does not answer questions about the best regimen to use.

Chopra AM, Diez-Villaneuva P, Cordoba-Soriano JG, Lee JKT, Al-Ahmad M, Ferraris VA et al. Meta-analysis of acetylsalicylic acid desensitization in patients with acute coronary syndrome. Am J Cardiol 2019 (Jul); 124(1): 14-19.

Low dose theophylline and inhaled corticosteroids in chronic obstructive pulmonary disease

Chronic obstructive pulmonary disease (COPD) can lead to frequent exacerbations which require hospital stays and which can cause early mortality. As theophylline has anti-inflammatory effects at low concentrations (1-5 mg/L), it was proposed that low doses may be beneficial as an additional medication in COPD. A multi-site, pragmatic, double-blind, randomised, placebo-controlled study carried out across the UK sought to determine if the addition of theophylline to patients with COPD taking inhaled corticosteroids was beneficial at reducing exacerbations. The 1578 participants in the trial were determined to be at high risk due to ≥2 exacerbations requiring antibiotics or corticosteroids per year. The dose of modified-release theophylline (200 mg daily or twice daily) was chosen based on the patient's smoking status and ideal body weight. Patients on medications

likely to interact with theophylline or who had severe ischaemic heart disease were excluded from the trial. The mean number of exacerbations over the one-year study was similar in both the theophylline and placebo groups (2.24 and 2.23 respectively). (Exacerbations in this trial were self-reported by patients; the authors validated this choice through a small validation study within the trial comparing patient reports with GP-supplied data). Theophylline did not improve FEV1, mortality, quality of life or pneumonia occurrence in patients with COPD using inhaled corticosteroids. Hospital admissions were fewer in the theophylline group, however this may have been due to a small number of patients in the placebo group having multiple admissions. Overall, low dose theophylline did not have additional benefits on morbidity or mortality in patients with COPD using inhaled corticosteroids.

Devereux G, Cotton S, Fielding S, McMeekin N, Barnes PJ, Briggs A, et al. Low-dose oral theophylline combined with inhaled corticosteroids for people with chronic obstructive pulmonary disease and high risk of exacerbations: a RCT. Health Technol Assess 2019 (Jul); 23(37):1-146.

ONCOLOGY AND HAEMATOLOGY

GRIT Liaison for #SHPAOncHaem: **Michael Powell**

Relapsed/refractory chronic lymphocytic leukaemia: update to the MURANO study

Special contributor: **Gail Rowan**

In 2018 Seymour et al published the results of the MURANO study which compared the combination of venetoclax and rituximab in relapsed/refractory chronic lymphocytic leukaemia to bendamustine and rituximab.1 In this study a fixed-term of up to two years of venetoclax combined with six months of rituximab showed superior progression-free survival (PFS) to the bendamustine-rituximab group. This article is the follow-up of the fixed duration venetoclax-rituximab group after ceasing medication.

The MURANO group presents the secondary end points of the study which included safety and peripheral blood (PB) minimal residual disease (MRD) status: at cycle 4, two to three months after end of combination therapy (EOCT); and every three to six months thereafter. Of the 194 patients who received venetoclax-rituximab therapy, 174 (90%) were able to complete the full two years of therapy. In this update, median follow-up is 36 months and shows both PFS and overall survival (NS) still favoured the venetoclax-rituximab arm. Outcomes for patients with an undetected MRD (uMRD) at EOCT were similar in terms of PFS whether the patient achieved a CR or PR response. MRD responses were maintained in the post-EOCT period to the end of the total 24-month treatment period and beyond. Responses were seen in all subgroups including those with poor prognostic indicators like Del(17p) and TP53 mutations. The investigators concluded that the advantages seen in the original MURANO study continued and this regimen offers long-term responses to patients with relapsed or refractory disease including those with poor prognostic markers.

Kater AP, Seymour JF, Hillmen P, Eichhorst E, Langerak AW, Owen C, et al. Fixed Duration of Venetoclax-Rituximab in Relapsed/Refractory Chronic Lymphocytic Leukemia Eradicates Minimal Residual Disease and Prolongs Survival: Post-Treatment Follow-Up of the MURANO Phase III Study. J Clin Oncol 2019; 37(4): 269–77.

Seymour JF, Kipps TJ, Eichhorst B, Hillmen P, D'Rozario J, Assouline S, et al. Venetoclax–Rituximab in Relapsed or Refractory Chronic Lymphocytic Leukemia. NEJM 2018; 378(12): 1107–20.

Atezolizumab beneficial addition to first line therapy for metastatic lung cancer

Special contributor: **John Coutsouvelis**

Metastatic non-small cell lung cancer (mNSCLC) remains a difficult cancer to treat. The regimens commonly used contain platinum-based doublet chemotherapy, sometimes combined with bevacizumab. Atezolizumab, a programmed death ligand 1 (PD-L1) antibody has shown overall survival (OS) benefit in previously treated mNSCLC. This study investigated the addition of atezolizumab to chemotherapy and bevacizumab as a first line agent for treating mNSCLC.

Patients were included if they had previously untreated stage IV disease or in recurrent non-squamous mNSCLC after adjuvant or neoadjuvant treatment had been completed at least six months before randomisation. Patients were included irrespective of PD-L1 status, EGFR or ALK genomic alterations and randomised to one of three arms: ACP (Atezolizumab, Carboplatin, Paclitaxel); ABCP (Atezolizumab, Bevacizumab, Carboplatin, Paclitaxel); or BCP (Bevacizumab, Carboplatin, Paclitaxel). This article presents results for the comparison between ABCP and BCP only.

