

Commentary

Regulatory Reticence and Medical Devices

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IN THIS ISSUE OF *The Milbank Quarterly*, THE ARTICLE “Improving Medical Device Regulation: The United States and Europe in Perspective,” by Corinna Sorenson and Michael Drummond, examines recent changes intended to improve the effectiveness of regulations for pre- and postmarket surveillance of medical devices in the United States and Europe. The authors deftly analyze the numerous weaknesses of current policies in both countries, urge that changes be implemented “in a timely manner,” and recommend further actions to enhance their effectiveness. They conclude that these relatively small changes in regulatory policy will make a substantial difference in the safety and quality of medical devices.¹

Our analysis of the recent history of device regulation in the United States, however, leads to a less optimistic conclusion: that these changes in regulatory policy fail to adequately address the central shortcoming in the regulation of medical devices in the United States and Europe. This shortcoming is the ongoing reluctance of government regulators to exert their existing authority to ensure that lifesaving and life-sustaining medical devices are safe and effective.

The historical record reveals that for years neither the US Food and Drug Administration (FDA) nor the European “Competent Authorities” have fully used their existing authority to ensure safety. For example, since 1976, US law has directed the FDA to require clinical trials and premarket inspections as part of the premarket approval (PMA) process for high-risk devices defined as “implanted and life-supporting or life-sustaining devices.”² Devices that posed moderate risks and were “substantially equivalent” to devices already on the market in 1976 could be cleared through a less stringent review, called the 510(k) process, which did not require evidence of safety or effectiveness based on

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clinical trials or premarket inspections and could not require companies to promise to conduct postmarket studies.

Since 1976, medical implants have become much more prevalent and considerably more complicated, which should have resulted in implants being more likely to require PMA today than they were in 1976. Instead, the trend has been in the opposite direction. Rather than defining them as the high-risk devices that they are, the FDA cleared for example, numerous heart valves and intra-aortic balloon pumps, virtually all artificial hips and knees, and many spinal fusion implants through the 510(k) process. Although the FDA has the authority to require clinical trials as part of the 510(k) process, regulations do not mandate such studies, and the FDA rarely requires them. Persuasive evidence of the FDA's reluctance to use its own authority is that it has so narrowed the definition of Class III devices that only 1% of all medical devices approved in the United States are currently regulated through the PMA process.³

Sorenson and Drummond point out that a 2012 law allows the FDA to more easily reclassify grandfathered devices. Unfortunately, the FDA has used the new law to lower rather than raise its standards. Agency officials have proposed to down-classify most of the grandfathered Class III (high-risk) devices to Class II, so that they can legally be reviewed through the 510(k) process rather than PMA. These include 11 types of lifesaving devices, such as implanted catheters used for dialysis, external pacemakers, external counter-pulsating cardiac devices, and mechanical cardiopulmonary resuscitation (CPR) devices. The FDA justified these down-classifications by claiming that they are based on "valid scientific evidence . . . from clinical and preclinical tests or studies that demonstrate the safety or effectiveness of the device."⁴

The medical profession has rarely criticized the lack of scientific rigor for device approval. Indeed, many orthopedic surgeons and invasive cardiologists, for instance, have strongly supported reliance on the 510(k) process.⁵ It is possible that some of these individuals have been influenced by consulting and speaking fees from device manufacturers, some of which, when defined legally as "kickbacks," led to multimillion-dollar fines.⁶ Congressional concerns about these financial ties resulted in the Physician Payment Sunshine Act, a provision of the Affordable Care Act (ACA) that requires companies that make medical products to publicly list all physicians who have received an individual payment or gift valued at more than \$10 or total gifts or payments exceeding \$100 in

2013 (adjusted for inflation in subsequent years). “Physician preference items,” the label for implantable devices in hospital-purchasing jargon, has acquired a double meaning.

