UBC Pharmacists Clinic

Our Practice

By pharmacists for pharmacists.

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Feature Article

The ongoing quest for laboratory tests

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Lab values can provide useful information that health care professionals need to inform patient care decisions. As pharmacists, we use lab values when starting, monitoring, changing and stopping drug therapies for the purpose of optimizing patient outcomes.

Pharmacists in Alberta, Manitoba, and Quebec have the authority to order and interpret lab tests, while some other provinces are in the process of creating enabling legislation and policy.[1] Here in British Columbia we do not have independent access to laboratory values or authority to order lab tests.

In our practice at the UBC Pharmacists Clinic, some patients self-refer for an appointment and provide no records from their physician. This leaves us to piece together the information we need from the patient directly, our assessment, and prescription drug records from the provincial PharmaNet system.

Here is the process we use when a patient presents to us with no lab values:

DETERMINE THE CLINICAL NEED FOR A LAB VALUE

We need to know if having this information would impact our recommendations. Practicing evidence-based medicine includes determining the need for a lab test and preventing over-testing.

- *Would the drug therapy recommendation change if we knew the result of a lab test?*
- *Is the lab test validated and have the results been shown to improve patient health outcomes?*
- *Is the patient able to get the lab test in a timely manner and follow instructions so the test result is accurate?*
- *Is the patient able to adhere to a monitoring plan that includes future lab tests?*

Often, the answer to one or more of these questions is "no" and laboratory testing may not need to be considered as a factor in our clinical decision-making. If we know a lab value will not be clinically useful, we document this in our notes.

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DEVELOP A WORKING RELATIONSHIP WITH THE PRIMARY PRESCRIBER

When a patient self-refers, we may not have a prior relationship with their primary prescriber so we need to establish one. We send them a letter of recommendations by fax to introduce ourselves and the role the patient has asked us to take in their care. This step sets the stage for future sharing of information, including lab values that the medical office will usually fax over or provide verbally upon request.

ENCOURAGE PATIENTS TO TAKE AN ACTIVE ROLE IN MANAGING THEIR HEALTH

We ask patients to bring a copy of any recent lab values and test results to their appointments. They can get this information from their doctor or print it directly from the patient portal of the provincial lab reporting system. In BC and Ontario, this portal is called **my ehealth** (https://secure.myehealth.ca). In BC, the my ehealth portal gives patients access to results from Lifelabs, BC Biomedical, Valley Medical Lab, and outpatient settings in Vancouver Coastal Health, Providence Health Care and Fraser Health.[2] We keep a supply of my ehealth brochures at the Clinic since many patients are not aware they can access their own data. In some cases, we sit with the patient while they access their results online at the Clinic.

UTILIZE POINT-OF-CARE TESTING WHEN APPROPRIATE

At the Clinic we have point-of-care testing devices we can use as an alternative to traditional lab testing, when appropriate. This includes blood pressure machines, a stadiometer (for height and weight), peak flow meters, and special equipment to measure hemoglobin A1c and full lipid panels. Depending on the practice setting, other point-of-care tests such as INR or serum creatinine may also be helpful. These point-of-care tests generate results within minutes and can be used during the patient's appointment to help with timely decision making. Some testing devices use consumable materials (test strips, cartridges, control solutions, and pipettes) that have a cost and a decision will need to be made on who pays. Some patients prefer to pay for test costs in our Clinic when it is more convenient than going to a lab.

References

1. Canadian Pharmacists Association: Pharmacists' Scope of Practice in Canada. December 2016. Accessed online: https://www.pharmacists.ca/pharmacy-in-canada/scope-of-practice-canada
2. Excelleris Technologies Inc: My ehealth. 2014. Accessed online: http://www.myehealth.ca

Case Study

Chronic use of Corticosteroids: Bad to the bone?

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A 55-year old male self-refers to the clinic for questions regarding therapeutic alternatives for steroid-dependent rheumatoid arthritis. Current medical conditions and medications include: rheumatoid arthritis (prednisone 7.5mg PO daily x 12 years, methotrexate 15mg PO once weekly x 12 years and folic acid 1mg PO daily x 12 years) and hypertension (candesartan 8mg PO daily x 8 years). Blood work from 3 months ago was normal (CBC, SCr, lytes and liver panel). While reviewing the patient's medical conditions and addressing his key concern, it was determined he was not aware long-term prednisone use could put him at risk for osteoporosis.

