Clinical Snippets June 2025

1. NOS and Nangs

A recent case I have looked at involved a young adult female presenting with slowly progressive bilateral lower limb sensory then motor changes eventually diagnosed as NOS-induced myelopathy (once her NO2 abuse was disclosed). A case series on the condition was published last year in NZMJ but there is an excellent RACGP article from 2021 examining the issue that includes the following points:

(i) Recreational NO2 use is widespread with ease of access and the common misperception of a 'safe high' contributing to abuse of the drug. The gas is cheap and easily accessible in the form of small metallic canisters (or larger decorated canisters) used as a propellant in whipped cream dispensers. Canisters, colloquially called 'nangs' or 'whippits', can be purchased in bulk from convenience stores or online suppliers, ostensibly for making whipped cream. The gas is discharged into a balloon using a small mechanical 'cracker' and then inhaled. The fleeting 'high' lasts only for a minute or so, and it is therefore common for people to use tens to hundreds of canisters in a session.

(ii) Nitrous oxide exerts its neurotoxicity through vitamin B12 inactivation, which disrupts myelin sheath maintenance, leading to peripheral and central nervous system demyelination. Importantly, patients often present with non-specific sensorimotor signs and symptoms with normal serum vitamin B12 levels. Early recognition and treatment are crucial to limit long-term neurological sequelae. Patients who are predisposed to Vitamin B12 deficiency for other reasons (eg malabsorption) may be more susceptible to the neurotoxic effects of nitrous oxide abuse. While neurological manifestations can occur in isolation, other features typical of chronic vitamin B12 deficiency may also be present such as glossitis and clinical features of anaemia. Neuropsychiatric presentations including psychosis have also been reported.

(iii) Patients can present with varying degrees of upper and lower motor neurone involvement resulting from the combination of a myelopathy and peripheral neuropathy, respectively. Spinal cord involvement (most commonly reported) manifests as spasticity, pyramidal pattern weakness and dorsal column sensory loss. Peripheral nerve involvement results in length-dependent large and small fibre sensory loss (often painful) and symmetrical distal weakness. Some patients develop visual disturbance because of optic neuropathy. The result is a combination of spasticity, sensory ataxia and weakness. The differential diagnosis of such a presentation is quite broad (discussed in detail in the RACGP article) but the earlier NO2 neurotoxicity is recognised and treatment commenced, the better the chance of full recovery.

(iv) In most cases of nitrous oxide toxicity, haemoglobin and MCV are normal, although in chronic abuse, a macrocytic anaemia may be present alongside a megaloblastic blood film. Importantly, while the serum B12 level may be low, it is often within the normal range, which can be falsely reassuring. This is because nitrous oxide causes inactivation of vitamin B12 rather than true deficiency. Therefore, if there is clinical suspicion, it is critical to check

homocysteine and methylmalonic acid (MMA) levels, which are functional indicators of vitamin B12 status and are elevated in >98% of patients with clinical deficiency. Elevated MMA is specific for vitamin B12 deficiency, whereas homocysteine may also be elevated in patients with folate deficiency, renal failure and hypothyroidism.

(v) Treatment involves cessation of nitrous oxide and immediate administration of hydroxocobalamin (B12). Current guidelines suggest intramuscular, rather than oral, treatment, at a dose of 1mg on alternating days for two weeks, although it is reasonable to continue with this replacement schedule while there is ongoing neurological improvement. Homocysteine and MMA levels recover rapidly with treatment and can be used as a marker of biochemical treatment response; however, clinical response always lags behind. B12 maintenance therapy is needed if an additional secondary cause for B12 deficiency is found. Folate deficiency should be corrected alongside vitamin B12. Some online 'nang' forums suggest oral vitamin B12 supplementation as 'prophylaxis' while using nitrous oxide; however, there is debate over how efficacious this might be in preventing neurotoxicity.

(vi) Medsafe notes in September 2024 that nitrous oxide, when intended for use for a therapeutic purpose and presented for use as such, is a medicine under the Medicines Act 1981. However, if it is not intended for a therapeutic purpose and is intended for use or is used as a recreational drug, it is a psychoactive substance under the Psychoactive Substances Act 2013. Supply of a psychoactive substance for the primary purpose of inducing a psychoactive effect, without a product approval and a licence issued under the Psychoactive Substances Act 2013 is prohibited. There are serious penalties, including substantial fines and imprisonment should a successful prosecution be taken against an organisation or individual supplying nitrous oxide for this purpose.