The quality of scientific evidence for the FDA’s down-classifications has, however, been repeatedly questioned by independent experts from nonprofit patient, consumer, and public health organizations that assess the quality of medical care.⁷ They emphasize that the “special controls” that the FDA sometimes requires for devices cleared through the 510(k) process are weak substitutes for clinical trials proving that a device is safe and effective for patients.

The absence of clinical trials for so many implants and lifesaving devices is especially alarming because of the increasing subjectivity of the FDA’s criteria for defining “substantial equivalence” to another device. This definition is so broad that a dental implant has served as a “predicate” for (that is, as the equivalent of) a spinal implant, for example. As Sorenson and Drummond observe, the result of these determinations is that the majority of high-risk recalls of medical devices have been of those that were cleared by the 510(k) process.⁸ In fact, approximately 18% of medical devices cleared through the 510(k) process in recent years have been subsequently subject to either a high-risk or a moderate-risk recall.⁹ Even moderate-risk recalls can require potentially debilitating surgical removal of an implant, with metal-on-metal hip replacements being a recent example.

Additional evidence of the FDA’s weak use of its current authority is that it often does not require clinical trials for modified PMA applications¹⁰ and even when it requires clinical trials for PMA applications, its scientific standards are much lower than for evaluating pharmaceutical drugs. Whereas pharmaceutical companies usually are required to submit two well-designed, randomized, controlled clinical trials, the FDA has routinely approved even the highest-risk medical devices on the basis of one relatively small, uncontrolled clinical trial. For example, the FDA is currently considering approving a cochlear implant, with well-established serious risks, for adults ages 18 and older based on one study of 50 patients, only one of whom was under 37 years of age.¹¹ Unfortunately, few clinical trials of new devices compare their effectiveness and safety to other treatment options, and none has approached the methodological sophistication of the systematic reviews of the comparative effectiveness of pharmaceutical drugs in particular

classes on which collective purchasers and physicians have increasingly relied for more than a decade.¹²

The FDA, like the European Union (EU), has been shifting the burden of obtaining evidence of safety for both devices and prescription drugs from premarket to postmarket studies. Unlike the EU, however, regulators in the United States have access to relatively limited data from registries or other postmarket methodologies. Moreover, the ease with which manufacturers can change devices already on the market means that long-term evidence is increasingly irrelevant to the safety and effectiveness of devices currently on the market, thus diminishing the value of registries that collected data on earlier versions of medical devices.

As Sorensen and Drummond describe, in 2013 the FDA issued final regulations requiring manufacturers to use “unique device identifiers” (UDIs) to assist in tracking adverse events associated with devices that are in use. This will eventually provide better data on devices, but the FDA’s final rule gives manufacturers 3 additional years after most official deadlines to fully comply with the UDI regulations, even though the law requiring UDIs was first enacted in 2007.¹³ This is an example of the FDA’s underwhelming response to a recommendation in 2011 by a committee of the Institute of Medicine that the agency accord priority to “developing an integrated pre-market and post-market regulatory framework.”¹⁴

Patients in many other industrial democracies have an important safeguard that US patients lack: their universal national health plans do not pay for devices unless they have been proven in clinical trials to benefit patients, which is a much higher standard than is required for either EU or FDA approval. In the United States, as soon as the FDA approves a device, it is likely to be covered by most public and private purchasers. This policy has contributed to the United States having the most expensive health care in the world and may put some American patients at greater risk of injury than are their counterparts in countries that apply more rigorous criteria for coverage and, hence, payment. Moreover, many devices are less expensive in Europe than in the United States because most EU member countries determine allowable wholesale prices, and hospitals and surgeons are reimbursed at lower rates than they are in the United States.¹⁵

Sorenson and Drummond explain that the European Union began to utilize its full authority to regulate medical devices only with the reforms

of 2012; prior to that, even when clinical trials were required for high-risk devices, they rarely were randomized or had a control arm; sample sizes were small; and outcomes focused on safety and “performance,” not whether the device benefits patients. The lack of transparency in the process reduced the opportunity for oversight or public outrage. In the United States, congressional hearings and media attention in the 1990s resulted in the FDA’s requiring clinical trials for breast implants and jaw implants, although it has not done so for many implants that are equally risky or pose even higher risks for patients.¹⁶ Only when similar congressional and media attention focused on metal-on-metal hip implants 20 years later did the FDA announce a plan to require clinical trials for them as well. Other implants, including numerous lifesaving cardiac devices, have been shown to be even more harmful when they fail but have received less attention from Congress and the media. The FDA has still not required clinical trials for many of those implants.

