

## **Introductory Preambles to Clinical Pharmacology and Toxicology eCurriculum Resources for Canadian Medical Students**

*Dr Anne Holbrook MD, PharmD, MSc, FRCPC, Director, Division of Clinical Pharmacology & Toxicology, McMaster University, Deep Patel MPharm, PhD, Lindsay Yoo PharmD, for the McMaster Prescribing Competence Committee*

### **General Preamble**

Our own work with Canadian medical students shows that many lack basic clinical pharmacology and therapeutics knowledge, and prescribing skills as schools struggle to meet all of their required curricula objectives.<sup>1,2</sup> Expertise in this broad-based specialty is scarce, and most medical schools no longer have dedicated clinical pharmacology courses. However, for the first time, the Medical Council of Canada has recently launched specific Prescribing Practices objectives that schools must cover.<sup>3</sup>

Safe prescribing is a complex activity requiring detailed knowledge of dozens of drug families, accurate patient diagnosis and individual risk assessment, excellent communication and inter-professional collaboration skills, and professionalism. More than 700 million prescriptions are written annually in Canada for drugs from approximately 1100 therapeutic groups.<sup>4</sup> Medication errors are common, usually go unrecognized and can pose a serious patient safety hazard.<sup>2, 5-8</sup> Medical students and residents are especially vulnerable, with prescribing errors on 7-10% of their prescriptions.<sup>5</sup>

Competent prescribing and medication management is even more essential as years go on, given the dozens of new medications introduced each year, primarily high-risk medications and very expensive medications, increasing numbers of patients with extreme polypharmacy, lethal problems with drug overdose and poisoning, and poor adherence with effective medications.

*The Australian National Prescribing Service's MedicineWise/ National Prescribing Curriculum* (NPC), available at: <https://learn.nps.org.au/> provides excellent case-based modules and courses in clinical pharmacology, therapeutics and prescribing skills. Unfortunately, there is no Canadian equivalent. At McMaster, we are encouraging the use of the NPC for all medical students, given the paucity of therapeutics, toxicology and prescribing competence learning opportunities in our core curriculum.

This preamble document provides you with some general Canadian clinical pharmacology, evidence-based therapeutics and toxicology knowledge and prescribing skill development advice. We then provide Canadian equivalents or counterparts for some of the resources and approaches that you will read about in the NPC.

Each NPC module includes an introductory section that provides Australian-specific references that are meant to address expectations around standards of practice, knowledge, and skills. These include an Australian prescribing competencies framework, a guide to good prescribing, and 12 core competencies for the prescriber. Many of the general approaches to patients and the principles

of safe prescribing are applicable for any medical practice. The Canadian equivalents of these references are listed below:

- a) [Royal College of Physicians and Surgeons of Canada: The Prescribing Safely Canada Physician Prescribing Competencies – Executive Summary](#)
- b) [The Prescribing Safely Canada Physician Prescribing Competencies](#)
- c) College of Physicians and Surgeons of Ontario’s Advice to the Profession on Prescribing Drugs  
[CPSO - Prescribing Drugs](#)  
[CPSO - Advice to the Profession: Prescribing Drugs](#)

Additional, valuable documents for learners on the prescribing competence topic include:

- d) The [World Health Organization’s Guide to Good Prescribing: A Practical Manual](#) – useful not specifically for the patient examples or specific drug examples, but for the recommended process of prescribing.
- e) The Essential Drugs List for McMaster Medical Students: <http://hdl.handle.net/11375/27291> – useful for specific drug and drug family examples that should become familiar to every medical trainee
- f) The Institute for Safe Medication Practices Canada (ISMP Canada)’s resources including
  - i) [DO NOT USE List of Dangerous Abbreviations Symbols and Dose Designations](#) - abbreviations, symbols, and dose designations reported as being frequently misinterpreted and contributing to harmful medication errors, and ii) [List of High-Alert Drugs](#) - medications with an increased risk of causing significant patient harm when they are used inappropriately, including lack of indication, wrong dose, contraindications, etc.<sup>9,10</sup>
- g) [Health Canada’s Drug Product Database](#) provides access to the full product monographs from all manufacturers of medications approved for use in Canada. Product monographs are the ‘bottom line’ on your medico-legal responsibilities. In other words, if a medication does not have an official indication for the disease or condition that you are treating or does not have clear, supportive randomized trial evidence, and you cannot justify that you have tried all other reasonable avenues and the patient was aware of and agreed with your rationale to prescribe the drug, then if a major adverse event related to the drug occurs, you will be at risk of successful legal and disciplinary challenge.
- h) Drug formulary and coverage is an essential consideration when prescribing any medication. Formularies in Canada are based on the highest quality cost-effectiveness information and evaluation.<sup>11</sup> Each province and territory has their own that can be accessed individually. For Ontario, this can be accessed via: <https://www.formulary.health.gov.on.ca/formulary/>
- i) Conflicts of Interest – Physicians must avoid conflicts of interest to ensure that their professional priorities remain patients and advancing healthcare, particularly when dealing with the pharmaceutical and device industry.<sup>12</sup>

## References

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