Analysis and comment

Quality improvement

Saving 100 000 lives in US hospitals

C Joseph McCannon, Marie W Schall, David R Calkins, Alexander G Nazem

An initiative to cut avoidable deaths required rapid recruitment and support of large numbers of US hospitals. Campaign leaders describe how they coordinate nationwide implementation of effective healthcare interventions and document lessons for effective spread

Editorial by Bell et al

Institute for Healthcare Improvement, 20 University Avenue, Cambridge, MA 02138, USA
C Joseph McCannon *100 000 Lives Campaign manager*
Marie W Schall *director*
David R Calkins *senior fellow*
Alexander G Nazem *100 000 Lives Campaign national field manager*
Correspondence to: C J McCannon jmccannon@ihi.org

BMJ 2006;332:1328–30

The quality of health care in the United States varies greatly.[1–3] A study in 2003 showed that Americans receive "recommended care" just over 50% of the time.[4] In response to growing national consensus among key provider, payer, and employer stakeholders about the inadequate pace of change, the Institute for Healthcare Improvement launched the 100 000 Lives Campaign in December 2004. Since then the institute, a not-for-profit organisation whose mission is to accelerate the improvement of health care in the US and internationally, has engaged over 3000 US hospitals (representing over 80% of total US hospital discharges) in this national initiative. The campaign aims to avoid 100 000 unnecessary deaths in US hospitals over the 18 months from January 2005 to June 2006, largely through encouraging and helping hospitals to adopt six evidence based interventions that are known to significantly reduce harm and death when implemented reliably (box 1).[5 6]

SAMUEL ASHFIELD/SPL

Preventing ventilator associated pneumonia is key to cutting deaths

Counting lives saved

The campaign defines a life saved as a patient who survived a hospital stay who would have died had he or she received that hospital's pre-campaign (2004) level of care.[7] It calculates lives saved by comparing a hospital's mortality data for each month during the campaign with mortality data for the corresponding month in 2004. The monthly lives saved are aggregated across all months and all participating hospitals with an adjustment to account for changes in national risk of patient mortality between 2004 and the campaign period. The campaign estimates that, as of April 2006, participating hospitals had saved over 84 000 lives (based on 83% of participating hospitals submitting mortality data).

Campaign model of spread

The campaign arose because pockets of positive results, spread incrementally, even on a scale of hundreds of organisations, could not meet the urgent need to transform the entire American healthcare system now. Looking to electoral politics as an example of a management structure for driving action to a common goal, the institute identified the campaign model as a way to reach the thousands of facilities seeking to improve the quality of their health care.

Although saving 100 000 lives is the primary focus, the campaign team has been building a national infrastructure that can support the rapid spread of improvements in health care now and in the future. Over the past 15 years, the Institute for Healthcare Improvement has developed several vehicles to drive

Box 1: 100 000 Lives Campaign interventions

- Deploy rapid response teams to patients at risk of cardiac or respiratory arrest
- Deliver reliable, evidence based care for acute myocardial infarction
- Prevent adverse drug events through drug reconciliation (reliable documentation of changes in drug orders)
- Prevent central line infections
- Prevent surgical site infections
- Prevent ventilator associated pneumonia

the rapid spread of effective healthcare interventions in the US and internationally.[8] Using research on the spread of innovation, social psychology, organisational theory, political science, and other disciplines,[9 10] the institute has developed a framework that identifies the following essential components for spreading a healthcare initiative:

- Ensuring leadership commitment
- Setting clear aims (including changes to be spread, target level of performance, target population, and time frame)
- Identifying and packaging proved ideas and practices
- Developing and executing a plan to communicate and implement the ideas
- Creating a system for measuring progress
- Establishing a process for refining the plan in response to learning during implementation.

Although these components should be part of any effective spread initiative, the way in which they are applied will vary depending on the characteristics of the organisation, the characteristics of the changes themselves, and the scope of the spread effort.[11–13]

Campaign structure

The 100 000 Lives Campaign operates at three levels: national, node (regional), and individual hospital or system.