At 12 months, the rate of progression-free survival was 36.5% in the ABCP

group and 18.06% in the BCP arm (p <0.001). This benefit was consistent across all biomarker groups. The OS analysis showed benefit for the ABCP group with a median OS of 19.2 months compared with 14.7 months in the BCP arm (p = 0.02). It was unclear when and if comparison with the ACP arm will be published. There were no unexpected or increased rates of adverse effects associated with these regimens. The Pharmaceutical Benefits Scheme funds Atezolizumab for 'Stage IV (metastatic) NSCLC' in combination with bevacizumab and a platinum-based chemotherapy regimen and this regimen should be considered as a first line option in this setting.

Socinski MA, Jotte RM, Cappuzzo F, Orlandi F, Stroyakovskiy D, Nogami N, et al. Atezolizumab for first-line treatment of metastatic nonsquamous NSCLC. NEJM 2018; 378(24): 2288–301.

Daratumumab, carfilzomib and dexamethasone – a treatment option for relapsed or refractory multiple myeloma

Special contributor: **Amanda Tey**

Most patients with myeloma relapse, necessitating multiple lines of combination therapy. The phase 1b study MMY1001 evaluated the safety and efficacy of D-Kd (daratumumab, carfilzomib and dexamethasone) in 85 carfilzomib and daratumumab naïve patients. Patients refractory to lenalidomide (60%) and/or bortezomib (31%) were included. Daratumumab (16mg/kg), carfilzomib (Days 1,8,15) and dexamethasone were given until disease progression. A median of 16 cycles was delivered. Daratumumab was given as a split dose in Cycle 1 for 75 patients. The most frequent Grade 3/4 Adverse Events (AEs) were thrombocytopenia (31%), anaemia (21%) and neutropenia (21%). Cardiac AEs occurred in 28% of patients. Infusion-related reactions (IRR) occurred in 60% of patients receiving the single first infusion of daratumumab and in 43% receiving the split dose. Median infusion time reduced from 7.1 hours to 4.3 hours respectively.

The overall response rate (ORR) was 84% with 33% achieving a complete response. The ORR for lenalidomide refractory patients was 79% and 84% for bortezomib refractory patients. Progression free and overall survival were 74% and 82% respectively at 12 months. These results compare favourably with other studies in similar populations. The D-Kd regimen showed acceptable tolerability and encouraging efficacy in treatment-refractory patients and this study established the use of split first-dose daratumumab. As a phase 1b trial, MMY1001 had small patient numbers and no control arm; D-Kd is now being assessed in a Phase 3 randomised controlled trial (CANDOR). Daratumumab is currently available via compassionate access as monotherapy while carfilzomib is available on the PBS.

Chari A, Martinez-Lopez J, Mateos MV, Blade J, Benboubker L, Oriol A, et al. Daratumumab Plus Carfilzomib and Dexamethasone in Patients With Relapsed or Refractory Multiple Myeloma. Blood 2019; 134(5): 421–31.

PALLIATIVE CARE

GRIT Liaison for #SHPAPalliative: **Josephine To & Penelope Tuffin**

Multidisciplinary pain management in palliative care

This study reviewed the effect of a pharmacist-led multidisciplinary team (MDT) on pain management in a specialist palliative care unit (PCU). The pharmacist is responsible for optimising pharmacological interventions with the support of physicians and nurses in the team.

107 patients with 117 prescriptions who were admitted to the PCU for worsening of cancer pain were included in the retrospective study. They were admitted from other wards, outpatients or the emergency department. The study evaluated the use of analgesics using six criteria based on standardised pain management guidelines over a 14-day period, beginning seven days prior to admission. If any of the six criteria were not met, prescribing was considered inappropriate. Overall, they found that self-reported pain scores (numerical rating scale, 0 for no pain to 10 for the most severe pain) and appropriateness of analgesic use significantly improved with involvement of the pharmacist-led MDT. Pain scores changed from 3.16 seven days prior to admission to PCU

to 4.05 on the day of admission to 2.66 on day 7 and appropriateness increased from 35% to 75%. The criteria for appropriateness with the most significant improvement were 'Reassessment of breakthrough pain' and 'Side effect prophylaxis'. These improvements were most notable in opioid prescribing.

Whilst in Australia, pharmacists leading a pain management team is not yet common, the criteria that were used to assess prescribing appropriateness in this study are relevant to all pharmacists regardless of setting. Pharmacists reviewing patients with cancer pain with palliative care needs can support their prescribers to improve the quality of prescribing and patients' experiences of pain.

Geum MJ, Ahn JH, Kim JS, Kim SH, Son ES, Hu YJ, et al. Interprofessional Collaboration Between a Multidisciplinary Palliative Care Team and the Team Pharmacist on Pain Management. Am J Hosp Palliat Care 2019; 36(7): 616–22.

Palliative care in the emergency department

Special contributor: **Vicki Poulier**

This study investigated palliative interventions provided directly by emergency department (ED) staff, rather than by palliative care consultation. The ED pharmacist made recommendations for pain management and medication issues.

The study used an ED-specific 5-question screening tool as part of a palliative intervention algorithm, to identify adult oncology patients who would benefit from pharmacist, social work and/or nursing consultation.

Metrics measured were ED length of stay (LOS), discharge rate and readmission within 10 days. Pharmacy consultation was prompted by a rating of ≥4 (on a 10-point Likert scale) for inadequate analgesia, and ≥3 for medication difficulties. The pharmacist optimised analgesia, including dose titration, in 26% of patients and addressed medication management issues in 27.5%. Overall, no statistical difference in ED LOS or 10-day readmission occurred for any ED intervention. Examples of interventions were not included and clinical outcomes were not assessed.

