Management of Complex Medication Regimens and the Universal Medication Schedule: An Interprofessional Skills Lab

Marlowe Djuric Kachlic, PharmD, BCACP, Elma Abdulbaki, PharmD Candidate, Noor Alawad, PharmD Candidate, Giancarlo Garcia, PharmD Candidate, Amna Judah, PharmD Candidate, Adam Sulh, PharmD Candidate
University of Illinois Chicago College of Pharmacy, Chicago, Illinois

Background

- The 2008 Institute of Medicine report, "Standardizing Medication Labels" discussed the use of the Universal Medication Schedule – dosing medications four times per day – morning, afternoon, evening, and bedtime[1]
- A study published in 2011 found that of 464 adults (55-74 years old), only 14.9% were able to simplify a hypothetical seven-drug regimen into four or fewer times per day, with an average of six times per day[2]
- In 2017, faculty at three schools of pharmacy studied how 831 first- and third-year student pharmacists simplified the same hypothetical seven-drug regimen and found that 27% of all students were able to simplify into four time intervals, with an average of five time intervals[3]

Study Objectives

- This study sought to assess the knowledge of the UMS among medical students (M2s) and pharmacy students (P3s) before starting clerkships and APPEs
- The primary outcome is the number of M2s and P3s that consolidated the hypothetical seven-drug regimen to the UMS
- The secondary outcomes include the number of intervals the M2s and P3s chose, and the number of errors made in the regimens

Methods

- M2s and P3s were presented with the hypothetical seven-drug regimen with complex directions.
- Without further explanation, they were asked to indicate what hours of the day they would tell a fictional patient to take each medication using "hot spot" questions in Qualtrics (Qualtrics, Provo, UT).
- After the activity, the investigators discussed the importance and context of the UMS as well as the importance of medication adherence in patients, particularly in the elderly population.


Your assignment
- Your patient, Polly Pharmacy (DOB 2/1/1942) takes 7 medications, and has the bottles with her today.
- She wants your help in figuring out *when* she should take these medications throughout the day.
- Her typical daily schedule is as follows:
  - Wake up – 5:00am
  - Breakfast – 8:00am
  - Lunch – 12:00pm
  - Dinner – 6:00pm
  - Bedtime – 9:00pm

Results

	P3s (n=62)	M2s (n=144)	p-value
Administration frequency = 4, n(%)	19 (30.64%)	39 (27.08%)	p=0.27
Total administration frequency, Mean (SD)	5.226 (1.372)	5.340 (1.360)	p=0.47
Range of frequency	3-9	3-11	
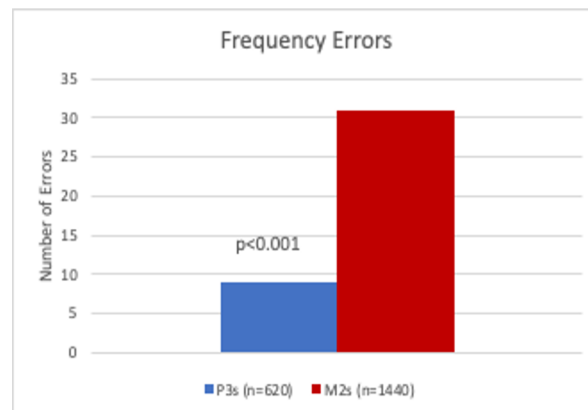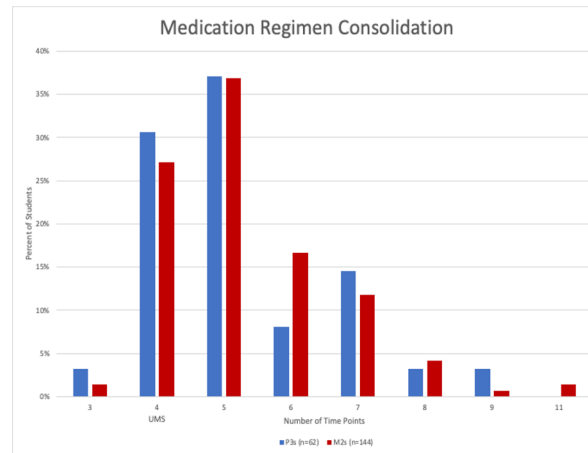
Discussion

- In total, 144 M2s and 62 P3s completed the activity, and 28.26% of all students consolidated the regimen to the UMS.
- More P3s consolidated the regimen to the UMS than M2s (30.64% vs 27.08%, p=.602).
- The M2s simplified the regimen to 5.340 time points in 24 hours, and the P3s simplified the regimen to 5.226 time points (p=0.47).
- Significantly more frequency-related errors were made by the M2s than the P3s (p=.0003)

Limitations

- Since the "pillboxes" were virtual, the students could only indicate the time to take each dose, but whether they would have chosen the correct number of pills for each dose could not be assessed.
- Pharmacy students may be at an advantage because many of them work in community pharmacies – some computer systems depict the UMS on the patient labels.

Conclusions

- Pharmacy students have experience with medication regimens through technician work, skills labs, and coursework, so they may be able to simplify complex medication regimens more effectively and with fewer errors than medical students.
- Since medical students will be responsible for writing prescriptions for patients with potentially complex regimens, it is important that they learn about the UMS.

References

1. Hernandez, LM., editor. Institute of Medicine. Standardizing Medication Labels: Confusing Patients Less. Washington, D.C: National Academies Press; 2008.
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3. Kebodeaux C, Woodyard JL, Djuric Kachlic M, Allen SM, Schadler AD, Vouri SM. Student Pharmacists' Ability to Organize Complex Medication Regimens According to the Universal Medication Schedule. Am J Pharm Educ. 2020 Aug; 84(8):7531.