

OREGON PUBLIC HEALTH DIVISION • OREGON HEALTH AUTHORITY

RISKY BUSINESS: DANGEROUS DRUGS AND TAINTED TATTOOS

This issue of the *CD Summary* reviews clusters of illness traced to two trendy pastimes.

“Spice”-y Toxicity

Nowadays, if you ask at your local convenience store for potpourri to freshen your shoe closet, you might get potpourri of quite a different kind — the synthetic drug kind.¹ Since April 2012, the Oregon Public Health Division (OPHD) has identified five cases of unexplained acute kidney failure in Oregon, and another in southwestern Washington, in persons who smoked the designer drug colloquially known as “spice.” All six were male; the median age was 18 (range, 15–27) years. “Spice,” “potpourri,” “K2,” “herbal incense” and “JWH-018” all refer to mixtures of plant material (typically of unknown origin) that are sprayed with synthetic analogs of tetrahydrocannabinol (THC), the active substance in marijuana, and smoked to achieve a “high.”^{2,3} They may also be called “synthetic marijuana” or “fake weed.”

Similar cases were reported earlier this year in Casper, Wyoming, and elsewhere in the United States.⁴ The Oregon cases reported onset of symptoms minutes to hours after smoking “spice”: severe abdominal or back pain, nausea, and vomiting to the point of dehydration. In cases in whom creatinine was measured serially, levels rose from normal to >8 mg/dL in less than 24 hours. Urinalyses showed no casts; some contained small amounts of blood. All patients had hypertension. Four of six patients’ renal function resolved over several days. The other two patients had renal biopsies, which revealed mild acute tubular necrosis in both and acute interstitial nephritis in one. The latter patient was treated with high-dose steroids, and the former required hemodialysis. Ultimately, all six patients were discharged with improving renal function, though the specter of chronic or end-stage renal disease will haunt anyone with acute renal injury.⁵ Indications of “spice” toxicity and recom-

Table 1. Synthetic marijuana-associated acute renal injury

If you see a patient with....	...then please do the following:
<ul style="list-style-type: none"> • 13-40 years of age • acute renal injury of unknown etiology • since April 30, 2012, and • history of using “spice” or other synthetic cannabinoids before symptom onset 	<ul style="list-style-type: none"> • contact the Poison Control Center for assistance with clinical management (1-800-222-1222); • report the case to OPHD (971-673-1111); and • save any available drug samples, serum and urine for toxicology testing.

mended actions are shown in Table 1.

The THC analogs in “spice” and like mixtures are chemicals concocted in a lab, not natural substances in marijuana plants. The renal damage may be a consequence of yet-to-be-identified compounds or contaminants. OPHD is working with the Arkansas Public Health Lab, the University of California, San Francisco Toxicology Lab and CDC to identify the toxin by testing patient blood and urine and any remaining “spice” product.

“Spice” resembles dried herbs, and is packaged in small containers or silvery plastic packets. It is sold over the internet or distributed at gas station convenience stores, “head shops,” tobacco stores and adult video and book stores. The contents in “spice” are difficult to trace: batches are made in warehouses using chemicals bought online from off-shore “research chemical” pharmacies. The plant material may come from elsewhere. Product from the same batch may be packaged under different labels, or a label may change its recipe depending on ingredient availability.

Sale or possession of synthetic cannabinoids is banned by the Oregon Board of Pharmacy through the Oregon Uniform Controlled Substances laws.* Nevertheless, they are advertised by sellers as “legal” and disingenuously labeled as “not for human consumption.” Some sellers go so far as to create legitimate-appearing laboratory reports, declaring the substances contained therein to be legal.

* Oregon Revised Statute 475.035; Oregon Administrative Rule 855-080-0021(3).

According to a University of Michigan study, 11.4% of high school seniors reported using synthetic marijuana in the past year.³ Perhaps users choose “spice” to achieve a more intense high, or to avoid testing positive on a urine drug test for THC. Sadly, this eagerness to alter their sensorium has landed a number of previously healthy young people in the hospital with kidney failure.