While ED workload, patient triage status, and patient/carer emotional distress meant less than one third of oncology patients received a pharmacist consultation, the study places the pharmacist as an integral part of the ED team. Despite Australian pharmacists not currently being responsible for titrating analgesic doses, the screening questions allow ED teams to identify palliative care patients for whom a pharmacist's unique knowledge may lead to improvements in care.

Reuter Q, Marshall A, Zaidi H, Sista P, Powell ES, McCarthy DM, et al. Emergency Department-based palliative interventions: A novel approach to palliative care in the Emergency Department. J Pall Med 2019; 22(6): 649–55.

Opioid switching/rotation in patients with cancer pain

It is common practice to switch/rotate to a different opioid if dose increases are unsuccessful in relieving cancer pain or the patient is experiencing unacceptable adverse effects. The effectiveness of this strategy is uncertain.

This study analysed the effect of opioid switching in 498 patients with advanced/metastatic solid tumours. It was a secondary analysis from a study to determine whether morphine, fentanyl, buprenorphine or oxycodone were equally effective and safe.1

There were 87 opioid switches in 79 (15.9%) patients during the 28-day follow-up. Rotation was conducted because of uncontrolled pain (52.3%), adverse reactions (22.1%), or both (4.8%) and dysphagia (20.8%). Patients with neuropathic or mixed pain at baseline were significantly more likely to switch opioid than not switch (24% v 14.8%). The average pain intensity (API) decreased on average by 31.2% and worst pain intensity decreased by 13.3% across all patients. For the 51.5% patients considered responders, an average of 52.8% reduction of API was recorded. Of note, the opioid dose may have been increased or decreased during the study period. The 23 patients switching for severe toxicity reported a total of 69 adverse effects. After opioid rotation, 43.5% of adverse effects were considered to have improved. In addition, the effectiveness in reducing toxicity was not consistent across the different adverse effects, with patients reporting an improvement in some adverse effects and not others.

This study concluded that switching opioids will improve pain relief or adverse effects in about 50% of patients not optimally managed on their current opioid.

Corli O, Floriani I, Roberto A, Montanari M, Galli F, Greco MT, et al. Are strong opioids equally effective and safe in the treatment of chronic cancer pain? A multicenter randomized phase IV 'real life' trial on the variability of response to opioids. Ann Oncol 2016; 27(6): 1107–15.

SURGERY AND PERIOPERATIVE MEDICINE

GRIT Liaison for #SHPASurgPeriop: **Tori Forrester**

Iron helps make life better after colorectal surgery

Up to 40% of patients with newly diagnosed colorectal cancer are anaemic at diagnosis. Anaemia is known to cause fatigue, lethargy, dyspnoea – all contributing to reduced cancer related quality of life (QoL) scores.

This multicentre, open-label, randomised, controlled trial aimed to assess whether intravenous iron (up to 1000mg carboxymaltose dosed based on weight and haemoglobin given once a week, maximum of 2000mg carboxymaltose) or oral iron (200mg ferrous sulphate twice daily) replacement for up to 2 weeks prior to surgery for colorectal cancer improved QoL scores. This study is a follow-on from a previous study where participants were randomised 1:1 to receive either oral iron or intravenous iron pre-operatively. 116 patients were included in the study analysis: 61 in the oral iron group, and 55 in the intravenous iron group. When analysed as one group, there was a positive correlation between haemoglobin level and six different QoL scores. The QoL scales with a significant improvement were: FACT-AN, EQ5D5L and sf36. Despite the general increase in both groups, there was only one significant increase for the mental component of the sf36 QoL score for oral iron.

Previous studies have demonstrated that intravenous iron produces a quicker and higher increase in haemoglobin levels, and this study found a correlation with higher haemoglobin levels and higher QoL scores. The authors discuss the variable timeframe between recruitment and day of surgery as a limitation as there may not have been enough time to optimise haemoglobin levels which would have impacted the results. This design mimics real life where, depending on the nature of the surgery, there may not be an optimal amount of pre-operative time. The results were promising in that intravenous iron improved the QoL at outpatient post-operative appointments of patients with colorectal cancer who have undergone surgery.

Keeler BD, Dickson EA, Simpson JA, Ng O, Padmanabhan H, Brookes MJ, et al. The impact of pre-operative intravenous iron on quality of life after colorectal cancer surgery: outcomes from the intravenous iron in colorectal cancer-associated anaemia (IVICA) trial. Anaesthesia 2019 (Jun); 74(6):714–25.

Pain prophet: Can we predict those patients most at risk of post-operative pain?

Special contributor: **Courtney Hill**

Under-treated post-operative pain control has been associated with increased lengths of hospital stay, sleep disturbance, prolonged time to mobilisation and increased opioid use. The ability to predict patients most at risk of post-operative pain will help us provide better patient-centred care.

This systematic review and meta-analysis of observational studies evaluated acute post-operative pain in hospitalised adults using validated pain scales including the visual analogue scale, numeric rating scale and verbal rating scale. The review featured 33 studies, with 53 362 patients, spanning from 2002 to 2017. A benefit of this article was its generalisability to a realistic population, as it included studies published in multiple languages and featuring a variety of surgical specialities and geographical locations.

Overall, 23 preoperative factors were examined, with nine of these considered statistically significant for predicting poor postoperative pain control. These included: younger age (OR 1.18 [95% CI 1.05 to 1.32], number of studies, n=14); female sex (OR 1.29 [95% CI 1.17 to 1.43], n=20); smoking (OR 1.33 [95% CI 1.09 to 1.61], n=9); history of depressive symptoms (OR 1.71 [95% CI 1.32 to 2.22], n=8); history of anxiety symptoms (OR 1.22 [95% CI 1.09 to 1.36], n=10); sleep difficulties (OR 2.32 [95% CI 1.46 to 3.69], n=2); higher body mass index (OR 1.02 [95% CI 1.01 to 1.03], n=2); presence of preoperative pain (OR 1.21 [95% CI 1.10 to 1.32], n=13); and use of pre-operative analgesia (OR 1.54 [95% CI 1.18 to 2.03], n=6).

