

UNDER THE MICROSCOPE

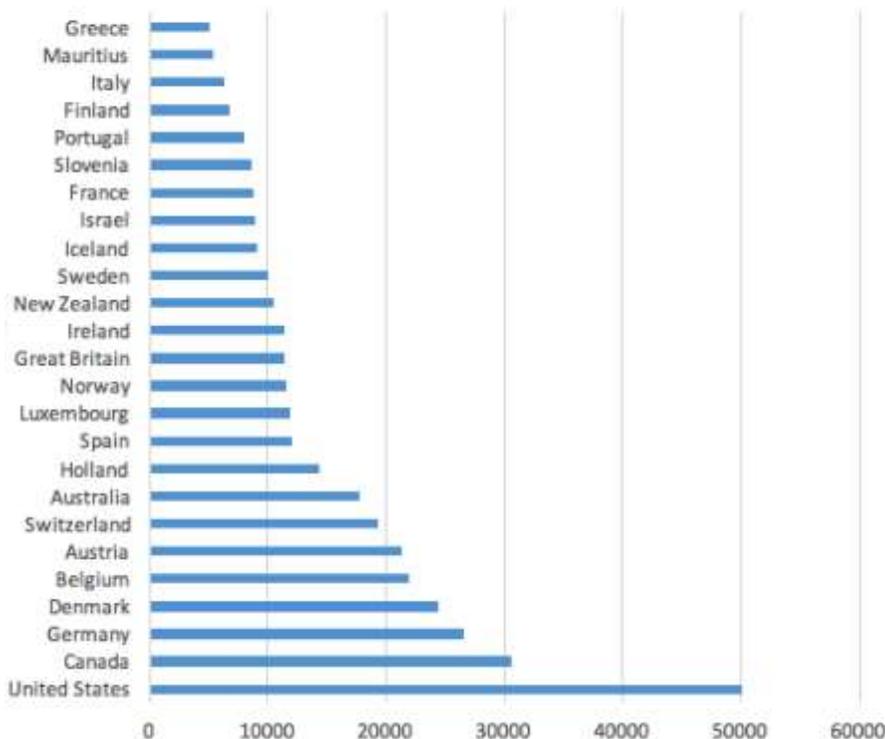
BY CHAD EL-ZAYATY, M.D.

Opioid Testing

Prescription opioids are a class of drugs prescribed by doctors to treat moderate to severe pain. Common types are oxycodone (OxyContin), hydrocodone (Vicodin), morphine, fentanyl, and methadone. These opioids are perfectly legal with a prescription, but can also have serious risks and side effects.

The U.S. is in the grip of an opioid misuse epidemic. The Centers for Disease Control and Prevention says opioid overdoses have hit record highs in the United States. The drugs killed more than 47,000 people in 2014. Nearly 12,000 children and teens mistakenly get some sort of opioid drug each year, many of them kids under 5 who find pills by mistake. Nearly one in four high school seniors in the United States has had some lifetime exposure to prescription opioids, either medically or non-medically. In a recent survey, more than 70 percent of the teens took the drugs on purpose. More than a third was attempting suicide, while 21 percent were deliberately abusing the drugs. A second study in the same journal found that most teens who misuse opioids had been given a legitimate prescription at first. These exposures can lead to future use of illegal substances. Almost 80 percent of new heroin users have previously used prescription opioid pain medications.

Standard Daily Doses of Opioids per Million Inhabitants



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A report, which was published by the International Narcotics Control Board, measures the global use of opioids, a class of powerful drugs that include heroin and many of the strongest prescription painkillers, like oxycodone, hydrocodone, codeine, morphine, and fentanyl. The report found that Americans are prescribed opioids much more frequently than other countries—six times more than France. We also consume an enormous amount of opioids, including over 99 percent of the world's supply of hydrocodone. Americans are prescribed about six times as many opioids per capita as are citizens of Portugal and France, even though those countries offer far easier access to health care. In fact, approximately 80 percent of the global opioid supply is consumed in the United States, despite only making up 5% of the world population.

One might think that Americans consume more opioids because as an aging population, they have more aches and pains. But the U.S. population ranks only 42nd in the world in its proportion of people aged 65 or older. Countries with a much higher proportion of senior citizens than the United States, such as Australia and Italy, consume only a fraction of the prescription opioids of Americans.

Opioids are the second-largest pharmaceutical class globally, after cancer medicines. There was about 300 million pain prescriptions written in 2015. The 300 million pain prescriptions equal a \$24 billion market of legally prescribed pain medication. Physicians and lawmakers point to several potential causes as the reasons for the current epidemic. They include doctors who prescribe these medications to patients without fully explaining side effects; payments to physicians from pharmaceutical companies; aggressive marketing by drug companies downplaying addiction risk; and patient advocate groups that insist people with chronic pain get the medications that relieve their symptoms right away.

At PCL Alverno, opiate testing is performed in form of a urine screen on the Beckman Coulter AU analyzer. The Opiate assay is an enzyme immunoassay which renders a qualitative and semi-quantitative analysis. It detects morphine, codeine, as well as synthetic opioids related to morphine, such as hydromorphone. A confirmatory test is performed at ARUP via mass spectrometry.