

Our Practice

By pharmacists for pharmacists.



Feature Article

Adopting an Electronic Medical Record System

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Electronic medical records (EMRs) are associated with increased quality of patient care, reduced healthcare errors, and enhanced appropriateness of care.¹ Most physicians and allied health providers use EMRs daily in their patient care practices. Pharmacists working in a health authority or primary care environment likely also use an EMR. Most community pharmacies use Pharmacy Practice Management Systems (PPMSs) such as Kroll or WinRx to optimize technical workflows and meet regulatory requirements for record keeping. Some PPMSs are also creating modules or functions to enable documentation of clinical patient care encounters similar to an EMR however adoption and use of EMR technology in a community pharmacy environment has been limited.

In November 2018, new regulations came into effect via the College of Pharmacists of British Columbia around electronic record keeping requirements. As the scope of practice for pharmacists continues to expand, enhanced documentation will be a requirement. At the Pharmacists Clinic, we feel it's important that we, as pharmacists, explore and use electronic documentation to optimize our efficiency and clinical effectiveness.

At the Clinic, we use both a PPMS (Kroll) and an EMR (OSCAR) in our practice. Each of these systems have a defined purpose: Kroll allows us to access and share clinical information via our provincial PharmaNet system, and OSCAR allows us to have an efficient scheduling/appointment system and secure electronic means for documenting patient care records.

Our approach to adopting an EMR can be summarized in three steps:

1) Choosing the right EMR

Unlike pharmacy software, the College of Pharmacists of British Columbia does not offer any regulatory guidelines on approved EMR vendors in BC. We started by having conversations with our physician colleagues and reviewing the most common EMRs including MedAccess, WOLF, IntraHealth Profile, and OSCAR. Every product had pros and cons and careful consideration of all of the options was critically important. Cost and ease-of-use were high on our priority list, but we quickly realized that none of

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the EMRs were designed to be “pharmacist friendly” and didn’t always follow our logic or thought process. We ultimately chose OSCAR because of its open-source design allowing for customization, relatively low costs, and collaborative spirit among its developers.

2) Making customizations

All EMRs enable a certain degree of customization, for example, adding company information, choosing how information is viewed, and other user preferences. From our perspective, we needed an EMR that could also enable key components of our care process, including medication reconciliation, patient evaluation and monitoring, and efficient communication with other care providers. With the help of a software developer, we created automated features in our EMR to generate a best possible medication history, link medications to diseases in patient-friendly terms, track which healthcare providers were caring for the patient, monitor drug therapy problems, and numerous templates for our consults and assessment forms. Each customization required varying amounts of time and funding, but has paid off in efficiencies and time savings to optimize our ability to care for patients.

3) Centralizing support for staff

We know that feedback and testing is critical to the successful adoption of any new workflow. Training of staff, improving basic computer literacy, technical support and ongoing maintenance of the EMR have all been shown to be barriers to successful adoption.² At the Clinic, we implemented a centralized process for triaging and managing technology-related issues through a designated informatics lead pharmacist. The role of this pharmacist is to be the conduit between IT experts and our pharmacist team. In addition, the informatics lead conducts testing of new EMR modifications, collects feedback, and leads the development and design of future customizations.

Ongoing changes within the pharmacy profession necessitate the growth and adoption of EMRs to meet the needs of pharmacists and health care teams that include pharmacists. We have taken a grassroots approach to implementing an EMR in conjunction with a PPMS to best support and enable our clinical practice. We encourage pharmacists in all practice settings to consider adopting an EMR and explore how this can support the delivery of care to patients.

References

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Case Study

Drug induced tremors – worth the shakes?



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A 46-year old Caucasian woman is referred to the clinic by her physician to discuss her anti-anxiety therapy and tremors. Her current medical conditions and medications include generalized anxiety disorder (escitalopram 10mg PO daily x 6 weeks) and insomnia (trazodone 50mg PO daily x 2 months). Social history includes no previous tobacco or cannabis use, minimal exercise, 1 cup of coffee daily and social alcohol. She has no known drug allergies. No recent lab values were available. She reports improvement in anxiety symptoms with initiation of counseling and escitalopram, but is not yet back to her baseline. Since starting trazodone she sleeps through the night without issue and feels refreshed upon waking.