Identifying modifiable risk factors such as smoking, BMI, preoperative pain and analgesia opens the door for further research into post-operative pain and the opportunity to individualise and improve outcomes for patients. The heterogeneity in study data included (e.g. study design, type of surgery, definition

of pain control) and inclusion of observational studies were potential sources of bias. However, this study provides further evidence of benefit for pharmacist's interventions in the preoperative setting (e.g. pre-admission clinic) including pharmacist-led smoking cessation counselling and pharmacotherapy advice, weight loss management and optimisation of preoperative analgesics.

Yang MM, Hartley RL, Leung AA, Ronksley PE, Jetté N, Casha S, Riva-Cambrin J. Preoperative predictors of poor acute postoperative pain control: a systematic review and meta-analysis. BMJ open 2019 (Apr); 9(4): e025091.

Antimicrobial-associated adverse events from continued surgical prophylaxis

Special contributor: **Janelle Penno**

Continuation of antimicrobial therapy beyond the operating theatre has long been questioned by pharmacists for appropriateness and safety for the patient. This study aimed to contribute to evidence on the potential harm from continuation of surgical antimicrobial prophylaxis. This was a retrospective cohort study of US Veterans Affairs patients undergoing major cardiac, orthopaedic joint replacement, colorectal and vascular procedures using data collected as part of surgical quality improvement. 79 058 patients (96.3% male, mean age 64.8) were included for assessment of 30-day surgical site infection (SSI), seven-day acute kidney injury (AKI) and 90-day incidence of C difficile infection in association with the duration and type of surgical prophylaxis. There was no additional SSI reduction with antimicrobial therapy continued beyond 24 hours. However, continuation of prophylaxis was shown to independently increase the odds of postoperative AKI and C difficile infection with the risk increasing further with each day of therapy. For AKI, the number needed to harm was nine after 24-<48 hours. Vancomycin was independently associated with increasing the risk of AKI, while clindamycin and/or fluoroquinolones were associated with C difficile infections. The results of this study are of particular significance given the recent update to the Therapeutic Guidelines Antibiotic which now recognise the limited evidence in some procedures of a single dose being as effective as 24 hours of prophylaxis. As the authors concluded 'Every day – and every dose – matters'.

Branch-Elliman W, O'Brien W, Strymish J, Itani K, Wyatt C, Gupta K. Association of duration and type of surgical prophylaxis with antimicrobial-associated adverse events. JAMA Surg 2019 (Jul); 154(7): 590-8.

TRANSITIONS OF CARE AND PRIMARY CARE

GRIT Liaison for #SHPATransitionCare: **Manya Angley**

Process, impact and outcomes of medication review in Australian residential aged care facilities: A systematic review

This is the first systematic review to specifically explore the value of medication review and reconciliation in Australian Residential Aged Care Facilities (RACFs). The review looked at 13 studies that investigated medication reviews, eight of which studied Residential Medication Management Reviews (RMMRs). All medication reviews included in the analysis were performed in Australian residential aged care facilities, with pharmacists leading them in 11 of the studies.

Residents entering RACFs have more complex care needs, are frailer and experience more polypharmacy than ever before. The review reported that up to 96% of residents referred for RMMRs have one or more actual or potential medication-related problems, yet it's estimated that only 38% of residents of Australian RACFs currently receive a RMMR annually. It was concluded there was evidence that medication reviews may assist to optimise medication use by decreasing anticholinergic and/or sedative medication burden and inappropriate prescribing. Comprehensive medication reviews were successful in identifying up to four medication-related problems (MRPs) per resident, with up to 84% of recommendations to resolve MRPs accepted by GPs. Other outcome measures were investigated, such as quality of life (QoL), hospitalisation and mortality; and one study found no significant difference following a medication review but was underpowered to detect a significant difference in these outcomes, indicating more research is needed.

As a GP referral is needed before a pharmacist is funded to conduct a RMMR, there is a need for pharmacists and GPs to be pro-active regarding delivering the RMMR service and for aged care

providers to have an environment where RMMRs are included as part of the process of care.

Chen EYH, Wang KN, Sluggett JK, Ilomäki J, Hilmer SN, Corlis M, Bell JS. Process, impact and outcomes of medication review in Australian residential aged care facilities: A systematic review. Australas J Ageing 2019; 38(Suppl 2):pp 9–25.

The discharge companion program: An interprofessional collaboration in transitional care

In the US, approximately one in five patients are readmitted post-hospitalisation, with associated worsened health outcomes for patients and increased healthcare expenditures. Medication misadventure is a major contributor to the rate of readmissions. Research suggests that collaborative activities, including enhanced patient education and coordination with primary care providers, can prevent readmissions. This non-randomised, retrospective study evaluated the Discharge Companion Program (DCP), a pharmacist- and nurse-coordinated interprofessional, collaborative Transitions of Care (ToC) program. The hospital transitional care coordinator nurse referred eligible patients to the DCP nurse coordinator, who scheduled phone calls with the DCP pharmacist at one- and three-weeks post-discharge to undertake medication therapy management (MTM) reviews. Participants were discharged to either home or a skilled nursing facility and the pharmacist had access to the patient's hospital electronic record. The MTM review included a comprehensive medication safety assessment and barriers to adherence were identified and addressed. The DCP used teach-back education to identify medication non-adherence and to educate the patient about early symptoms associated with worsening of the patient's condition, a unique feature of this TOC model.

