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Short communication

Developing pharmacy student empathy using mock HIV antiretroviral therapy regimens: A learning activity

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Abstract

Objective: To develop empathy among pharmacy students by utilizing a learning simulation of Human Immunodeficiency Virus (HIV) antiretroviral therapies in a first year anti-infectives course.

Design: Students were given a mock antiretroviral regimen to “take” over five days to simulate HIV drug regimens. Students recorded their medication adherence, discussed difficulties adhering to the various regimens, and reviewed the pharmacology and medicinal chemistry of the antiretroviral drugs.

Assessment: Students’ compliance with their mock regimens were assessed, as well as their perceptions on the usefulness of the activity. A post-survey evaluated student opinions of their gained knowledge of HIV drugs, how adherence correlates with drug resistance, and empathy.

Conclusions: Students who took the regimen with the lowest pill burden reported the highest adherence. Most surveyed students agreed that this activity helped them relate to the challenges of a complicated daily regimen. Lastly, this activity created an opportunity to develop student empathy in the classroom setting.

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Keywords: HIV regimens; Medication adherence; Empathy; Learning activity

Introduction

Although antiretroviral research is promising, approximately 40,000 cases of Human Immunodeficiency Virus (HIV) are reported in the United States annually.¹ Poor medication adherence increases the likelihood of the development of drug-resistant HIV strains, and affects utility of available treatment modalities. HIV antiretroviral (ART) drug therapy is used to suppress HIV replication and delay the onset of Acquired Immune Deficiency Syndrome (AIDS) for many years. Because of the high mutation rate

of HIV, treating a patient with just one drug at a time can select for a mutant drug-resistant strain. Regimens containing multiple drugs are prescribed so that if a drug-resistant strain to one of the drugs arises it can be suppressed by the other drugs. However, it is well documented that poor adherence to antiretroviral regimens escalates disease severity, decreases quality of life, and increases health care costs.^{2,3} Treatment guidelines indicate that not only is ART adherence essential for reduced morbidity and mortality, but also for decreasing the risk of transmission to partners and offspring. Statistics indicate that among all patients diagnosed with HIV in the United States, only 28% are virally suppressed.⁴

While didactic knowledge of disease states gained from their pharmacy education is crucial, many students and new pharmacy practitioners may have difficulties empathizing with patients on complicated antiretroviral regimens.

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Providing quality patient care also requires the ability to interact with diverse patient populations and practitioners' understanding of the medication adherence obstacles that chronically ill patients often encounter. Empathy modeling activities where students "become the patients" are often used during experiential rotations but can be more difficult to employ in the classroom. Institutions who have used these types of activities in didactic courses have reported that post-survey student attitudes indicate an increased awareness of the importance of medication adherence, as well as an improved appreciation and understanding for patients taking these complex regimens.^{5,6}

Design

Overall design of the learning activity

Pharmacochemistry of Anti-infective Drugs is a three-credit first professional year course that covers the pharmacology and medicinal chemistry of drugs used to treat bacterial, viral, fungal, and parasitic infections. In our three calendar-year program, this course meets for six hours a day over a period of 7.5 days and is taught by two Pharmaceutical Sciences faculty with expertise in the pharmacology and medicinal chemistry of the anti-infective drugs. The activity described herein was given during the 2011–2012, 2012–13, and 2013–14 academic years in the Pharmacochemistry of Anti-infective Drugs course that occurs in the P1 year. Therefore, three separate cohorts (classes of 2014, 2015, and 2016) have each taken it during their P1 year.

Over a period of five days, students were expected to adhere to one of three HIV medication regimens and record when they took their doses. This activity culminated in a discussion of the antiretroviral treatments, their medicinal chemistry and pharmacology, as well as a real case of a pharmacy medication error resulting in resistant HIV; thus further emphasizing the importance of adherence. Because this course heavily utilizes a group learning component, the discussion of the activity and adherence calculations were

performed in groups of six to seven students before discussing the activity with the whole class.

It is important to note that students were not required to ingest the "medicine" (colored Tic Tacs[®] or Kool-Aid[®]) to participate in this activity. If they preferred not to ingest anything, students were instructed to simply discard the dose but note the time and the date on their medication log as if they had taken the "medicine." This activity was adapted from one provided by the Howard Hughes Medical Institute (HHMI). Videos provided by HHMI were also used during the instruction of the HIV drugs and discussion of antiretroviral resistance.⁷

On the first day of class, students were given a handout describing the activity, as well as a mock drug regimen to take for the next five days. Students were randomly given one of three protocols (Table 1) as well as a data sheet to record their medication adherence over the five days (Fig. 1). Bags containing the regimens were randomly distributed within student groups to ensure that all three protocols were equally distributed among the group members. For example, for a student group of six: two students would have protocol 1, two students would have protocol 2, and two students would have protocol 3. Students were instructed to record doses as missed as described on the sheet provided specific to their protocol (Table 1).

At the conclusion of day five, students were given an opportunity to pool their data within their groups of six to seven students on the day of class the antiretroviral drugs were discussed. To accomplish this, students were given an activity to complete regarding their adherence data within their group (Tables 2 and 3). Adherence was calculated as the number of doses actually taken divided by the number of total doses that were required, multiplied by 100%. For example, if 10 doses were to be taken over the five day time period and the student only took eight, the percent adherence would be 80%.

Lastly, a survey was designed and circulated via SurveyMonkey[®] to the classes of 2014, 2015, and 2016 to gauge their perceptions of this activity after having

Table 1
Mock HIV anti-retroviral therapy protocols

Protocol 1	Protocol 2	Protocol 3
Fuzeon (Kool-Aid [®]): Mix packet with 8 oz. of water, let stand for ten minutes, and then drink. Take every 12 hours.	Truvada (Yellow Tic Tac [®]): Take one tablet once a day with or without food.	Atripla (White Tic Tac [®]): Take at bedtime once a day on an empty stomach.
Kaletra (Green Tic Tac [®]): Take one tablet every 12 hours.	Reyataz (Orange Tic Tac [®]): Take two tablets once a day with food.	
Combivir (White Tic Tac [®]): Take one tablet every 12 hours.	Norvir (Red Tic Tac [®]): Take one tablet once a day with Reyataz.	
If you forget a dose at the scheduled time, take it as soon as you remember, unless the next scheduled dose in six hours or less. If so, skip the dose and record it as missed. In either case, take the next scheduled dose at its regular time.	If you forget a dose at the scheduled time, take it as soon as you remember, unless the next scheduled dose in 12 hours or less. If so, skip the dose and record it as missed. In either case, take the next scheduled dose at its regular time.	If you miss taking the dose at bedtime, record it as missed, then take the next scheduled dose at its regular time.

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