

Periodic graphics

A collaboration between C&EN and
Andy Brunning, author of the popular
graphics blog **Compound Interest**

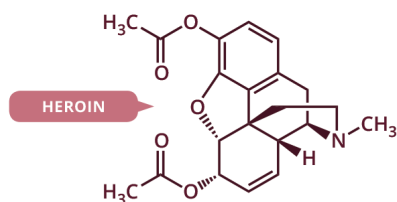
More
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To see more of
Bunning's work, go to
compoundchem.com.
To see all of C&EN's
Periodic Graphics,
visit **cenm.ag/
periodicgraphics**.

THE OPIOID EPIDEMIC

Opioid overdoses killed more than 33,000 people in the U.S. in 2015. Here we take a look at the drugs behind the opioid epidemic and available treatments for opioid overdose and addiction.

HEROIN & OPIOIDS



Like other opioids, heroin turns on opioid receptors to relieve pain and produce a feeling of euphoria. Opioids are highly addictive and at high doses can depress breathing, leading to death.

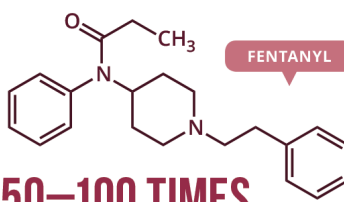
63.1% OF DRUG OVERDOSE
DEATHS IN 2015
INVOLVED AN OPIOID DRUG

Street heroin is now being mixed with other opioids, making it more potent and dangerous. Users often do not know what the heroin they are using contains, increasing the risk of overdose.



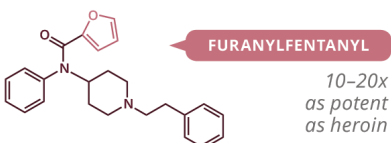
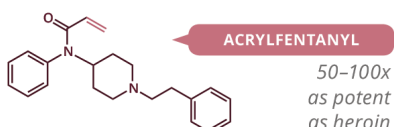
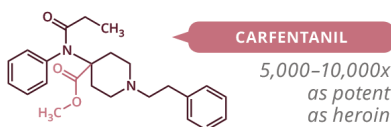
- HEROIN?
- FENTANYL?
- ANALOGS?
- DESIGNER OPIOIDS?

FENTANYL & ANALOGS

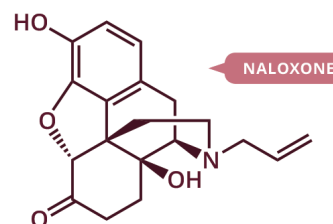


**50–100 TIMES
AS POTENT AS HEROIN**

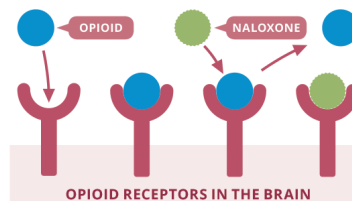
Fentanyl is a synthetic opioid that doctors prescribe to treat chronic pain. The fentanyl in street heroin is illicitly manufactured. Fentanyl analogs (selection shown below) are also increasingly common. Their higher potency increases the risk of overdose.



OVERDOSE & TREATMENT



Naloxone reverses the effects of opioid overdoses. It has a stronger affinity for opioid receptors than opioids do and turns off the receptors. The antidote works within two minutes when injected.



Methadone eases withdrawal symptoms for people with opioid addiction getting sober. Its effects are similar to heroin's but are less intense and longer lasting.



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