Hospital records and DCP documentation were reviewed to describe pharmacist-interventions and assess the impact on 30-day readmissions. A total of 456 patients were referred to the DCP, with 340 patients in the 'intervention' group and 116 in the 'usual care' group. In the intervention group, 44 (13%) compared with 20 (17%) of the usual care, were readmitted within 30-days post-discharge, which was not significant, noting it only evaluated readmission to the same hospital. The DCP pharmacists conducted 1242 clinical interventions with participants, of which 53% related to medication safety.

In Australia, there is a need to develop and evaluatee innovative interdisciplinary ToC services, that include telehealth and other enabling technologies, to enhance access and reach, with the view to reducing medication misadventure, readmissions and related health care costs.

Bingham J, Campbell P, Schussel K, Taylor AM, Boesen K, Harrington A, et al. The Discharge Companion Program: An Interprofessional Collaboration in Transitional Care Model Delivery. Pharmacy (Basel) 2019 (Jun); 7(2): 68.

Improving care transitions for hospitalised veterans discharged to skilled nursing facilities: A focus on polypharmacy and geriatric syndromes

US research shows that geriatric syndromes and polypharmacy are common in older patients at the point of discharge, especially when discharged to a skilled nursing facility (SNF) for rehabilitation or nursing care. Further, this population is at increased risk of unplanned readmissions and associated morbidity and mortality. In the US, it is estimated that around 25% of veterans patients are readmitted. Geriatric syndromes most commonly include: cognitive impairment, delirium, falls, depression, pain, incontinence, unintentional weight loss and pressure ulcers. Polypharmacy (five or more medications) and hyper-polypharmacy (10 or more medications) may also be considered geriatric syndromes. The presence of geriatric syndromes is rarely communicated to the next provider at discharge and can contribute to functional decline and readmissions. Further, polypharmacy increases the risk of adverse drug events that contribute to readmissions.

This paper reports a one-year quality improvement (QI) study at a Veterans acute care hospital. In the first phase of the study, researchers audited 26 patient charts to understand the baseline frequencies of information communicated at hospital discharge. This informed the second phase, where the primary objective was

to standardise the assessment of seven geriatric syndromes and polypharmacy, and to communicate this information during care transitions for a sample of veterans discharged to a SNF. The interdisciplinary intervention included a 'warm handover' by a transitions advocate who contacted a SNF nurse and ensured that standardised documents –a Nursing Transition Summary and a Medication Management Form (prepared by a pharmacist) – were received and any questions or concerns were addressed. It was found that the 134 studied veterans were prescribed an average of 14.7 medications at hospital discharge and 75% of veterans had more than two geriatric syndromes, some of which began during hospitalisation. Although this effort did not significantly impact 30-day readmissions, it was concluded that if detailed information about geriatric syndromes (including polypharmacy) is provided at 'handover', it may improve communication and the quality of the care transition for older, vulnerable patients and in turn prevent readmissions.

Mixon AS, Yeh V, Simmons S, Powers J, Ely EW, Schnelle J, Vasilevskis EE. Improving Care Transitions for Hospitalized Veterans Discharged to Skilled Nursing Facilities: A Focus on Polypharmacy and Geriatric Syndromes. Geriatrics (Basel) 2019 (Mar); 4(1): 19.

WOMEN'S AND NEWBORN HEALTH

GRIT Liaison for #SHPAWomenNewborn: **Stephanie Hoy** and **Kate Luttrell**

The search for effective pre-eclampsia prevention remains elusive

Pre-eclampsia affects multiple organ systems and complicates 3-5% of pregnancies. It is a major cause of pre-term delivery, maternal and perinatal morbidity and mortality globally, with hypertensive disorders of pregnancy contributing to 14% of maternal deaths worldwide. Delivery of the placenta is the only known cure. Low-dose aspirin reduces the risk of pre-eclampsia by 17%, however additional effective, safe and affordable prophylaxis is needed.

This study investigated whether high-dose folic acid supplementation is effective in prevention of pre-eclampsia in women with one or more risk factors, including pre-existing hypertension, pre-pregnancy diabetes, twin pregnancy, previous pre-eclampsia or body mass index ≥35. This was a randomised, phase III, double-blind international, multicentre clinical trial, conducted across 70 obstetric centres in five countries. High-risk pregnant women (n=2464) were randomised to receive either high-dose folic acid (4 mg) or placebo. The primary outcome was pre-eclampsia. Pre-eclampsia occurred in 14.8% of women in the folic acid group, and 13.5% in the placebo group. The investigators concluded that supplementation with high-dose folic acid beyond the first trimester does not prevent pre-eclampsia in women at high-risk of developing this condition.

It is important to distinguish between folic acid used to prevent neural tube defects, which has substantial supporting evidence, and folic acid for the prevention of pre-eclampsia. Supplementation with high-dose folic acid beyond the first trimester has become widespread, despite a recent Cochrane review being unable to report on its benefits in pre-eclampsia due to lack of clinical trial data. There is a clinical need to define when to discontinue folic acid supplementation as current guidelines do not provide clear guidance beyond the first trimester.

Wen SW, White RR, Rybak N, Gaudet LM, Robson S, Hague W, et al. Effect of high dose folic acid supplementation in pregnancy on pre-eclampsia (FACT): double blind, phase III, randomised controlled, international, multicentre trial. BMJ 2018; 362: k3478.

Does duration of empirical antibiotics in premature neonates impact outcomes?

Early onset sepsis can be a serious complication in premature or very low birth weight neonates. It is routine practice in many neonatal intensive care units to commence empirical antibiotics in these patients from birth, continuing until presence of pathogenic organisms can be excluded. Some

patients may receive antibiotics for five days or longer, despite having negative blood cultures. Unnecessary antibiotic exposure can contribute to antibiotic resistance and adverse neonatal outcomes.