National level—The Institute for Healthcare Improvement leads the campaign nationally by establishing the initiative's agenda and pace and developing materials to support change in participating facilities. The institute provides information about the campaign's status and recommended hospital activities, detailed guides for each of the interventions (mostly through its website), an internet based data collection system, and various learning opportunities, including calls, online discussions, access to experts, and mentoring by peer facilities. The campaign uses it own field staff to disseminate innovations among (often distant) sites and closely attend to the needs of—and important relationships between—different types of facilities (such as rural, academic, and community hospitals) and different levels of care. Several influential national partner organisations support the effort and help create a supportive context for change.

Node level—A campaign field office, or node, consists of one or more organisations that have volunteered to support the campaign activity for a group of 50 to 100 hospitals, organised by geography, system affiliation, or affinity. Nodes act as local drivers of the campaign's national agenda, providing more intensive local support (box 2). State nodes often consist of state hospital associations, state nurses associations, state medical societies, local quality improvement organisations, and other groups involved in enhancing safety and quality. Large healthcare systems also act in this capacity (system nodes), as do national associations of academic, paediatric, rural, and public hospitals (affinity nodes).

Individual hospital or system level— Participating hospitals are charged with implementing the six interventions. Each participating hospital or system of hospitals is expected to engage all stakeholders—boards, executives, managers, frontline providers, patients, and families—in the campaign process, developing explicit targets, accountabilities, and campaign work plans, applying quality improvement methods to drive change, and regularly reviewing the organisation's performance.

On a typical day in a successful campaign hospital, one team might be attending a city-wide consortium sharing best practices on drug reconciliation; the rapid response team (typically consisting of a critical care nurse and a respiratory therapist) is responding to early signs of distress before a catastrophic cardiac or respiratory event occurs outside of the intensive care unit; the intensive care team is using a daily goals sheet to make sure that the ventilation guidelines are being implemented reliably for all ventilated patients and tracking the number of days since the last case of ventilator associated pneumonia; and the hospital leaders are meeting to review the results for all of the campaign interventions and develop ways to accelerate the pace and scope of change.

Successes and challenges

As the end of the first phase of the campaign approaches on 14 June, the institute is reviewing progress and refining the process for the next stage. It has learnt critical lessons about what works well for spreading changes and the challenges that still remain. The campaign's clear goal and aggressive deadline have drawn the attention of hospitals and driven the pace of the work. Furthermore, the voluntary nature has created a positive environment in which some participants report that they are proactively driving change within their organisations rather than responding to mandates from federal or regulatory sources.

The campaign has benefited from the disciplined development of a national infrastructure for supporting the spread of improvement and from the assignment of clear roles and responsibilities for regional nodes and participants. This network, though challenging to build and hold together, succeeds because it supports change at the frontlines of care rather than providing guidelines from a distance. Given the number of participating hospitals and the predictable variation in their readiness, commitment, and improvement skills, the campaign has also benefited from a range of tools to support different subpopulations (such as a conference call to discuss the unique needs of rural hospitals) and a commitment to test new tools and approaches early and often.

Box 2: Key responsibilities of campaign nodes

- Raise awareness about the campaign
- Drive enrolment within the node area
- Bring participating organisations together (through meetings, conference calls, electronic discussion forums, or collaborative projects)
- Act as a communications relay point
- Coordinate technical help to participating sites
- Track progress (through performance data and success stories)
- Identify and respond to emerging challenges within the node

The campaign still faces several key challenges. It has had limited success in engaging patients and families, payers, and employers. Their involvement would provide hospitals with a more urgent sense of external demand for high quality care. Also, because it was not compulsory for hospitals to submit process and outcome data for the six interventions and because the calculations of lives saved are imprecise at hospital level, the campaign can give only limited information about performance of individual facilities.

The campaign's pluralistic approach has also led to various challenges. The regional nodes participate voluntarily, making it difficult to standardise support to participants. These field offices have different amounts of time and resources for campaign activities, although clear expectations and toolkits have helped limit variation in performance. In addition, the campaign did not enforce a deadline for enrolling hospitals, resulting in a constant stream of new participants. Their forward momentum would have been improved by a robust induction process and a system for ongoing, customised coaching in quality improvement methods.

Finally, the campaign has had to work hard to maintain coalitions of partners, participants, and nodes, given complex relationships and the strong interests of different parties. Regular communication, clear definition of each party's role, and an unambiguous national agenda have all been vital. The institute hopes that the campaign has created a national network for continuous improvement that can be used to generate powerful and sustained efforts for years to come.

