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Re: Real doctors treat more than one species

I must admit that I am not sure what to make of Dr Gallagher's article, "Real doctors treat more than one species," in the January/February issue [*BCMJ* 2016;58:44-45].

The analogy of the appropriateness of using different medications in different species in veterinary practice combined with a simple classification of groups of human patients based on age suggests the use of a simple, one-size-fits-all system of medicating frail geriatric patients. In medical practice, however, I have found that treatment decisions tend to be complex and prevent the use of simple treatment protocols. While special care must be used in prescribing medications to geriatric patients, polypharmacy or the simultaneous use of multiple medications should not be described pejoratively because in many cases it is entirely appropriate. Interestingly, Dr Gallagher notes that a few medications account for a significant percentage of adverse drug reactions in the elderly but, not surprisingly, these same medications largely overlap with a list of four high-alert medications accounting for the most frequent and severe adverse drug reactions in hospital patients at any age.¹ In contrast, drugs on the ubiquitous Beers list account for less than 9% of adverse drug reactions in elderly patients presenting to the ER.² In addition, there are concerns that using a broad stroke to vilify the use

of multiple medications in geriatric patients can result in underuse of beneficial medication in the elderly.^{3,4}

In closing, the foregoing suggests to me that older, frail patients need a detailed, individualized review of their medications in all situations to optimize their outcome, and that a cookie-cutter approach is ill advised. Perhaps rather than looking to veterinary science we should look to physics for advice on how to approach complex medical issues. Dr Einstein's recommendation that we should simplify everything as much as possible, but no more, is appropriate in all situations.

—Aidan Byrne MD, FCFP
Sidney

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Author replies

Thanks to Dr Byrne for writing in response to my article, "Real doc-

tors treat more than one species." As I mentioned in the article, this was a superficial analogy to get people thinking. And it seems to have triggered some thinking in Dr Byrne that I would like to address.

Dr Byrne suggests that my article advocates a "simple, one-size-fits-all" approach to medicating frail older patients. There is nothing simple about discussing preferences for care with patients. It is time consuming and requires emotional energy. Describing according to time-to-benefit requires a prognosis estimate and knowledge of the medical literature.

Dr Byrne notes that the few medications that cause frequent hospitalizations in older adults are the same medications as those in adults of any age. What I was pointing out in the article is that the medications that cause hospitalizations (warfarin, antiplatelet agents, insulin, and hypoglycemic) are medications that are highly unlikely to benefit those in their last months of life, and I was urging physicians to stop these medications when possible. Dr Byrne also criticizes the Beers criteria because they identified less than 10% of drugs causing emergency room adverse-event visits. Adverse events can cause symptoms and signs that result in needless investigations, further medications, and poor quality of life, and may never result in an emergency visit.

Perhaps Dr Byrne felt that an analogy to veterinary practice was too simplistic, but a veterinarian treat-

ing an animal would not look at the species as the only factor in deciding on therapy. Age, habits, renal or liver function, route of administration (even our vet is challenged getting a pill into one of my cats!), and preferences for care (as expressed by the owner) would all be considered prior to therapy.

Dr Byrne advocates looking to physics for advice on complex systems as an approach to frail older adults. While I agree this approach may add a greater understanding of how frailty, disability, and morbidity relate to each other, I am not sure it would acknowledge the significant role that prognosis awareness and an individual's preferences should have in the care we provide for older adults.

—**Romayne Gallagher, MD, CCFP(PC), FCFP**
Geriatrics and Palliative Care Committee

Vaccine administration and placement

Both the *Immunization Bulletin* from the Office of the Chief Medical Health Officer, Vancouver Coastal Health, dated 1 September 2015, and the *Vaccine Administration and Pain Management Information Circular* from the same source dated September 2015 advocate subcutaneous vaccine

injection into the upper-outer triceps region for patients equal to or over 12 months of age. I recommend that Vancouver Coastal Health revise such a recommendation, and I advise immunizing health professionals about the hazards inherent to those 2015 recommendations.

Nerve injuries following injections have long been recognized to occur more frequently than was thought.¹ Indeed, inadvertent injury to the radial nerve continues to be reported following errant injections along the lateral arm.²⁻⁴ Although subcutaneous injections should, in theory, avoid the radial nerve, the subcutaneous adipose in children and thin adults may be insufficient to safeguard the relatively superficial radial nerve. When the lateral triceps is advocated for subcutaneous vaccines, the popularity also spills over to use of that site for subcutaneous allergen desensitization injections. In my clinical experience I have seen patients present *de novo* with transient radial nerve pathology after either intramuscular or subcutaneous injections in that region. Effectively, the triceps region should be avoided given the underlying radial, brachial, and ulnar nerves and the profunda brachii artery.⁵ There are many alternative safe sites for subcutaneous vaccination or

allergen injection.

Furthermore, apart from excessively low intramuscular deltoid injections potentially affecting the radial nerve, other deltoid injections can be problematic. In particular, an excessively high deltoid placement can injure the anterior axillary nerve branch or enter accidentally into the subacromial space.^{6,7} The upper third of the deltoid should be avoided, and placement should be made into the middle third of the deltoid muscle.

—**Nevio Cimolai, MD, FRCPC**
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Reply from Vancouver Coastal Health

Thank you for inviting us to comment on Dr Cimolai's letter. Vaccine safety, including injection safety, is important to the public, immunizers, and public health. In this regard, we produce immunization updates regularly¹ with administration advice based on provincial guidance.² This advice is consistent with national and US recommendations.^{3,4}

While vaccines are very safe, an injection given in the wrong place can cause a nerve or joint injury. An intramuscular injection given too high in the deltoid can injure the shoulder joint/bursa; those given too low can

injure a branch of the axillary nerve. These complications are preventable if the correct landmarking technique is followed.

Radial nerve injury following subcutaneous and intramuscular injection in the outer triceps area, or radial nerve injury following intramuscular injection in the deltoid, is highly unusual. We receive approximately 150 reports of adverse events following immunization annually, but we do not recall a single report of radial nerve injury. A correctly landmarked intramuscular injection of the deltoid should not result in injury to the radial nerve (a graphic showing the course of the radial nerve is available at www.medicinplexus.com/index.php/articles/86-radial-nerve⁵). The radial nerve courses on the posterior axillary wall, and then runs through the spiral groove between lateral and medial heads of the triceps; thus, it does not have exposure in the deltoid area. In addition, the outer triceps area is reserved for subcutaneous procedures only. A vaccine given outside the recommended area of the deltoid or given incorrectly (intramuscular

instead of subcutaneous) in the outer triceps area could result in a radial nerve injury. The remedy here is not to change injection site recommendations but rather to correct the injection technique.

We recommend all physicians follow local health authority/provincial guidance in immunizing patients and invite physicians to report adverse events to local public health centres.⁶ Vaccine safety surveillance is an important partnership between primary care providers and public health. We appreciate the opportunity to promote this dialogue.

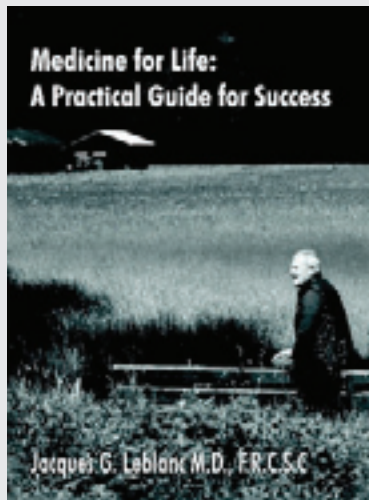
—Meena Dawar, MD, FRCPC
Medical Health Officer

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