Our patient reports a pre-existing benign essential tremor that was previously largely undetectable, but has become more pronounced in frequency and amplitude since addition of serotonergic agents. The timing of her worsening tremors has coincided with previous trials of desvenlafaxine and citalopram over the past few months, with improvement upon discontinuation. She has also trialed a dose increase to escitalopram 20mg daily, however tremors worsened immensely and became intolerable prompting dose reduction. Tremors did not worsen with addition of trazodone. Currently, she feels an inner restlessness and tremors that impact her daily functioning and cause embarrassment in social settings. She also described some minor bruising on her inner thighs and feeling warmer than usual over the past 2 months.

Tremors are a common neurological complaint with prevalence increasing after age 60.^{1,2} Risk factors for tremors and likely drug-induced tremors include advanced age, familial history of essential tremor, and having multiple comorbidities and medications. Drug-induced tremors tend to be bilateral and are reversible upon stopping the offending medication although resolution may take months to years.^{2,3} Medications commonly implicated in causing tremors are listed in **Table 1**.

Tremors can significantly impact a patient’s daily function and be difficult to assess whether they are drug-induced or previously underlying and just enhanced with medications. Management strategies in patients who are bothered and/or debilitated by

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SSRI-induced tremors include dose reductions, medication switch, or the addition of medication for the symptomatic management of tremors (such as beta-blockers). Non-pharmacologic strategies such as caffeine reduction, stress management and sleep optimization should also be recommended.³

We discussed with our patient that use of serotonergic medications such as trazodone and SSRIs were likely unmasking her underlying tremor. An SSRI dose reduction could lead to suboptimal anxiety management and she was not interested in adding additional medications to her regimen. The patient was also adamant that she did not want the trazodone dose changed or reduced given the significant benefit it provided her with for sleep. Our patient also reported bruising and feeling warmer than usual; side effects of serotonergic agents and possible signs of mild serotonergic excess despite being on a low dose of escitalopram and trazodone. An added consideration was that since escitalopram is primarily metabolized in the liver by CYP2C19 and CYP3A4, genetic variations in CYP2C19 can cause increased systemic exposure to escitalopram.³ Due to concern that our patient may be a CYP2C19 slow metabolizer (~10% of Caucasian population), and that she was not willing to stay on escitalopram, we recommended switching to sertraline which is less dependent on this same CYP pathway for metabolism.^{4,5} On follow up, 2 weeks after switching to sertraline, the patient reported a reduced tremor that she was able to conceal more easily. She was amenable to ongoing sertraline titration (with monitoring of tremors) and reassessment of drug therapy should tremors worsen, followed by an attempted trazodone taper.

Table 1³ Medications associated with tremors

Drug Class	Medication examples
Antiarrhythmics	Amiodarone, mexiletine, procainamide
Antibiotics	Sulfamethoxazole/trimethoprim
Antidepressants and mood stabilizers	Amitriptyline, lithium, SSRIs, SNRIs
Antiepileptics	Valproic acid
Bronchodilators	Salbutamol, salmeterol
Chemotherapeutics	Tamoxifen
Gastrointestinal drugs	Metoclopramide, cimetidine
Hormones	Thyroxine, calcitonin, medroxyprogesterone, epinephrine
Immunosuppressants	Tacrolimus, cyclosporine, interferon-alpha
Methylxanthines	Theophylline, caffeine
Neuroleptics and dopamine antagonists	Haloperidol
Recreational drugs	Cocaine, ethanol, MDMA*, nicotine

*MDMA = 3,4-methylenedioxymethamphetamine (ecstasy)

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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 British Columbia.

Your Responsibility: The recommendations in this case are based on the views of our clinicians after careful consideration of the best available evidence and needs of a specific patient. As a health care professional, you will assess each of your cases based on the patient's unique circumstances and in consultation with the patient and their care team. If you would like to discuss one of your patients with us please contact the [Clinic team](#).