(vii) RNZ reports an interview in September last year with [xx] who owns a convenience and vape store in the Auckland CBD, who said the store sells nitrous oxide canisters to those who do not appear to be using them for recreational use. They sell them in boxes of 10 for $20. "If they call it nangs, it means they're using it for other ways. But, if some people come in and ask us for cream chargers, first, we ask for ID if they are over 18, and we ask the purpose for use. "If they say for cooking or something, we will sell it," he said. It seems similarly easy to buy small and large canisters online.

2. Updated rheumatic fever guidelines

Just a reminder that the Aotearoa New Zealand Rheumatic fever guidelines were updated mid last year with a handy Summary guide for clinicians containing key messages and changes in clinical guidance, along with tables and algorithms summarising recommendations for diagnosis and management of acute rheumatic fever and rheumatic heart disease. Some key points include:

- Modifications have been made to the assessment of ARF risk in a person with a sore throat with higher-risk definition now Māori or Pacific peoples who are 3–35 years (with emphasis on those 4–19 years) OR Personal or family history of ARF/RHD.
- Rapid antigen diagnostic tests (RADT) are not recommended in Aotearoa.
- Phenoxymethylpenicillin dosing has been simplified to twice daily dosing (15mg/kg (maximum 500mg/dose) twice daily).
- Recommendations have been added for the single dose administration of IM benzathine penicillin as an option (see algorithm for doses).
- Roxithromycin has been removed for people with documented penicillin allergy, while erythromycin remains available for this indication (20mg/kg/dose two times daily - max 1.6g daily).
- All oral treatments are for 10 days unless a swab result (if taken) returns a negative result
- People at low risk of ARF usually only require their symptoms to be managed and neither swabbing nor antibiotics are usually indicated.
- Streptococcal antibody titres to support the diagnosis of ARF have been revised reference intervals updated. Other changes aimed at increasing detection of acute rheumatic fever and accuracy of diagnosis are discussed and I recommend reviewing at least the summary document.

3. Antipsychotic audit

Best Practice Bulletin Issue 122 announces release of a new clinical audit tool on antipsychotic prescribing in older people.

The audit identifies patients aged 65 years and over who are taking an antipsychotic medicine to assess whether there is an ongoing indication for treatment, whether non-pharmacological interventions have been discussed and if treatment has recently been reviewed. There are links to the 2020 BPAC publication on appropriate prescribing of antipsychotics in this age group.

This is an area where I see complaints not infrequently with issues often relating to lack of information provided at the time of prescribing regarding the nature of the medication, off-label prescribing (if relevant eg quetiapine for insomnia) and potential risks. New Zealand Formulary carries a blue-box warning noted below for quetiapine:

Antipsychotic use in older people

Older people are more susceptible to the adverse effects of antipsychotics (see Antipsychotic use in dementia and Anticholinergic burden below)

- Antipsychotic drugs should **not** be used in older people to treat mild psychotic symptoms.
- Initial doses of antipsychotic drugs in elderly patients should be reduced (to half the adult dose or less), taking into account factors such as the patient's weight, co-morbidity, and concomitant medication.
- Treatment should be reviewed regularly.

4. ACC Resources

The ACC monthly provider update last month included links to some handy resources:

(i) ACC National Sport Concussion Management guidelines that includes a one page Graduated return to education/work & sport protocol outlining the various recovery stages and useful as an 'official' guide for patients/parents/coaches wanting to ' bend the rules'. At this point I'll put in another plug for the Brain Injury Screening Tool which can be completed on line and downloaded as a PDF and is great for monitoring recovery from a TBI.

(ii) The update notes BPAC have recently published a comprehensive guide and B-Quick summary to support primary care clinicians in navigating the ACC recovery at work process, including considerations when issuing medical certificates. BPAC have also developed a case study and quiz with interactive feedback for this topic. The quiz follows two different cases through the recovery at work framework.

(iii) An ACC-produced downloadable resource for patients on understanding fit for selected work medical certificates is available for medical and nurse practitioners to support their kiritaki (clients). It explains the benefits to them, why they're not 'fully unfit', and how to apply for weekly compensation and other supports.

(iv) ACC Provider Videos are available. These short videos cover various aspects of working with ACC including topics such as gradual process injury, appropriate use of READ codes, treatment injury, updating or adding a diagnosis for cover etc.

