

*'Teaching Antiviral Pharmacology Through a Standardized Patient Encounter in Preclinical Medical Education: A Pilot Study'*

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**WORKS IN PROGRESS**

*Background:* Pharmacology is a critical learning topic during undergraduate medical education, representing between 16-23% of the material on United States Medical Licensing Exam (USMLE) Step 1. In recent years, organizations such as the American College of Clinical Pharmacology have called for the expansion and improvement of clinical pharmacology education in undergraduate medical education. One technique that has been investigated by a few previous studies is the use of simulated patient encounters, allowing for the application of pharmacology knowledge into a clinical setting.

*Objectives:* To evaluate the effectiveness of a standardized patient (SP) encounter for integrating and applying clinical pharmacology content encountered during first-year medical students' Virology course.

*Methods:* Groups of 3-4 first-year MD candidates participated in a standardized patient encounter to discuss pharmacology for the treatment of shingles (varicella-zoster virus), topics covered in didactic instruction two days before this event. Students were given time to review treatment options for the infection, noting mechanism of action, route of administration, and possible adverse effects before the encounter. Next, students had 10 minutes to discuss their recommended treatment with the SP and answer their questions. SPs were provided scripts

and instructed to ask the student a series of questions on mechanism, route, and adverse effects if not provided directly by the student.

*Evaluation Plan:* We utilized a randomized crossover design in which half of the student class participated in the SP encounter followed by a 3 item USMLE style multiple-choice questionnaire. The other half completed these activities in reverse order. Following the completion of both steps, students were offered an optional debrief session where the instructor reviewed the SP case and emphasized important learning points. We compared the two study groups' performance on 3 multiple choice questions by performing a chi-square test. A voluntary post-simulation evaluation survey was sent to all participating students, which included a series of Likert-scale questions assessing the activity's relevance, design, and effectiveness for achieving the learning objectives.

*Results:* Knowledge performance on antiviral selection (74.6% correct pre, 69.7% post,  $p=0.53$ ) and mechanism of action (79.1% pre, 80.3% post,  $p=0.86$ ) were similar between groups, while the post-simulation group performed better on an adverse effect item (29.9% pre, 43.9% post,  $p=0.092$ ). Forty-four of 133 (39%) students completed the learner evaluation survey. Students' narrative comments on the SP encounter were generally positive, with many students stating that the encounter was a challenging and unique way to integrate pharmacology, and calling for the incorporation of simulated encounters into future courses.

*Conclusions:* This study evaluated a standardized patient encounter to integrate antiviral pharmacology concepts for first-year medical students, using a randomized pre/post-simulation group design. Pharmacology-based SP encounters could be incorporated into other basic science courses for preclinical medical students, including other areas of microbiology, to provide learners with opportunities to practice integrating pharmacology for other antimicrobials. Additional research on using this technique to enhance pharmacology instruction is needed.