

# Implementation of Supplemental Small-Group Sessions in an Online Clinical Pharmacology Course

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**Introduction:** Clinical pharmacology is traditionally a challenging course due to heterogeneity in student preparation and the high volume of technical content and depth of knowledge required. In the context of an online Nurse Practitioner (NP) program, challenges are increased by asynchronous didactic content delivery and the temporally and geographically isolated nature of the students. To overcome some of these barriers, we describe results of a pilot trial of live, small group interactive virtual review sessions implemented to supplement didactic instruction.

**Methods:** Sessions were initiated mid-semester and were facilitated by a senior peer in the program. Students self-identified and volunteered to attend small group sessions based on their interest in developing study strategies for pharmacology and improving performance. The sessions have the dual aim to emphasize unique study approaches for mastery of pharmacological concepts as well as to apply current evidence-based clinical practice guidelines. A standardized approach was developed and used irrespective of content area. This method can be grossly divided into 1) pharmacology (e.g., class, mechanism of action, pharmacokinetics/pharmacodynamics, monitoring) and 2) application of current clinical practice guidelines. To evaluate effectiveness, we analyzed engagement using attendance measures; and compared performance on assessments before and after implementation of the sessions. This work was determined to be exempt by the Institutional Review Board.

**Results:** The core approach can be used effectively across various topics in the pharmacology course, despite differences in therapeutic areas, providing a consistent framework for students to rely on and standardize their approach. Students are led to self-organize the material into functional units based around core pathophysiological concepts. Application of clinical guidelines and mnemonic tricks are discussed, and mastery is tested with group review questions designed by faculty. Seven weekly 1-hour sessions were offered beginning midway through the course. We found that student engagement in these sessions was generally high. Students who chose to attend ( $n = 12$ ) represented approximately 18% of the course enrollment. Mean exam scores pre- vs. post-implementation increased from 70.6% to 81.5%, respectively ( $p = 0.009$ ).

**Conclusions:** Preliminary data indicate that supplemental, small group, live virtual sessions led by a peer-tutor were successful in improving performance in an online clinical pharmacology course. Important factors related to improvement may include the systematic approach, peer tutor and live group, all potentially leading to increased engagement.