5. June Prescriber Update Highlights

The June 2025 Prescriber Update includes the following brief updates:

(i) Patients with BRASH syndrome (bradycardia, renal failure,AV node blockade, shock, hyperkalaemia) may present with a range of symptoms from asymptomatic bradycardia to multiorgan failure. The main differential diagnosis to consider is isolated hyperkalaemia. BRASH syndrome involves the synergistic effects of atrioventricular (AV) node blockers with hyperkalaemia, causing profound bradycardia. Triggers include hypovolaemia due to illness and starting or increasing the dose of medicines such as AV blockers (primarily beta-blockers and calcium channel blockers). Medicines that cause acute kidney injury, hyperkalaemia or reduced cardiac output may also contribute to the development of BRASH syndrome (eg ACEs, ARBs, spironolactone). **Healthcare professionals should consider BRASH syndrome in patients taking AV blocking medicines who present with signs of bradycardia and/or hyperkalaemia, even if they seem relatively well.**

(ii) Peripheral neuropathy is a known side effect of vitamin B6. Vitamin B6 is commonly present in dietary supplements such as vitamin B complexes and multivitamin and mineral preparations, often in combination with magnesium or zinc. Vitamin B6 is also an ingredient in some medicines. **In patients with signs and symptoms of peripheral neuropathy, remember to ask about supplement use.**

(iii) **Hepatic reactions can occur with both short-term and long-term nitrofurantoin use.** Use nitrofurantoin with caution in patients with hepatic dysfunction. Nitrofurantoin is contraindicated in patients with previous history of nitrofurantoin-related hepatotoxicity. Educate patients and caregivers about the signs and symptoms of hepatic dysfunction, such as yellowing of the skin or eyes, upper right abdominal pain, dark urine and pale or grey-coloured stools, itching or joint pain and swelling, and advise them to seek immediate medical advice if they occur.

6. Deceased patient notes

- A recent NZ Doctor article discussed actions you should take if you get a request for a deceased person's medical information. Rule 11 of the Health Information Privacy Code generally prohibits a health agency from disclosing a person's health information and it still applies to a deceased individual's information. This means to disclose health information about a person who has died, an agency must be satisfied that one of the exceptions in rule 11 applies.

- Rule 11(5) gives the deceased patient's representative (executor or administrator) the legal right to request access to their health information. This is treated as if the request was made under principle 6 – access to personal information by the person whose information it is. Someone who had an enduring power of attorney while the patient was alive is not always the executor or administrator of their estate once they've died, so it's important to check who the representative is once the patient has died.

- If someone who is not the legal representative makes a request, an agency may choose to disclose the information if it reasonably believes one of the other exceptions applies. However, this only allows an agency to decide whether it wishes to disclose the information. It is not required to and couldn't be forced to exercise its discretion either way. Also, Section 53(b)(ii) of the Privacy Act permits an agency to withhold personal information if releasing it would involve the unwarranted disclosure of the affairs of another individual or a deceased individual,

- Rule 11(2)(b) allows a health agency to disclose information to a near relative of the deceased person in accordance with recognised professional practice. This exception requires the agency to consider whether the disclosure contradicts the patient's or

their representative's wishes. It will ultimately be up to the agency holding the information to determine whether this applies.

- The bottom line is that you are probably better to err on the side of caution and seek medicolegal advice if the situation is unclear.

7. Odd things

(i) Issue 251 of GP Research review discusses a case study published in Ear, Nose & Throat Journal of a patient who reported temporary vertigo and nausea following head movements, after he began using earbuds during exercise and while driving. During an acute vertigo episode, he returned a positive Dix Hallpike test, and physical examination indicated posterior semicircular canal benign paroxysmal positional vertigo in the right ear. After the patient stopped using earbuds, he experienced complete resolution of dizziness, tinnitus and tingling within the ear. The patient then began using bone-conduction headphones, and after 6 months, he had not experienced any subsequent dizziness or other symptoms. It was felt he suffered from earbuds induced benign paroxysmal positional vertigo and it may be worth enquiring about earbud use in patients presenting with BPPV symptoms.

(ii) Medscape family Medicine reported on research suggesting saffron may help treat sexual dysfunction related to selective serotonin reuptake inhibitors (SSRIs). Results of a preliminary new review found saffron, a spice derived from the flower of *Crocus sativus*, commonly known as the "saffron crocus," reduced SSRI-related erectile dysfunction in men and boosted arousal in women. After conducting a literature search, the researchers included five studies in their review, all conducted in Iran between 2009 and 2017. It is noted that Iran is the world's leading exporter of saffron, producing about 90% of the global supply. It has long been used there both in cuisine and for medicinal purposes. Four of the studies were randomized controlled trials (RCTs), while the fifth was a single-group clinical trial. The various studies used doses ranging from 5-30mg saffron daily with the author noting doses above 5g daily are considered unsafe. Saffron capsules are readily available in does from 13.5 - 88.5mg