The mechanism of glucocorticoid induced osteoporosis (GIOP) has been linked to direct inhibition of bone formation and increase in bone resorption as well as reduced intestinal calcium absorption and enhanced urinary calcium excretion resulting in net calcium loss.[3] Long-term glucocorticoid use (> 3 months cumulative in the past year) on prednisone (or equivalent) doses of 7.5mg daily, has been associated with GIOP and increased fracture risk.[1,2,3,4] In patients receiving glucocorticoid therapy, 30-50% may experience GIOP.[2] The rate of bone loss is highest in the first 3 months of glucocorticoid use, highlighting the importance of discussing the pros and cons of preventative therapy with patients before beginning treatment.[1] All patients on glucocorticoids should be maintained on the lowest effective dose for the shortest possible duration to reduce the risk of GIOP.[2]

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In patients at risk for GIOP, a Canadian validated risk assessment tool such as the Fracture Risk Assessment tool (FRAX) (https://www.sheffield.ac.uk/FRAX/tool.aspx?country=19) should be used as a starting point to determine fracture risk (CAROC is another tool however requires bone mineral density (BMD): http://www.osteoporosis.ca/multimedia/pdf/CAROC.pdf). Each patient must be assessed individually as these tools have not been validated in premenopausal women or men < 40 years of age. If not complete, consideration may be given to BMD testing prior to starting glucocorticoids in patients who would not typically be considered high risk. It is important to note however, that glucocorticoids may cause fractures even in patients with normal BMD.[2]

Our patient's risk factors were reviewed and FRAX score calculated, indicating a 5.3% risk for major osteoporotic fracture and 0.4% risk for hip fracture over the next 10 years (his only risk factor is glucocorticoid use). Of note, FRAX does not account for glucocorticoid dose or duration so our patient's risk is likely underestimated. A Cochrane Review of 27 randomized controlled trials of adults taking a mean dose of prednisone 5mg, or equivalent (most trials included higher doses) for both < 3 months (prevention trials) and >3 months (considered treatment trials) concluded use of bisphosphonates resulted in an absolute reduction in radiographic vertebral fracture of 3.5% (NNT = 28) over 24 months. There was no differentiation between which of these fractures were clinically significant. There was no significant reduction in non-vertebral fractures compared to control groups (calcium and vitamin D). Adverse events were not statistically significant between groups although these studies were not powered to detect such differences. Studies varied in terms of patient baseline risk, prior steroid use, baseline BMD and fracture history.[3]

In discussion with the patient he did not feel the potential benefits of bisphosphonate therapy justified starting therapy, even if his risk was underestimated. He was asked to follow-up with his family physician for assessment of BMD. In the interim, vitamin D 1000 international units daily and optimization of calcium (target 1200 mg elemental daily through diet and/or supplementation) was recommended. Other recommendations to minimize fracture risk were reviewed including regular weight-bearing exercise and avoiding smoking and excess alcohol intake.[1]

References

1. Papaioannou A, Morin S, Cheung AM, Atkinson S, Brown JP, Feldman S, Hanley DA, Hodsman A, Jamal SA, Kaiser SM, Kvern B. 2010 clinical practice guidelines for the diagnosis and management of osteoporosis in Canada: summary. Canadian Medical Association Journal. 2010 Nov 23;182(17):1864-73.
2. Caplan A, Fett N, Rosenbach M, Werth VP, Micheletti RG. Prevention and management of glucocorticoid-induced side effects: A comprehensive review: A review of glucocorticoid pharmacology and bone health. Journal of the American Academy of Dermatology. 2017 Jan 31;76(1):1-9.
3. Allen CS, Yeung JH, Vandermeer B, Homik J. Bisphosphonates for steroid-induced osteoporosis. The Cochrane Library. 2016 Jan 1.
4. Crandall CJ, Newberry SJ, Diamant A, Lim YW, Gellad WF, Booth MJ, Motala A, Shekelle PG. Comparative Effectiveness of Pharmacologic Treatments to Prevent Fractures An Updated Systematic Review. Annals of internal medicine. 2014 Nov 18;161(10):711-23.

Note: each case study has been peer reviewed and qualifies as a non-accredited learning activity (CE-Plus) within the annual professional development requirement for licensure by the College of Pharmacists of BC.

Your Responsibility

Health care professionals are required to assess each case based on the patient's unique circumstances in consultation with the patient and their care team. The recommendations in this case are based on the views of our clinicians after careful consideration of the best available evidence and needs of the patient. If you would like to discuss one of your patients with us please contact the Clinic team.

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