



DISRUPTIVE TECHNOLOGIES BRIEFING

April 25, 2019

Custom-Made Drugs & Hips

If there ever was a sector ripe for disruption, it's health care. Many patients have no idea what they're paying for products and services, nor can they measure the quality of the service. But there are changes occurring at the margins. Here are two news items—on drug compounding and 3D joint printing—that caught our eye:

(1) *Battling high drug prices*. Some dermatologists are looking at the sky-high prices of drugs as an opportunity. They're buying inventory of drugs manufactured by drug outsourcing companies and selling them at prices that are reportedly far below what consumers would pay at the pharmacy, with or without insurance.

Compounding drugs outside the traditional system has a spotty history. Contaminated drugs dispensed in 2012 by the New England Compounding Center resulted in 76 deaths when more than 800 patients receiving a steroid injection contracted meningitis. Congress responded in 2013 with The Drug Quality and Security Act, a new law that allowed physicians to purchase drugs on a shortage list from a FDA-registered 503B outsourcing facility and dispense them directly to patients, a 2/25 [article](#) in *Dermatology Times* states.

Critics worry that doctors are more likely to overprescribe drugs or charge more for them when they profit from the drug sales. Supporters say patients would be more likely to fill prescriptions at a doctor's office, and doctors could charge prices below a pharmacy's. If the drug prices at both the pharmacy and the doctor's office were listed on the Internet, it's easy to see how patients could come out ahead.

(2) *3-D knees*. 3D printing has come to orthopedics. A number of companies are making joints specifically tailored to patients' knee and hip joints. One such company, Conformis, uses CT scan data to design a personalized joint—adjusting for bone spurs, cysts, and flattening of the joint—and then produces it using a 3D printer. Normally, hospitals carry joints in various sizes that have been mass produced.

Theoretically, 3D printing should be a big win for patients and hospitals. The individualized joint should fit better, and the just-in-time manufacturing should reduce hospitals' inventory and costs. However, 3D joints haven't been widely adopted primarily because they're costly and because patients generally enjoy good outcomes using prefabricated joints.

A 4/13/17 *U.S. News and World Reports* [article](#) stated: “[I]n general, the vast majority of patients who undergo traditional total joint replacement do well in regards to reducing pain and improving range of motion and mobility. Because of that, research evaluating a large group of patients would likely be needed to home in on even small differences in improvement.”

One [study](#) of knee replacements published in the 5/25/18 edition of the *Journal of Knee Surgery* found that customized implants eliminate two sources of pain after total knee arthroplasty: tibial

sizing and tibial rotation. “With approximately 20% of total knee patients not satisfied after the procedure,” said Dr. Gregory Martin, “customized implants need to be taken seriously.” Dr. Martin co-authored a study discussed in a 7/16/18 [article](#) in *Orthopedics This Week*.

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