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# Dealing with medical waste

Recycling medical refuse like unused disposable syringes is part of a much-wanted greening of the US health care industry writes **INGFEI CHEN**

**T**HE health care industry has a garbage problem. It's not just that hospitals, doctors' offices, clinics and other health facilities generate several billion pounds of garbage each year: buried in that mountain of trash are untold numbers of unused disposable medical devices as well as used but recyclable supplies and equipment, from excess syringes and gauze to surgical instruments.

The problem, fuelled by a shift toward the use of disposables that made it simple to keep treatment practices sterile, has been an open secret for years, but getting the health care industry to change its habits has not been easy.

No organisation now tracks how much medical trash the United States produces — the last known estimate, from the early 1990s, was two million tons a year.

Only recently has the industry begun grappling with its waste. One reason is that financially stressed hospitals are seeking ways to cut costs.

"We've just seen a change," said Cecilia DeLoach Lynn, director of sustainability education at Practice Greenhealth, a nonprofit group in Reston, Virginia, that is working to shrink the environmental footprint of health care institutions.

"Where once you had to do a lot of door-knocking to get anyone to pay attention," says DeLoach Lynn, "these days, folks are asking us how." Practice Greenhealth's members include around 1,100 hospitals and 80 companies.

A new movement is taking aim at one of the biggest sources of medical refuse — the operating room, which churns out about 25 per cent of a hospital's waste...

At a symposium in Baltimore in May, Practice Greenhealth announced an initiative called Greening the O.R. It will explore and vet the best sustainable practices for reducing operating-room garbage, energy consumption and indoor air quality — while lowering expenses and improving

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safety, DeLoach Lynn says.

Eliminating the squandering of medical supplies and equipment can save on purchases as well as incineration and landfill fees. Some institutions have started reducing their use of materials, recycling what they do use, and donating leftover but still usable items to developing nations.

In a commentary published in March in *Academic Medicine*, Dr Martin A. Makary, a gastrointestinal surgeon, and colleagues at Johns Hopkins School of Medicine called for more medical centres to “go green” by recycling disposable single-use medical devices.

Several reprocessing companies take certain disposables — like orthopedic drill bits and heart-monitoring catheters — and

clean, recalibrate, repackage and resterilise them, then sell them back to hospitals and medical suppliers for 40 to 60 per cent of the price of new ones.

The commentary stemmed in part from a moment two years ago when Dr Makary stared into a trash bin in the operating room after performing routine laparoscopic “keyhole” surgery.

As is typical in most hospitals, the wastebasket was full of “perfectly good equipment, much of which was either barely used or never used,” he recalls. The unused devices came from sterilised surgical kits that were opened for the operation; no longer sterile, they were tossed.

Until fairly recently, most medical devices — made from durable metal, glass or rubber — could be disinfected for countless reuses. But in the 1980s, the health care industry began shifting to single-use versions, often made from inexpensive plastics, partly because the emerging HIV epidemic raised fears about the risks of recycling equipment.

Although it was soon clear that sterilisation techniques readily killed the virus, the trend toward disposables grew. It was, says Dr Makary, a way “for the industry to make more money”.

Some single-use devices can be reused after reprocessing, but a decade ago there was

consternation that inadequately decontaminated products might cause infections. Or that cleaning and sterilisation might erode their less durable components, leading to malfunction.

Original-equipment makers and their trade group, the Advanced Medical Technology Association, warned that it was unsafe to recycle devices designed to be used only once. But since 2000, the Food and Drug Administration has taken steps to require that reprocessing companies meet the same stringent regulations for their products that original-device makers do.

But lingering safety concerns slowed the adoption of reprocessing.

To investigate those fears, Gifty Kwakye, then a graduate student at Hopkins, worked with Dr Makary and a colleague, Dr Peter J. Pronovost, in combing the medical literature for evidence that patients were harmed by recycled devices.

They found none.

A report by the Government Accountability Office in 2008 said the available data indicated no additional health risk from reprocessed disposables.

Reprocessing “has a reliable safety record of excellence identical to that of new equipment,” the Hopkins researchers concluded in their commentary.

David Nexon, senior executive vice-president of the Advanced Medical Technology Association, acknowledges that with increased oversight, where devices have won FDA clearance based on review of additional data validating their safety and effectiveness after being reprocessed, the products are now “probably pretty safe.”

Still, Nexon questioned the safety of recycled products for which FDA does not require such data.

But Karen Riley, an FDA spokeswoman, says only a minority of reprocessed devices were exempt from the requirement for extra validation data, because they posed a low safety risk. They include devices that may touch the

skin but not penetrate it.

Many organisations, from Practice Greenhealth to the American College of Cardiology, support reprocessing as a safe strategy. Today, more than half the country’s hospitals send at least some of their single-use devices to reprocessors, says Daniel J. Vukelich, president of the Association of Medical Device Reprocessors.

But while recycling is helpful, even reprocessed disposables must eventually be thrown away, says Dr Rafael Andrade, a surgeon at the University of Minnesota Medical Centre, Fairview, who spoke at the recent Practice Greenhealth workshop.

The bigger goal, he says, should be to resume the old practice of relying on permanently reusable equipment.

For now, another approach is to cut back the use of disposables at the source by streamlining packaged surgical kits. Last year, Dr Andrade and a nurse, Lynn Thelen, started an “O.R. green team” at Fairview.

One kit for implanting an intravenous port in chemotherapy patients contained 44 items, but the green team downsized it to 27 items and swapped disposable gowns and linens for reusable ones. That trimmed a pound of trash and US\$50 (RM150) in supply costs per procedure. So far, Thelen says, the various kit reformulations have prevented 7,792 pounds of waste and saved US\$104,658.

Similarly, at Rochester General Hospital in New York, surgeons have agreed to use standardised supply kits selected to cover most of their needs while leaving little unused, says Dr Ralph Pennino, the chief of plastic surgery.

Leftover items are donated to InterVol, a nonprofit organisation started in 1989 by Dr Pennino. Each week, its volunteers gather about 8,000 pounds of unused supplies and reusable equipment from regional health care facilities, then ship the stock to clinics in more than two dozen countries, including Somalia and Haiti.

Other humanitarian relief groups, like Project C.U.R.E., do similar work. — NYT

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