# Profile

## Peter Pronovost: champion of checklists in critical care

Medicine is complicated and becoming more so. Is it possible to make it simpler? Peter Pronovost believes it is. Making it simpler is essential to make it safe, he says. Some branches of medicine—intensive care, for example—have grown so far beyond ordinary complexity that avoiding mistakes is almost impossible.

To simplify complex procedures and make them less error-prone, Pronovost, professor at Johns Hopkins University School of Medicine's Departments of Anesthesiology and Critical Care Medicine and Surgery, devised the checklist. He started with one problem: central line infections, which are associated with between 30 000 and 62 000 deaths a year in the USA. On a sheet of paper Pronovost listed the steps necessary to avoid line infections. They were the things every doctor and nurse knew they should do but did not reliably carry out on each occasion. He introduced it at Johns Hopkins, in Baltimore, MD, USA, and asked medical staff to run through it each time they inserted a line. The results were dramatic: the infection rate went from 11% to zero.

The checklist was later extended to hospitals in Michigan where in the first 15 months it is estimated to have saved 1500 lives and US$175 million in costs. Today, 8 years after that initial trial at Johns Hopkins, Pronovost is about to see the idea he pioneered implemented on a national scale. In May, US Secretary of Health and Human Services Kathleen Sebelius announced the checklist was to be rolled out to 28 states with a target to cut line infections by 75% in 3 years. "We struggled for a couple of years but now [interest] has just exploded", Pronovost says.

Pronovost is now advising a dozen countries, including the UK National Patient Safety Agency that is piloting the checklist in eight hospitals in the northeast. But winning acceptance for the idea has not been easy. Clinicians tend either to dismiss it as tick-box medicine, or insist they are making the checks already, or protest that the deaths are inevitable. He had been shocked, he says, that hospitals in the UK did not measure their infection rates in a way that allowed them to be compared with other hospitals. "I do not give a hoot if they say they are using the checklist, I care that they measure their rates of infections in a valid way. We are grossly overconfident about how good we are. This problem is the most measurable and preventable harm—and it is not being measured," he says. Pronovost believes high death rates from hospital infections had been tolerated for too long and says "It is going to take consumer activism to tackle this. We need governments and clinicians and managers and patients behind it—without all of them in the sandbox it is not going to work."

As both scientist and campaigner, his efforts to focus attention on the unglamorous business of delivering health care have won plaudits from US surgeon and author Atul Gawande, who has helped WHO launch a version of the checklist for surgery that is already saving lives around the world. In the UK, Peter Hibbert, associate director at the National Patient Safety Agency, which is running the pilot scheme in the UK, said of Pronovost: "He is inspirational, dynamic, and always coming up with new ideas. As a practising clinician he can relate to people in intensive care units. We are very excited about the opportunity to reduce patient harm in this particular problem. There are lessons you can learn that can be applied to other safety issues. The health service does most things well for most patients but the checklist enables you to do it well for all patients."

Implementing the checklist is not a simple matter of handing it out and asking medical staff to follow it, however. "It is not Harry Potter's wand", Pronovost says. Checklists might seem deceptively simple, but the effective use of them is a complex issue that encompasses different groups within the health-care system and organisational change—culture and custom have to change, too. "My vision is that the science of how to do checklists is in its infancy", Pronovost explains.

44-year-old Pronovost wears a number of hats at Johns Hopkins as professor of anaesthesia, director of the Quality and Safety Research Group, and medical director of the Center for Innovation in Quality Patient Care. He speaks three or four times a week at meetings, criss-crossing the USA—and the world. A favoured image used in these talks is that of the three buckets to represent the tasks of medicine: one is understanding the biology of disease; the second is finding effective treatments; and the third is ensuring the treatments are delivered effectively. The third bucket has been totally ignored by research funders, Pronovost says: "We spend a cent on the third bucket for every $1 we spend on the first two." His aim is to now persuade people to pay more attention, and put more funds, into the third bucket. He calls it implementation science. "I am trying to lay bridges between two worlds that were an ocean apart", he says.

As a family man, with a busy professional and domestic diary—his wife is the Johns Hopkins paediatrician, Marlene Miller, and the couple have two children—he uses a personal checklist to organise his time. "It helps me work out which invitations to accept. I have a rule when I travel that I will only miss one dinner a week away. If I can't get back for dinner on the other days, I don't go." Having proved its worth in his own household, Pronovost is now on a mission to introduce the checklist to the world.

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