Introduction to HIV and Addiction Medicine for Residents: Integrated Case-Based Learning

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Abstract

Introduction: Both HIV and addiction medicine are common clinical issues that medical residents encounter in their training. However, there are projected shortages of providers in both arenas, and studies indicate that trainees have limited exposure to and lack comfort managing these conditions. Within the existing epidemic of opiate use and addiction in Indiana, the HIV outbreak highlights the importance of training on both issues. Therefore, we have developed an innovative, integrated, case-based group learning exercise focusing on treatment of HIV and substance use.

Methods: The curriculum is designed as a 2-hour module for interns after a degree of clinical exposure to these conditions. Residents in teams work through cases, finding relevant resources and guidelines in real time using computers or wireless devices, then report their findings to the larger group for discussion. The materials associated with this curriculum include a detailed instructor’s manual with three discussion cases. We also include a slide set to facilitate interactive discussion of the material, as well as a sample evaluation form and a table with helpful references and resource websites.

Results: This curriculum has been included as a regular part of our academic half-day for the last 3 years. Most residents indicated relatively low levels of precurricular knowledge about both HIV and addiction. After this module, residents self-reported increased comfort with managing HIV and opiate withdrawal, as well as with identifying resources to help patients with both conditions. Residents reported enjoyment of the integration of these topics and the interactive nature of the material.

Discussion: An integrated case-based group learning exercise highlighting practical cases involving HIV and substance use has been well received, engaging, and able to increase resident comfort with addressing these often comorbid conditions.

Keywords
Substance-Related Disorders, Addiction, Opioid-Related Disorders, HIV, Withdrawal, Opioid Use Disorder, Substance Withdrawal Syndrome

Educational Objectives

By the end of Case 1, the learner will be able to:
1. Explain when to start HIV medications as well as the pros and cons of therapy.
2. Describe the first line regimens for HIV naïve patients and why to choose one over another.
3. Describe factors that affect medication adherence.
4. Elicit a substance use history.

By the end of Case 2, the learner will be able to:
1. Identify the clinical syndrome of opiate withdrawal.
2. Discuss treatment of acute opiate withdrawal in the hospital setting.
3. Describe HIV medications and a few examples of drug-drug interactions related to the regimen.
4. Identify resources for connecting patients to outpatient treatment for opiate use disorder and HIV.

By the end of Case 3, the learner will be able to:
1. Recognize the extent of the epidemic of opiate use disorders and overdose in the United States.
2. List methadone’s drug-drug interactions and potential adverse drug effects.
3. Explain the role of buprenorphine, an office-based therapy for opiate use disorders.

Introduction
The Institute of Medicine projects the United States will not have enough providers with HIV expertise to care for patients with HIV over the years to come\(^1\). In many programs, residents in internal medicine and family medicine have limited exposure to and comfort with providing HIV care\(^2\) and substance use care.\(^3\) Persons living with HIV infection have a high prevalence of substance use disorders, which can impact adherence and viral control.\(^4,5\) At the same time, the United States is experiencing an epidemic of opiate use, addiction, and overdose. The recent HIV outbreak in Indiana in the setting of an epidemic of opiate use and addiction clearly illustrates the need for joint training in both areas.

Treatment of addiction and the complications of substance use can be challenging for residents. Therefore, we developed an innovative, integrated, case-based group learning exercise focusing on treatment of HIV and substance use. We draw from existing models of collaborative learning\(^6\) and interactive case-based curricula such as the Yale Office-Based Medicine Curriculum,\(^7\) which is a frequently utilized resource.\(^8\) We postulate that integrating learning around these often comorbid conditions will improve residents’ ability to manage complex patients living with them. Through this joint curriculum, we address a number of common challenges such as drug-to-drug interactions, limited adherence to medications, and acute opiate withdrawal. Overall, the purpose of this module is to develop a practical approach to the frequently comorbid conditions of substance use and HIV through interactive patient cases. By the end of this module, internal medicine residents will be more comfortable in initial evaluation and treatment of patients with HIV and/or substance use in the inpatient and outpatient settings.

Methods
The target audience for this module is internal medicine residents. We specifically targeted interns at the end of their PGY-1 year to explore these topics after initial clinical exposure on the wards and in office practice. This module also could be used for acting interns (fourth-year medical students) as well as family medicine or preventive medicine residents. Facilitators should have some prior knowledge of both topics (or the module can be cotaught by two individuals, one with greater expertise in each of the areas, as we do at our institution) and be aware of local addiction patterns and resources for treatment, as well as local incidence and prevalence of HIV. We have included some resources about substance use patterns around the United States as well as treatment resources for both conditions.

