The art of medicine

Reality check for checklists

Catheter-related blood stream infections in the intensive care unit (ICU) are common, costly, and potentially lethal. The Dec 28, 2006, issue of *The New England Journal of Medicine* reported that an evidence-based intervention in 103 intensive care units in the Michigan Keystone ICU programme had resulted in a large sustained reduction in rates of these infections. The study was widely reported in the popular media and elsewhere as a triumph of the "simple checklist" as a solution to patients' safety problems. Yet the widespread interest in this study is a dual-edged sword.

It was a great story. Science often needs to be simplified for the lay public. The problem is that the story may well have been oversimplified. The emphasis on checklists is a Hitchcockian "McGuffan", a distraction from the plot that diverts attention from how safer care is really achieved. Safer care is achieved when all three—not just one—of the following are realised: summarise and simplify what to do; measure and provide feedback on outcomes; and improve culture by building expectations of performance standards into work processes. We propose that widespread deployment of checklists without an appreciation of how or why they work is a potential threat to patients' safety and to high-quality care.

Attributing the reduction of infection in the Keystone programme solely to the use of checklists is an easily made but crucial mistake. Checklists are a good way of making certain that tasks get done, as anyone who has taken a shopping list to the supermarket can testify. If wise, checklists can help workers perform a task by reducing ambiguity about what to do. Of course, determining the best way of proceeding in a complex health-care setting is not as straightforward as producing a prompt to remember the milk. But figuring out what should form the content of a checklist for a clinical problem is a nonetheless achievable ambition: there are well-defined processes for identifying and synthesising research evidence. For the Keystone programme, interventions with a potential to improve outcomes were identified, and the five procedures that had the strongest evidence and the lowest barriers to implementation were selected and converted into a standardised checklist.

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But checklists, even if based on rigorous evidence, have never penetrated medicine in the way they perhaps ought to have. The reasons for this are primarily social and cultural. In part, the way that physicians are socialised creates resistances and interferences to the use of checklists. Some come to feel that checklists undermine their claims to expertise, are infantilising, and an unnecessary impediment to the swift decision making and action required for effective care. How to understand and disrupt these deeply entrenched norms is a much greater challenge than identifying the components of a checklist.

The mistake of the "simple checklist" story is in the assumption that a technical solution (checklists) can solve an adaptive (sociocultural) problem. To improve safety, health care needs to get the technical and adaptive work right. Without attention to adaptive work, checklists would probably suffer the same fate as guidelines—often left unused, even when very robust. Summarising evidence is a necessary but not sufficient step for translating evidence into practice. Evidence summaries need to be combined with an understanding of, and a strategy for, mitigating the technical and social/political and psychological (even emotional) barriers to using the evidence, and with feedback about performance. Emphasising checklists as the explanatory mechanism for the reduction in catheter-related infections obscures the complex labour necessary to create a collective local faith in checklists. How support was mobilised for coordinating work around infection control is the real story of the Keystone ICU project.

What happened in Michigan involved the creation of social networks with a shared sense of mission, whose members were each able to reinforce the efforts of the other to cooperate with the interventions. Implementing the entire programme occurred over 9 months—it was not simply the case that the units were handed the checklist and immediately fell in line. The work was arduous and often laden with emotions. Before ICU units were allowed to take part in the intervention, each hospital had to assign a senior executive to work with participating units. Each ICU was required to identify a physician and nurse team leader. The executives were required to meet monthly with unit

workers, listen to problems, and work with team members to solve them. Team leaders received instruction in the science of safety as well as each component of the comprehensive intervention. Team leaders were responsible for schooling their colleagues on the principles of safety in general and the components of the study intervention in particular, and they stayed in touch with study leaders and each other through conference calls and meetings. Infection control practitioners collected valid rates of blood stream infections and reported results to the ICU staff, and frontline caregivers were asked for their feedback regarding the impact of their efforts. The checklists were thus themselves just one component of a more comprehensive programme to alter the culture of the ICUs, which included, among other things, empowering nurses to stop procedures if guidelines were not followed.

The Keystone study therefore models how to achieve results in wider contexts: recruit advocates within the organisation, keep the team focused on goals, create an alliance with central administration to secure resources, shift power relations, create social and reputational incentives for cooperating, open channels of communications with units that face the same challenges, and use audit and feedback. Thus, Keystone was a complex, cultural, and organisational change effort that was well grounded in theory. A key feature of this model is its rejection of a command and control regime, where workers are simply told what to do (just given the checklist) and expected to get on with it. A long and often painful history has shown that not only are command and control methods expensive, they are also prone to failure and tend to generate new pathologies, not least because workers usually find ways to neutralise or subvert instructions that they do not believe in or that seem to threaten their interests. Another important feature is the emphasis of the model on conferring legitimacy on the intervention. This was achieved by allowing teams to customise the implementation of evidence locally, and challenging assumptions about who has relevant knowledge, who counts as an expert, and who is able and ought to act to improve safety. Indeed, it would be a mistake to say there was one "Keystone checklist": there was not a uniform instrument, but rather, more than 100 versions. Each ICU, informed by evidence and a prototype, was encouraged to develop their own checklist to fit their unique barriers and culture. Taken together, what the Keystone programme did was change workers' motives for cooperating so that they internalised new norms: the new way became taken for granted as "the way we do things around here".

There is no question that checklists can be useful tools to improve performance; and no debate that, to date, health care has not made use of checklists as effectively as it might. However, there are some important caveats.

First, checklists are suited to solving specific kinds of problems, but not others. The success of checklists in preventing disasters during the takeoff and landing of commercial aircraft is often pointed out. But checklists are also used to track baggage for the airlines. On this task, checklists perform less admirably. Handling baggage that comes in different sizes and shapes, involves complex transfers, and is often in poor condition, is a more realistic analogy for use of checklists in achieving patients' safety than their use on takeoffs and landings. Baggage handling is a task that shares with managing patients a staggering amount of coordination, time-pressured decision making, frustrating delays, and tracking systems for non-standardised raw material that needs to be handled safely.

Second, using checklists requires focused effort that is properly informed by a scientifically grounded understanding of how organisations and people work, based on theory and evidence. The US Veterans Affairs classifies the strength of patient safety interventions based on the probability that they will reduce risks; checklists are weak interventions. They are simple reminders of what to do, and unless they are coupled with attitude change and efforts to remove barriers to actually using them, they have limited impact.

When we begin to believe and act on the notion that safety is simple and inexpensive, that all it requires is a checklist, we abandon any serious attempt to achieve safer, higher quality care. Reporting the Keystone initiative as a success of checklists teaches the wrong lesson: namely, that reliable, safe care requires nothing more than insisting upon routine, standardised procedures. Nothing threatens safety so much as the complacency induced when an organisation thinks that a problem is solved. A chilling reminder of this is the phenomenon of wrong site surgery, which persists despite the broad recommendation to use checklists. "If we just tell the workers to use checklists, we will have solved the problem of catheter-related blood stream infections" is quite simply the wrong conclusion to draw from the Keystone study. The "simple checklist" stories in the press created excitement about progress in achieving patients' safety and reassurance for the public and policy makers, but the real story of Keystone is messier and more complex. Although we all hope for the simple solution that with ease and no additional expense makes a stay in the ICU safer, there is some danger in mistaking hope for reality. The answer to the question of what a simple checklist can achieve is: on its own, not much.

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Further reading

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