

## **Bridging gaps in pharmacokinetics education across Canadian biomedical and pharmacology programs**

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**Introduction.** Pharmacokinetics is fundamental to drug discovery, therapeutic optimization, and patient safety. Yet students show limited mastery of core concepts, a challenge linked to the mathematical basis of the field and the difficulty of applying abstract principles to real-world scenarios. While pharmacokinetics education among allied health trainees has been examined, far less is understood about how pharmacokinetics is taught and learned within undergraduate biomedical and pharmacology curricula in Canada.

**Aims.** This study examines how pharmacokinetics is taught across Canadian post-secondary pharmacology programs, focusing on instructional time, assessment methods, and pedagogical approaches. It aims to identify curricular deficiencies and propose recommendations to strengthen student comprehension.

**Methods.** We used a mixed-methods approach, surveying faculty across Canadian institutions on teaching practices and perceptions of student competence in pharmacokinetics. Follow-up interviews will further explore effective methods and gaps in curricula.

**Results.** The current survey responses have been completed by faculty responsible for teaching pharmacokinetics at U15 research-intensive Canadian universities, with a mixture of respondents including tenured faculty. Pharmacokinetics was a mandatory, semester-long course in the majority of the programs, most often offered in the third year and instructional time exceeded six hours in most cases. Few courses incorporated laboratory-based instruction, and teaching was primarily delivered through lectures, case studies, and practice questions. More than half of respondents indicated that students achieved an appropriate level of pharmacokinetics knowledge at course completion, with a slight decline by program completion.

**Discussion.** Coverage was predominantly in didactic formats, with few laboratory components, representing a missed opportunity to strengthen the translation of theory into practice. These findings highlight the need to review course content, optimize instructional strategies and timing, and introduce pharmacokinetics earlier with reinforcement in upper years to better support education in Canadian biomedical and pharmacology programs. The slight decline in program completion underscores the need for consistent longitudinal integration to support long-term retention.