The recent dramatic increase in the incidence of opioid overdoses and drug addiction has impacted every community, every age and every socioeconomic stratum. The medical community and our society are stunned by the breadth of this crisis, and by the rapidity with which it has emerged. One aspect of the problem is a major increase in heroin use and in heroin overdoses. Heroin users now include populations that have historically had lower rates of use, such as women and people with higher incomes. A second component of the epidemic is an increase in use and misuse of prescription painkillers, and an increase in overdoses of these drugs. Individuals who are addicted to prescription opioid painkillers are at high risk for becoming heroin addicts.

The efforts to combat this outbreak reach from the White House to our local streets, and into physicians’ offices. One vital fundamental component of stemming the tide is to help physicians understand safe and effective treatment of pain, including safe prescribing practices. Physicians also need to be prepared to recognize patients who are at risk for becoming addicted or who are already addicted, and to be ready to intervene.

IMPLEMENTATION

Medical students learn about the opiate epidemic, pain management, opiates, addiction and related subjects starting in their first year and continuing throughout their four year curriculum. Sessions include a range of perspectives, from a cellular and molecular level, to behavioral considerations, and to the impact on society. The core curriculum on these subjects includes:

- Patient-physician communication skills, including SBIRT and motivational interviewing
- Physiology of pain and pain perception
- Pharmacologic and non-pharmacologic treatment approaches
- Safe prescribing practices
- Addiction and treatment
- Treatment of acute complications, including intoxication, overdose and withdrawal

Instructional methods include encounters with standardized patients, simulations, and on-line interactive modules, plus typical lectures and case discussions.

The following are highlights of where these topics are addressed in the UPSOM curriculum.

PRECLINICAL COURSES

Ethics, Law and Professionalism
The Ethics, Law and Professionalism course begins in the second week of medical school as part of the Patient, Physician and Society block. Beginning in 2016, the opiate epidemic is addressed directly in a session dedicated to establishing a clear understanding of the opiate problem. It addresses the magnitude of the epidemic; the range of the impact on individuals, communities and society; and explains the origin and evolution of this critical public health problem.
Medical Interviewing
In the first year Medical Interviewing course, students receive basic instruction about patient-physician communication skills. They speak with multiple standardized patients about drug and alcohol use, addiction and how patients being treated for pain can become addicted to painkillers.

Advanced Medical Interviewing
This second year course provides students with experience in dealing with more challenging patient encounters through standardized patient cases. Students interview patients whose medical problems intersect with their drug abuse.

Behavioral Medicine
This first year course provides an overview of substance use disorders in a lecture that incorporates epidemiology, screening, diagnosis, brief intervention, and motivational interviewing.

Neuroscience
This first year course is where students learn about the mechanisms of pain perception and the basic pharmacology of opioids and non-opioid analgesics.

Introduction to Psychiatry
Late in the first year, substance use disorders are reexamined, with coverage of epidemiology; intoxication and withdrawal; overdose/death; injection risks and other health risks.

CLINICAL CLERKSHIPS
During the third year core clerkships, students learn about a broad spectrum of drug and alcohol addiction problems. In multiple instructional and assessment workshops, students encounter standardized patients with a range of addictions, and at various stages of readiness or reluctance to change. Beyond these standardized patient encounters, there are related instructional sessions across the clerkship year.

Adult Inpatient Medicine Clerkship
Pain management is a focus of a small group workshop during this clerkship. The workshop covers: opiates for treatment of acute pain; mechanism of action of opiates; commonly prescribed opiates and their dosing; and adjuncts to opiates such as NSAIDS, acetaminophen, immobilization, and anxiolytics.

Psychiatry Clerkship
All students learn about substance use disorders at a more advanced level. Curriculum content includes assessment and treatment, Medication-Assisted Treatment options (e.g., methadone maintenance, buprenorphine maintenance, and naltrexone injection) and evidence-based behavioral treatments. Students may opt to have their 5 week rotation at the WPIC Dual Diagnosis Unit where they will treat patients with co-occurring psychiatric and substance use diagnoses, including opiate use disorders. Beginning in 2017, intensive instruction in motivational interviewing and SBIRT prepared students to take an even more active role in helping identify and refer patients with substance abuse problems.

Surgery Clerkship
Management of acute pain in surgical and other patients is addressed in this clerkship’s core lecture series.

Combined Ambulatory Medicine and Pediatrics Clerkship
This 8-week ambulatory clerkship is a key course where students encounter the challenges of managing pain in an outpatient setting, including pain that persists past an acute episode. Clinical encounters provide students with an ideal context in which to learn about safe prescribing and care of a patient with pain. All students complete a National Institute on Drug Abuse online module on Safe Prescribing for Pain. This case-based module helps students deepen their understanding of the skills and tools clinicians can use to screen for and prevent abuse in patients with pain.
**ELECTIVE COURSES**

**Psychiatry**
Two Psychiatry electives provide specific opportunities for students to dive deeper into the treatment of patients with substance abuse and addiction problems. Senior students may enroll in a 4-week sub-internship on the Dual Diagnosis Unit. This sub-internship helps students further develop skills in motivational interviewing and treatment of patients with co-occurring psychiatric and substance use diagnoses, including opiate use disorders.

The Outpatient Addiction Medicine Elective is open to students in year 3 or 4. The clinical focus is on providing behavioral and Medication-Assisted Treatment via methadone, buprenorphine, and naltrexone in an outpatient clinical experience. Students also learn about overdose education and prevention and family education. Each student has an opportunity to attend meetings of mutual self-help groups such as Narcotics Anonymous and Nar-Anon.

**Anesthesiology**
The Pain Medicine elective provides a unique experience where students will work with chronic and cancer pain patients at the UPMC St. Margaret Pain Medicine Center (a busy pain medicine clinic) and the Pain Evaluation and Treatment Institute. Beyond the clinical experience, students learn through a tutorial curriculum with assignments based on the Pain Fellowship Curriculum. Student work as part of a multidisciplinary team and learn about rehabilitative and interventional approaches to the treatment of patients with chronic pain.

**Emergency Medicine**
Pain is one of the most common presenting symptoms among emergency department patients. During the senior elective in emergency medicine, students quickly gain a range of perspectives on pain management, including pain assessment and care of patients with acute versus chronic pain. Bedside learning is richly augmented by case discussions and high-fidelity simulations that address opiate overdose and appropriate use of naloxone; acute IV pain control and procedural sedation; alcohol intoxication and withdrawal; and safe opiate prescribing for ambulatory patients with acutely painful conditions (e.g., dental pain, fractures, burns).

**Get Ready for Residency**
The majority of senior students enroll in this simulation-based elective during the final weeks before graduation. Through an intensive series of simulation-based encounters, students learn how to manage a range of common clinical conditions, including post-operative pain; multiple drug overdose (which includes opiates and benzodiazepines); and acute alcohol withdrawal.

**IMPACT**

Medical students learn about addiction and the opiate epidemic through a longitudinal curriculum. The overall experience establishes a solid foundation in generalizable principles, and then helps students develop specific patient care skills in screening, counseling, prescribing and related aspects of treatment. Ultimately students are well-prepared for their subsequent experiences as resident physicians, where they will continue to grow their knowledge and skills in safe prescribing and patient care as they train in their chosen clinical specialty.