What accounts for the FDA’s reticence regarding more stringent regulation of medical devices? This is the same agency that Harvard political scientist Daniel Carpenter, in a history of its regulation of pharmaceuticals published in 2010, called the “most powerful regulatory agency in the world.”¹⁷ Sorenson and Drummond justifiably accuse the FDA and the EU of issuing regulations that “not only introduce risks to patients but also the wrong incentives to . . . evaluate the benefits and risk of new devices.” They offer some history of this failure in the EU, but hardly any for the FDA. This omission may be partly a result of the absence of scholarship on the recent history of device regulation comparable to Carpenter’s work on pharmaceuticals. Such timely scholarship would build on the article by Sorenson and Drummond and a review of recent literature by Christa Altenstetter.¹⁸

Evidence has nevertheless accumulated about the impact of politics on device regulation in the United States. The presence of the device industry in every state and many congressional districts enhances its effectiveness in lobbying influential members of the House and Senate across the political spectrum. In addition, a lobbyist for AdvaMed, the device industry’s trade association, left this job to become deputy chief of staff for Speaker of the House John Boehner,¹⁹ and the current senior executive vice president of AdvaMed was previously a key health adviser to the late Senator Edward M. Kennedy.²⁰ In the Senate, liberal Democrats Al Franken (MN), Patty Murray (WA), Barbara Mikulski

(MD), and Elizabeth Warren (MA), for example, have joined with conservative Republicans such as Kelly Ayotte (NH), Tom Coburn (OK), Rand Paul (KY) and Marco Rubio (FL) to support initiatives promoted by device industry lobbyists, including a proposed delay or repeal of a 2.3% tax on medical devices in the ACA that helps pay for health insurance subsidies. AdvaMed and individual device companies make substantial contributions to Congressional candidates and spend tens of millions of dollars on lobbying every year.²¹ This makes it impossible to distinguish between the impact of Congressional concerns about the legitimate needs of device company constituents and the impact of campaign contributions. Regardless of causation, however, the result has been Congressional hearings that criticized FDA efforts to improve scientific standards for devices, and legislation that fails to ensure that most devices are either safe or effective.

The device industry and AdvaMed have, moreover, thwarted legislation to require price transparency for devices, arguing that prices are a trade secret under the US Commercial Code.²² They also have resisted attempts by investigative reporters to obtain information about adverse events associated with implants and conflicts of interest among physicians who select those devices. Exceptions include notable stories by Barry Meier of the *New York Times* and Peter Whoriskey of the *Washington Post*.²³

Sorenson and Drummond write that the FDA's decisions have frequently benefited device manufacturers rather than the public. We augment their conclusions by emphasizing the influence of interest-group politics on the agency's regulatory reticence. The device industry wields enormous influence at the FDA as well as in Congress. For example, the last four directors of the FDA's Center for Devices and Radiological Health subsequently worked for the device industry as consultants or full-time employees, starting with James Benson, who left the FDA in 1992 to head the trade association that preceded AdvaMed.²⁴⁻²⁷ But the revolving doors between industry and government, which have been widely criticized at the Pentagon and other agencies, have rarely captured public attention when they benefit the medical device industry. Regardless of FDA conflict-of-interest and regulatory policies, revolving doors undermine the quality and integrity—and add to the costs—of the US health-care system because the relationships involved could contribute to the agency's failure to require solid scientific evidence of the safety and

effectiveness of most moderate-risk and high-risk medical devices upon which patients rely.

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