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Tainted Tattoos

On August 22, CDC reported 19 cases of *Mycobacterium chelonae* infection in persons tattooed in New York, Washington, Iowa and Colorado, and three cases of *Mycobacterium abscessus* infection in persons who received tattoos in Washington.¹ Among 22 cases, 64% were male, and the median age was 33.5 (range, 20–48) years. These cases are reminiscent of a case of nontuberculous mycobacteria (NTM) infection reported from Oregon earlier this year (Figure, *verso*).²

Product trace back linked the recent clusters with tattoo ink from four different suppliers.³ Tattoo inks are regulated by



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FDA as “cosmetics,” and although no specific regulation requires that they be sterile, the outbreak gave FDA license to visit and collect samples from the manufacturing plants associated with the largest cluster in New York. *M. chelonae* isolates from gray ink produced by one of the suppliers were indistinguishable from patient isolates from this cluster, leading to recall of the implicated ink. Despite strong epidemiologic links between the other human clusters and certain suppliers’ inks, cultures were not available to force their recall.

Ingredients in the implicated tattoo inks included a wide range of pigments, carrier solutions, and diluents. A common misconception is that distilled water and water treated with reverse osmosis filtration are sterile; but NTM could be found in either, and NTM contamination of tattoo ink has been associated with dilution by non-sterile water.² NTM are ubiquitous; tap water is a major reservoir. *M. chelonae* and *M. abscessus* (of the *M. fortuitum* complex) are termed “rapid-growers” for their ability to grow on agar plates within seven days, unlike their cousins in the *M. tuberculosis* complex, which take their time at 21–56 days. Rapid growers are the most common cause of community-acquired skin and soft-tissue NTM infections.⁴

Consider infection with NTM in any patient with a tattoo-associated skin infection (Figure; Table 2).² NTM infections may be established by culture of skin punch biopsies for mycobacteria. If NTM are isolated, susceptibility testing by broth microdilution is recommended. Against wily rapid growers, few antibacterial drugs are effective;

Table 2. Tattoo-associated non-tuberculosis mycobacterial skin infections

If you see a patient with....	...then please do the following:
<ul style="list-style-type: none"> popular, pustular, nodular skin lesions over a tattoo, even if tattoo is healed chronic, draining lesions over a tattoo persistent skin infection over a tattoo that is not responding to antibiotics since May 2011 	<ul style="list-style-type: none"> culture and biopsy for bacteria, mycobacteria and fungi; obtain tattoo information: time, place, ink used and tattoo artist; report suspected or confirmed tattoo-associated NTM skin infections to OPHD (971-673-1111); and instruct the patient to notify FDA’s MedWatch program for product safety.*

Figure. Numerous 2–3 mm papules are present within and around the margins of the tattoo.²



they include clarithromycin, amikacin, and cefoxitin. Typical antituberculous drugs are not effective.⁴ Treatment is prolonged, and surgical debridement may be necessary.

CDC recommends that tattoo aficionados (1) use registered tattoo parlors; (2) request tattoo-specific ink (printing press ink is a no-no[†]); (3) ensure that tattoo artists employ hygienic practices[‡]; (4) seek medical attention if

[†] Printing press ink is not manufactured to FDA Cosmetic standards.

[‡] Spit-cleaning doesn’t count.

skin problems develop over the tattoo; and (5) notify the tattoo artist and FDA’s MedWatch program* if they develop symptoms of infection over and around the tattoo.¹

For tattoo artists reading this CD Summary, be aware that inks and pigments can be contaminated through (1) use of contaminated materials to make ink; (2) manufacturing processes that contaminate ink and allow bacteria to survive; (3) unhygienic practices during tattoo application; (4) non-sterile water used to dilute inks; and (5) use of tattoo inks past their expiration date.³

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* www.fda.gov/safety/medwatch/howtoreport/