This large retrospective cohort study aimed to compare the short-term outcomes of premature neonates without culture-proven sepsis who received different durations of empirical antibiotics in the first week of life.

Of the 14 207 infants included in this study, 21%, 38% and 41% received 0, 1–3, and 4–7 days of antibiotics respectively. Even after adjusting for confounding variables, prolonged empirical antibiotic treatment for 4-7 days was associated with a higher adjusted odds ratio of mortality or major morbidity compared to those receiving no antibiotics (aOR 1.24) or 1–3 days of antibiotics (aOR 1.38). This included higher rates of chronic lung disease, patent ductus arteriosus requiring treatment, retinopathy of prematurity and severe neurologic injury.

The outcomes of this study demonstrate the potential for clinical pharmacists and antimicrobial stewardship teams to optimise antibiotic use in this patient cohort. Of particular concern is the significant use of prolonged antibiotic courses in infants considered to be low-risk for early onset sepsis.

Ting JY, Roberts A, Sherlock R, Ojah C, Cieslak Z, Dunn M, et al. Duration of initial empirical antibiotic therapy and outcomes in very low birth weight infants. Pediatrics 2019; 143(3): e20182286.

Does progesterone therapy affect outcomes after bleeding in early pregnancy?

Bleeding in early pregnancy is very common and is often associated with early pregnancy loss. Progesterone is an essential hormone in pregnancy, hence supplementation with progesterone during early pregnancy has been investigated for prevention of miscarriage in women with a history of recurrent miscarriage, and for maintaining a pregnancy in women who have started to bleed in early pregnancy.

This trial evaluated whether treatment with progesterone would result in a higher incidence of live births among women with bleeding in early pregnancy than placebo. It was a multicentre, randomised, double-blind, placebo-controlled trial. Women were randomly assigned to receive either vaginal progesterone 400 mg pessaries or matching placebo twice daily, from the first time they presented with bleeding, through to 16 weeks of gestation. The trial enrolled women who were aged 16 to 39 years and who had completed less than 12 weeks of pregnancy. A total of 4153 women were enrolled in the trial. The number of live births after at least 34 weeks of gestation was 75% in the progesterone group and 72% in the placebo group. Subgroup analysis showed that the greater the number of previous miscarriages, the greater the benefit of progesterone in women with early pregnancy bleeding.

This study concluded that the use of progesterone in early pregnancy bleeding during the first 12 weeks of pregnancy did not result in significant improvement in the incidence of live births. It is important to note there is evidence to support the use of progesterone for prevention of pre-term birth in women with a short cervix or a history of spontaneous preterm birth.

Coomarasamy A, Devall A, Cheed V, Harb H, Middleton L, Gallos I, et al. A randomised trial of progesterone in women with bleeding in early pregnancy. NEJM 2019; 380: 1815–24.

nitty gritty

What is the nitty gritty? The grist and gist of SHPA's recent operations: fundamental news bites about what's happening on the ground to further the aims of the Society, along with other morsels of member news.

Challenging start to 2020 as SHPA backs bushfire relief

As many parts of Australia faced an unprecedented bushfire season, SHPA reinforced its commitment to partnering wherever possible to support the volunteers and professionals providing support to impacted Australians and Australian wildlife.

SHPA is donating 10% of all of its January and February event registration fees to the Community Enterprise Foundation's National Bushfire Disaster Appeal, and WIRES' Wildlife Emergency Fund.

We have reached out directly to all Directors of Pharmacy and Chief Pharmacists in affected areas to ascertain how our professional community can help fill any gaps in government and volunteer support. We've also established the SHPA Staffing Relief Register, a list of hospital pharmacists who may be available to travel to remote or rural centres in times of disaster or acute resource shortfall. The Register is not a locum employment service, but is intended to connect hospital pharmacy departments or teams in need with potentially available pharmacists via hidden (BCC) email. If you would like to add your name, phone number and email to the register, please email us at shpa@shpa.org.au.

Further, SHPA has facilitated contact between Branch Committee Chairs and the Council of Pharmacy Schools, which has advised academic pharmacists from its member University Schools and Departments of Pharmacy have expressed availability and interest in providing temporary locum relief to pharmacies in affected areas. For more information, contact your SHPA Branch Chair.

Finally, we've partnered with the Australian Veterinary Association Victoria to facilitate donation of unscheduled medications and consumables to aid wildlife rescue and, in a broader sense, 2020 will see a solar energy fit-out of SHPA's Collingwood office, mandatory carbon offset for corporate travel, and all proceeds from internal staff fundraising events going toward bushfire relief.

SHPA's Pharmacy Practice Pillars Conference is coming!

SHPA's second Specialty Practice conference unites three streams under the banner of the SHPA 2020 Pharmacy Practice Pillars Conference, with the conference program drawing on the expertise of hospital pharmacy leaders across SHPA's Medication Safety, Dispensing and Distribution and Electronic Medication Management (EMM) streams.

To be held on 30 and 31 May in Melbourne, the pillars of hospital pharmacy and will focus on building a stronger human safety net in a digital future. The call for abstracts is now open, with further information available via the SHPA website, SHPA eNews, member email and across social media channels! For more information go to **conferences.shpa.org.au**

New Standard of Practice released

In December 2019, we released the *Standard of Practice in Emergency Medicine for Pharmacy Services*, a new blueprint for emergency medicine pharmacy services to improve patient care while reducing total service cost in Australia's emergency departments and short stay units, including 1:10 pharmacist-patient ratios.

The addition of a clinical pharmacist within an emergency department has been proven to reduce the number of medicines omissions and dosing delays, and a systematic literature review from 2009-16 demonstrated the role of the emergency pharmacist led to a diverse range of positive patient outcomes. However, 2016 research showed 40% of Australian hospitals do not have a dedicated emergency medicine pharmacy service.

