BMJ investigation raises concerns about the post-approval surveillance of medical devices

November 3 2010

A British Medical Journal investigation published today raises concerns about the ability of the US Food and Drug Administration to monitor the ongoing safety of medical devices through post-approval surveillance.

The report by Jeanne Lenzer, a medical investigative journalist in New York, and Shannon Brownlee from the Dartmouth Institute for Health Policy and Clinical Practice in New Hampshire, looks at the FDA's approval of a device to prevent or reduce seizures in patients with epilepsy who do not respond to drug treatment.

The device, manufactured by Cyberonics, is implanted under the skin and sends electrical impulses to stimulate the vagus nerve in the neck. It was approved by the FDA in 1997 on the condition that Cyberonics carried out a post-approval study to examine the safety of the device.

"However, in the 13 years since the device was approved in the US, more than 900 deaths have been reported to the FDA, and it is still not clear what impact, if any, the device has had on patient mortality," say Lenzer and Brownlee. They point out that, although Cyberonics conducted the requisite post-approval study, the FDA did not specifically require the company to submit mortality data.

Lenzer and Brownlee argue that the FDA's failure to request and rigorously monitor mortality data related to the vagus nerve stimulator "is but one example of the gap in post-approval surveillance of medical devices." A recent review showed that less than one third of devices

approved under FDA's premarket approval process had been evaluated in a randomised study.

They also question the FDA's ability to detect potentially unsafe devices through its harms database and cite a finding that many post-approval studies "are not conducted or conducted so poorly as to be meaningless."

The FDA gave the BMJ references to five additional post-approval studies as evidence of the device's safety. But Lenzer and Brownlee say that these studies do not establish that the device wasn't responsible for deaths because none of them reported mortality data.

In 2005, the FDA approved the vagus nerve stimulator for the treatment of depression, despite the recommendation against approval by its own scientists. The company has also suggested that the stimulator might have a role in treating obesity, stroke, traumatic brain injury, and other conditions, and has taken out patents for these potential therapies.

The gaps in post-approval monitoring of the vagus nerve stimulator are emblematic of the FDA's surveillance of all devices, say the authors. Yet they believe many of the problems have relatively easy fixes. For example, the FDA could make better use of the FDA's database to detect potential safety issues by requiring manufacturers to regularly submit data on the number of active devices.

An independent review panel could also be appointed to decide whether certain adverse outcomes could be excluded from reporting, instead of allowing the manufacturer to make those decisions. And, as the FDA has suggested, mechanisms to limit widespread uptake of new devices could be put in place so that fewer patients are harmed if it ultimately turns out that newly approved devices are flawed, they conclude.

In an accompanying editorial, Professor Jerry Avorn from Harvard

Medical School argues that "the standards for device approval and surveillance have fallen far below those for drugs, and even those that would be dictated by common sense."

He points to a "notoriously inadequate approach" in the vital area of postmarketing safety surveillance, and calls for surveillance activities to be placed at a higher and more independent position within regulatory bodies.

Important lessons can be learnt from drug regulation, he says, including mandatory recording of all installed devices on clinical databases and better systems to review new products.

Provided by British Medical Journal