DRC, who worked tirelessly for the campaign, died on 7 April 2006. We thank Jane Roessner for her contribution to the preparation and editing of this article.

Contributors and sources: CJM manages all aspects of the 100 000 Lives Campaign at the Institute for Healthcare Improvement; DRC was instrumental in researching the evidence supporting the campaign's six interventions; MWS is a leader in developing and refining the institute's spread model; and AGN oversees the campaign's field operations. CJM is guarantor.

Summary points

The US 100 000 Lives Campaign aims to cut hospital deaths over 18 months

The campaign focuses on six effective, evidence based, clinical interventions

Rapid spread of change is facilitated by a national and regional support network

Competing interests: None declared.

1 Committee on Quality of Health Care in America, Institute of Medicine. *To err is human*. Washington, DC: National Academies Press, 1999.
2 Committee on Quality of Health Care in America, Institute of Medicine. *Crossing the quality chasm: a new health system for the 21st century*. Washington, DC: National Academies Press, 2001.
3 Commonwealth Fund. *First report and recommendations of the Commonwealth Fund's international working group on quality indicators*. New York: Commonwealth Fund, 2004.
4 McGlynn EA, Asch SM, Adams J, Keesey J, Hicks J, DeCristofaro A, et al. The quality of health care delivered to adults in the United States. *N Engl J Med* 2003;348:2635-45.
5 Berwick DM, Calkins DR, McCannon CJ, Hackbarth AD. The 100 000 lives campaign: setting a goal and a deadline for improving health care quality. *JAMA* 2006;295:324-7.
6 100 000 Lives Campaign. *Campaign materials*. www.ihi.org/IHI/Programs/Campaign/Campaign.htm?TabId=2 (accessed 10 April 2006).
7 Hackbarth AD, McCannon CJ, Martin L, Lloyd R, Calkins DR. The hard count: calculating lives saved in the 100 000 Lives Campaign. *ACP Guide for Hospitalists* 2006 Apr:1-5.
8 Nolan K, Schall MW, Erb F, Nolan T. Using a framework for spread: the case of patient access in the Veterans Health Administration. *Jt Comm J Qual Safety* 2005;31:339-47.
9 Rogers EM. *Diffusion of innovations*. 4th ed. New York: Free Press, 1995.
10 Deming WE. *The new economics for industry, government, education*. 2nd ed. Cambridge, MA: MIT Press, 2000.
11 Massoud MR, Nielsen GA, Nolan K, Nolan T, Schall MW, Sevin C. *A framework for spread: from local improvements to system-wide change*. Cambridge, MA: Institute for Healthcare Improvement, 2006.
12 Berwick DM. Disseminating innovations in health care. *JAMA* 2003;289:1969-75.
13 World Health Organization. *An approach to rapid scale-up: Using HIV/AIDS treatment and care as an example. HIV/AIDS, tuberculosis and malaria evidence and information for policy*. Geneva: WHO, 2004.

Controversy

Should we lower cholesterol as much as possible?

Uffe Ravnskov, Paul J Rosch, Morley C Sutter, Mark C Houston

Statins are portrayed as harmless drugs that almost everyone would benefit from, but little is known about the side effects at the high doses now being suggested

Magle Stora
Kyrkogata 9, S
22350 Lund,
Sweden
Uffe Ravnskov
independent researcher

continued over

BMJ 2006;332:1330–2

People at high risk of cardiovascular disease should be treated more aggressively. This is the message from the American National Cholesterol Education Program published last year.[1] By aggressively, it means that low density lipoprotein (LDL) cholesterol concentrations should be lowered to less than 1.81 mmol/l. Recently, Getz et al calculated that in Norway, one of the healthiest nations in the world, about 85% of men and more than 20% of the women over age 40 would be classified as high risk using this criterion.[2] If followed, the new recommendations might therefore put most of the Western world's adult population on statin therapy. As the risk to benefit ratio for a more drastic lowering of low density lipoprotein cholesterol is unknown we question the wisdom of this advice.

Are higher statin doses safe?

To achieve this new goal, people at high risk would have to take higher statin doses than currently suggested. This would increase the risk of adverse side effects. In the treating to new targets (TNT) trial, the only study comparing a low and high dose of the same statin, not even 80 mg atorvastatin was able to lower