Through the leadership of SHPA members, and partnership with the Australasian College for Emergency Medicine (ACEM), this Standard provides clear guidance that supports the closing of this gap to the benefit of Australia's most critically ill patients.

The Standard was published in the December 2019 issue of the Journal of Pharmacy Practice and Research (JPPR); read more at **bit.ly/EmergMedSoP**

Call to embed pharmacy in aged care to 'shift the dial' on patient safety

In late November we welcomed the Morrison Government's $537 million response to the Royal Commission into Aged Care Quality and Safety Interim Report, while reiterating the need for embedded pharmacist positions in the aged care setting to ensure the additional investment truly 'shifts the dial' on medicines safety and quality.

The increase of $25.5 million in funding for medication management programs should consider the best possible approach to delivering much-needed clinical pharmacy services in aged care. Research shows however, that in many cases the majority of pharmacy recommendations made through RMMRs do not translate into action by prescribers, a critical disconnection which should be remedied with the inclusion of pharmacists in residential aged care teams. Read more at **bit.ly/SHPAAgedCareRC**

SHPA calls for embedded pharmacist positions in the aged care setting.

‘Investment to impact’ as SHPA sums up 2019

Held in conjunction with Medicines Management 2019, SHPA’s 2019 Annual General Meeting saw the launch of the *Investment to impact: 2019 SHPA Annual Report* video and supporting summary.

The video highlights span advocacy, Residency, CPD and events and the release of the visionary *Advancing Australia’s Pharmacy Workforce*. 2019 saw national policy achievements in areas such as opioid management, and SHPA continued to drive the conversation on electronic medicines management and closed loop systems.

In another busy year,SHPA began the progressive release of new and updated guidelines on optimal clinical practice, saw growth across national and Branch CPD events and roll-out of Residency sites, launched the CPD Central planning and recording too, remained the principal driver of the Advancing Practice credentialing program and saw the first year of full operation of the SHPA Mentoring Program. Read more at **bit.ly/InvestmenttoImpact**

New EMIT resource launched!

December saw the release of the long-awaited *EMIT (Electronic Medicines Information Training)*! The latest addition to SHPA Online CPD, EMIT provides essential learning relevant for all pharmacists across 22 modules, and serves as critical introductory learning for pharmacists wishing to work in the medicine information specialty area and community pharmacists interested in moving into the hospital setting.

EMIT provides up-to-date, curated education on seeking and providing medicines information pharmacists can trust. Comprehensively reviewed and updated by expert Medicines Information Pharmacists, EMIT features a new module on Toxicology and all-new multiple-choice questions, all clinically relevant to Australia.

EMIT is suitable for any Australian pharmacist seeking to enhance their daily practice and impact on patient care, while also facilitating the accrual of up to a combined 44.5 CPD credits (including 41 Group 2 credits) across the 22 modules, which include Mental Health, Adverse Drug Reactions and Critical Evaluation.

As a key member benefit, all EMIT core content is free for SHPA members, while CPD 'Test yourself' sections will be 50% off, at $20 per module, or $220 for all 22 modules. Explore EMIT at **shpa.org.au/emit**

EMIT provides essential learning relevant for all pharmacists.

Adelaide set to host Medicines Management 2020!

After 12 years, Australia's largest scientific pharmacy conference is heading back to Adelaide, to be held at the Adelaide Convention Centre Thursday 19 – Saturday 21 November 2020.

This year's first major announcement for Medicines Management 2020 (MM2020), the 46th SHPA National Conference is the reveal of your new Scientific Program Committee, with representation from all seven SHPA Branches!

Led by Chair Duncan McKenzie (Tas) and Deputy Chair Anna McClure (SA/NT), the committee includes prominent pharmacists and technicians Megan Arnold (ACT), Jess Eglington (Qld), Yvette Haselden (Qld), Tricia Holmes (SA/NT), Chris Hopps (WA), Jacinta Johnson (SA/NT), Kate Luttrell (Tas), Cathy Martin (NSW), Anish Philip (Vic), Mark Sheppard (Vic), Janet Sluggett (SA/NT) and Josephine To (SA/NT).

While we welcome our new Scientific Program Committee, we also wish to take this time to extend our thanks our first truly national committee (pictured) for tirelessly bringing their skills and passion to what was a resoundingly successful 2019 conference.

See the centrespread of this issue to relive the magic of MM2019.

MM2019 Scientific Program Committee (left to right): Natalie Tasker – Chair (NSW), Kate Luttrell (Tas), Sarah Charles (Vic), Alan Tuxford (Vic), Mel Anderson (NSW), Adam Hort (WA), Yvette Haselden (Qld), Jason Waddell (Qld), Josephine To (SA/NT), Duncan McKenzie – Deputy Chair (Tas), Daniel Trajkov (Qld), Margie Butnoris (Qld), Cathy Martin (NSW). Absent: Rachel Raleigh (Qld).

Letters
TO THE COMMUNITY

Pharmacy GRIT strives to be immersed in the SHPA membership. *Letters to the Community* is a place for members to share ideas and opinions with the rest of the Society – especially when you might not have any other forum where you can share these ideas and opinions. In the *Pharmacy GRIT* spirit, it is a place for boldness, innovation, and reports from the frontline of practice. Be candid and constructive – and be heard!

Vitamin D and Parkinson's disease: Causal or correlational?

To the SHPA Community,

Parkinson's disease (PD) is a common neurodegenerative disorder which poses a significant burden to patients and healthcare systems.[1] Studies have investigated vitamin D deficiency as a cause of PD and found an inverse association between serum vitamin D levels and PD.[2–5] Establishing a clear causal association, by evaluating evidence from aetiological studies, can inform clinical practice to identify if vitamin D supplementation should be recommended to prevent or delay PD onset and progression.

