Big story (and also non-story) out of Miami. And all over the Internet and Snopes. Two related questions: Did a kid get poisoned from fentanyl on a supermarket shopping cart? And CAN a kid get poisoned from fentanyl on a supermarket shopping cart?

All the teeth-gnashing aside, these are both easy to answer. The first - this looks like an urban myth. There is no indication [1] that any child was killed from fentanyl on a shopping cart. The second - yes, a kid (or anyone else) could be poisoned by fentanyl (or even more readily, one of the "super-fentanyls," like carfentanil on a shopping cart. Or anything else for that matter. This is the scary part.

A story in the Miami Herald [2] asks "Police warn you can OD on fentanyl from touching a shopping cart. Is that true?" The paper did an OK job of answering the question but missed the main point.

"Black-market fentanyl, the most deadly and popular kind, comes in the form of white powder, according to Snopes. The DEA recently warned that this kind of fentanyl can be “absorbed through the skin or eyes, any substance suspected to contain fentanyl should be treated with extreme caution as exposure to a small amount can lead to significant health?related complications, respiratory depression, or death."

Death by shopping cart? Rumor, so far.
This statement is technically correct, but also misleading. They are focusing on the wrong organ. It should be the mouth. This is because, with very few exceptions, solids do not penetrate the skin and get into the blood. The only reason that Duragesic, a transdermal fentanyl patch, works at all is that the patch is formulated to enhance skin absorption, and it took a fair amount of research to get that to work (1).

Even in solution, most chemicals don't penetrate the skin. A water solution of sodium cyanide does not (2). The correct answer to the question in the Herald consists of two parts. One is less scary than what we've been reading. The other is scarier.

The skin scare is essentially nonexistent. The experts who said that transdermal absorption is not going to be a problem are correct. But the second part of the scare is scientifically feasible although the story itself is false. Here's why.

The lethal dose of fentanyl in adults is about one mg. In kids, let's assume that it's half that. A grain of salt weights 0.3 mg, so a lethal dose of the drug would be invisible. To be lethal, a child would have to touch the drug and then put his/her fingers in his/her mouth. So, a bit of fentanyl powder sprinkled on any surface is a serious concern. But, as bad as it is, fentanyl is candy corn compared to some of the fentanyl analogs out there. There are dozens. Some of these are hundreds of times more potent than fentanyl itself. (See: If You Think Fentanyl Is Bad... [3]). This is what is truly horrifying about what is being circulated the country. Drugs that are so deadly that you cannot even see a lethal dose. Is it any wonder that thousands of people are dying every week from what is essentially an invisible murder weapon? Which is easy to synthesize.

There have never been street drugs like these. They are that bad. Meanwhile, politicians pass laws limiting how many days of Vicodin prescriptions you can get, and CVS takes it upon itself to ignore physician's prescriptions in the name of "fighting this nations' addiction problem." (See: CVS's Transparent Opioid PR Stunt [4]).

Surely even the dumbest, self-serving, or most corrupt policy-and lawmakers must see that the battle they are "fighting" is the wrong battle. Put that in your shopping cart.

NOTES:

(1) Transdermal drug delivery has been the holy grail in drug research for some time, especially for insulin.

(2) Sodium cyanide dissolved in dimethylsulfoxide (DMSO) is very dangerous. The DMSO penetrates skin easily and "carries" the cyanide with it.