The curriculum was designed as a 2-hour module during protected intern education time at our institution (5-minute introduction, 40 minutes for Case 1, 40 minutes for Case 2, 30 minutes for Case 3, 5-minute debrief). It could potentially be shortened somewhat in length with elimination of one of the three included cases. It was conceived as a team-based learning exercise, emphasizing resident discussion of the clinical cases and use of real-world resources to look up guidelines and management plans.

The session should take place in a room with cellular service and/or wireless Internet access to facilitate learning how to search for relevant resources. Another option is to conduct this session in a room with several computers that can access the Internet.

In advance of the session, instructors should review the content of the Instructor Manual (Appendix A) and familiarize themselves with institutional and/or local resources for addiction treatment and HIV care, state laws and local policies around HIV testing and partner notification, and prescription-monitoring programs for controlled substances. Please see the Table of Key References (Appendix C) for a list of helpful websites.

This curricular module was designed to build upon preexisting knowledge and practices around HIV and substance use disorders. There were no specific prereadings as is the case with our other intern curricula.
due to the residents’ busy schedules. If desired, participants could review current HIV guidelines and national substance use trends (Appendix C). Learners should be encouraged to bring smartphones or tablets for this interactive session.

Residents should be split into small groups of three to four to discuss a small portion of each case. They then will report their findings to the larger group under the guidance of faculty facilitators.

Please see the attached detailed Instructor Manual for estimated discussion times for each case as well as breakpoints for the discussion. We used a few PowerPoint slides (Appendix B) as an adjuvant resource to anchor the discussion. A whiteboard could be used for a similar purpose.

Leave 5 minutes at the end of the session for questions and to complete a session evaluation. A sample evaluation (Appendix D) is included.

Results

We are now in our third year of facilitation of these cases, and the curriculum continues to be well received. The residents have remarked on the relevancy to their own patient care experiences and appreciate the practical approach to these clinical scenarios. Our initial evaluation efforts suggest that resident knowledge is improved in multiple domains after taking part in this curriculum.

Precurricular resident knowledge (Likert scale: 1 = very limited, 5 = excellent; n = 20 respondents) reported the following means:

- HIV: $M = 2.67$.
- Addiction medicine: $M = 2.81$.

Postcurriculum resident comfort (Likert scale: 1 = quite uncomfortable, 5 = very comfortable; n = 20 respondents) reported the following means:

- Initiating antiretroviral therapy to patients with HIV: $M = 3.10$.
- Recognizing signs and symptoms of opiate withdrawal: $M = 4.29$.
- Treating opiate withdrawal in the hospital: $M = 4.29$.
- Identifying important medication interactions: $M = 3.67$.
- Describing local resources for addressing substance use: $M = 3.57$.

Discussion

Overall, an integrated case-based group learning exercise highlighting practical cases involving HIV and substance use has been well received, engaging, and able to increase resident comfort with addressing these often comorbid conditions. Holding the session towards the end of the intern year gives residents enough time to gain real-world exposure to these conditions in the inpatient and outpatient settings, lending vigor to the discussion and ensuring that the material covered is immediately applicable to their own clinical practice.

Moreover, we realized that having two facilitators with different expertise makes the program richer for the residents, allows for an efficient use of resident time to cover multiple subjects, and models the interdisciplinary care that the residents will practice in the future. Based on a busy intern schedule, we did not require prework and instead intentionally encouraged the residents to work in teams, share knowledge, and find electronic resources in real time to answer the questions, as they do in day-to-day clinical care. It was crucial to be aware of our institutional and local resources for HIV testing and treatment and for addiction treatment.

One potential pitfall is that if resources are significantly lacking, discussing these cases may be a frustrating exercise, although awareness may promote resident advocacy around these important issues.
The timing of the exercise also can be challenging as these are both large subjects that we are condensing into a brief time period to accommodate the competing demands of broader residency education. In the future, this curriculum could be expanded by incorporating skills practice around discussing sensitive issues such as substance use and adherence, hands-on training for naloxone rescue kits, or incorporating a quality improvement project on screening for substance use or HIV in resident clinic.

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References

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