One of the most widely accepted causal associations was established by the *British Doctors Cohort Study.* In 1951, Richard Doll and Austin Bradford Hill conducted a prospective study of the effects of tobacco smoking within a cohort of 41,024 physicians.[6] The cohort was followed over 50 years and a causal link between smoking and lung cancer, amongst other potentially preventable diseases, was confirmed.[6] As a result of these landmark studies, smoking cessation is universally advocated.

A key method for establishing causality is Hill's Criteria of Causation, published in 1965.[7] It has nine considerations: (1) strength, (2) consistency, (3) specificity, (4) temporality, (5) biological gradient, (6) plausibility, (7) coherence, (8) experimental evidence, and (9) analogy.[7] These considerations should be interpreted in the context of existing disease knowledge. Criterion 3 or 'specificity' requires that a single causal factor leads to an observed effect.[7] As our understanding of causality has evolved, we now know that multiple exposures can cause a single disease, and a specific exposure may cause multiple diseases.

Of the remaining eight considerations, Criterion 4 or 'temporality' is essential.[7] An exposure must precede disease development. Numerous cross-sectional studies have investigated the relationship between serum vitamin D levels and PD.[5,8] However, these studies cannot establish temporality because they examine disease prevalence. PD diagnosis has been based on clinical presentation and symptoms,[9] meaning that the date of PD diagnosis may not indicate actual disease onset. Due to the complexity of PD, it is difficult to determine if vitamin D deficiency precedes PD onset.

Several studies assessed differing serum vitamin D levels,[2,5,8] finding that lower concentrations had stronger associations with PD. These studies satisfy Criterion 5 or 'biological gradient', providing evidence of a dose-response relationship. Studies have also investigated Criterion 6 'plausibility', by providing evidence for biological mechanisms, e.g. the vitamin

> Whilst pharmacists can advise the use of vitamin D supplementation for patients with existing PD in the context of vitamin D deficiency, they cannot advocate supplementation as a means of disease prevention or progression.

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D receptor gene was investigated for its role in PD pathogenesis.[2,10,11] Given the evidence for plausibility, Criterion 7, or coherence, is also satisfied because the biological evidence is in agreement. Strength of an association, or Criterion 1, is more suggestive of causality than weak associations.[7] However, there is conflicting evidence as some studies have found strong associations,[2,3] while others show insignificant results.[12] Thus, Criterion 2 is not met because there is reduced consistency across studies.

Currently there is insufficient evidence for a clear causal relationship between serum vitamin D levels and PD. Although there is a definite correlation, further research is needed to determine causation. Whilst pharmacists can advise the use of vitamin D supplementation for patients with existing PD in the context of vitamin D deficiency, they cannot advocate supplementation as a means of disease prevention or progression.

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REFERENCES

1. Stovner LJ, Nichols E, Steiner TJ, Abd-Allah F, Abdelalim A, Al-Raddadi RM, et al. Global, regional, and national burden of migraine and tension-type headache, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. The Lancet Neurology 2018; 17(11): 954-976.
2. Wang L, Evatt ML, Maldonado LG, Perry WR, Ritchie JC, Beecham GW, et al. Vitamin D from different sources is inversely associated with Parkinson disease. Mov Disord 2015; 30(4): 560-566.
3. Evatt ML, Delong MR, Khazai N, Rosen A, Triche S, Tangpricha V. Prevalence of vitamin d insufficiency in patients with Parkinson disease and Alzheimer disease. Arch Neurol 2008; 65(10): 1348-1352.
4. Liu Y, Zhang BS. Serum 25-hydroxyvitamin D predicts severity in Parkinson's disease patients. Neurol Sci 2014; 35(1): 67-71.
5. Shrestha S, Lutsey PL, Alonso A, Huang X, Mosley Jr TH, Chen H. Serum 25-hydroxyvitamin D concentrations in Mid-adulthood and Parkinson's disease risk. Mov Disord 2016; 31(7): 972-978.
6. Doll R, Hill AB. The Mortality of Doctors in relation to their smoking habits: a preliminary report. BMJ: British Medical Journal 2004; 328(7455): 1529-1533.
7. Fedak KM, Bernal A, Capshaw ZA, Gross S. Applying the Bradford Hill criteria in the 21st century: how data integration has changed causal inference in molecular epidemiology. Emerg Themes Epidemiol 2015 ;12: 14.
8. Evatt ML, DeLong MR, Kumari M, Auinger P, McDermott MP, Tangpricha V. High prevalence of hypovitaminosis D status in patients with early Parkinson disease. Arch Neurol 2011; 68(3): 314-319.
9. Lewis PA, Spillane JE. Chapter 3 – Parkinson's Disease. In: Lewis PA, Spillane JE, editors. The Molecular and Clinical Pathology of Neurodegenerative Disease: Academic Press; 2019. p. 83-121.
10. Kim JS, Kim YI, Song C, Yoon I, Park JW, Choi YB, et al. Association of vitamin D receptor gene polymorphism and Parkinson's disease in Koreans. J Korean Med Sci 2005; 20(3): 495-498.
11. Ding CH, Dhima JK, Lockhart NK, Locascio TJ, Hoesing SA, Duong WK, et al. Unrecognized vitamin D3 deficiency is common in Parkinson disease: Harvard Biomarker Study. Neurology 2013; 81(17): 1531-1537.
12. Petersen MS, Bech S, Christiansen DH, Schmedes AV, Halling J. The role of vitamin D levels and vitamin D receptor polymorphism on Parkinson's disease in the Faroe Islands. Neurosci Lett 2014; 561: 74-79.

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