The extent to which trusts are prepared for NICE guidance and have put in place structures and processes to manage their implementation was variable.

The degree of active promotion by NICE is likely to have some impact on adoption, although probably not directly proportional to the effort invested. The greatest effect is likely when opinion leaders including the professional bodies and associations adopt and promote the guidance.

**Conclusions**

Implementation of NICE guidance is likely to be improved if it is clear and based on an understanding of clinical practice, if the evidence is strong and relatively stable, if adequate funding is available, and if the guidance is supported and disseminated by professional bodies. Trusts should institute strong supportive internal systems for handling guidance and gathering data on implementation.

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Competing interests: NC was a member of the NICE Appraisals Committee between 1999 and 2002. KL, PW, DW, and JM work for York Health Economics Consortium, which undertakes work for a range of pharmaceutical companies, the Department of Health, and the NHS and has undertaken a cost-effectiveness study for Guidant, which manufactures implantable cardioverter defibrillators. This study was submitted to NICE as part of the assessment process.

Ethical approval: North West Multicentre Research Ethics Committee.

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# Commentary: Is NICE delivering the goods?

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Those of us concerned with the ability of organisations such as the National Institute for Clinical Excellence (NICE) to influence clinical practice in line with their guidance will read this paper with great interest.[1] But what conclusions can we draw from it? If NICE was an unqualified success, clinical practice in the NHS would reflect its guidance—so use of implantable cardioverter defibrillators would have gone up smartly, laparoscopic hernia repair would have stopped, and so on. This was demonstrably not the case.

In contrast with randomised controlled trials, where the intervention is under the control of the investigator, the quasi-experimental method necessarily used by the authors is weak in attributing cause and effect. So we cannot even conclude that changes that occurred apparently in line with the NICE guidance were actually caused by it, either in part or in whole.

Some may find it surprising that prescribing of (two of four) taxanes for cancer, and of orlistat for obesity were the only topics out of 12 surveyed where significant changes in the rate of use occurred after NICE guidance. Given that the manufacturers of these products are also very interested in increasing prescribing, and from informal accounts have worked hard to increase sales, it seems a big step to presume that changing use at around that time was caused by the guidance. Indeed, it would be much more convincing if there was evidence that practice had changed after publication of NICE guidance in the counterfactual direction to that which would result from marketing activity. Without such evidence many will remain, correctly, sceptical as to whether there is any real return from the substantial efforts and resources that go into producing NICE guidance.

NICE has recently woken up to the potential problems regarding the implementation of its guidance in the NHS and is appointing a board level "implementation tsar."[2] That person's task may seem unenviable—influencing clinical practice seems much more difficult than merely issuing edicts. Indeed, as A H Weiler reputedly said, "Nothing is impossible for the man who doesn't have to do it himself." Achieving real change in clinical practice is clearly a necessary part of the remit of NICE. Without this vital step, the resources currently used to support the NICE enterprise would be better spent on care for patients. Other regulatory structures, such as the pharmaceutical benefits scheme in Australia, which limits access to reimbursement in the health service to pharmaceuticals that are judged to be good value for money, seem much more effective in achieving real change, and there is a lot to learn from the experience in other health systems.[3] So, rather than give up on the task of modernising the way the NHS uses healthcare interventions, we should look at a variety of ways to make NICE more effective.[4]

As he left the *BMJ*, Richard Smith ably appraised the performance of NICE in a sentence or two, questioning in particular the extent to which NICE dealt with rationing and the breadth of clinical practice,

kept an appropriate distance from politicians and the pharmaceutical industry, or was directly accountable to the public.[5] With the publication of this paper, we might further question whether NICE was delivering the goods.

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# Collaborative quality improvement to promote evidence based surfactant for preterm infants: a cluster randomised trial


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## Abstract

**Objective** To test a multifaceted collaborative quality improvement intervention designed to promote evidence based surfactant treatment for preterm infants of 23-29 weeks' gestation.
**Design** Cluster randomised controlled trial
**Setting and participants** 114 neonatal intensive care units (which treated 6039 infants of 23-29 weeks gestation born in 2001).
**Main outcome measures** Process of care measures: proportion of infants receiving first surfactant in the delivery room, proportion receiving first surfactant more than two hours after birth, and median time from birth to first dose of surfactant. Clinical outcomes: death before discharge home, and pneumothorax.
**Intervention** Multifaceted collaborative quality improvement advice including audit and feedback, evidence reviews, an interactive training workshop, and ongoing faculty support via conference calls and email.
**Results** Compared with those in control hospitals, infants in intervention hospitals were more likely to receive surfactant in the delivery room (adjusted odds ratio 5.38 (95% confidence interval 2.84 to 10.20)), were less likely to receive the first dose more than two hours after birth (adjusted odds ratio 0.35 (0.24 to 0.53)), and received the first dose of surfactant sooner after birth (median of 21 minutes *v* 78 minutes, $P < 0.001$). The intervention effect on timing of surfactant was larger for infants born in the participating hospitals than for infants transferred to a participating hospital after birth. There were no significant differences in mortality or pneumothorax.
**Conclusion** A multifaceted intervention including audit and feedback, evidence reviews, quality improvement training, and follow up support changed the behaviour of health professionals and promoted evidence based practice.


## Introduction

Health services continue to show major gaps between routine practice and what the research evidence suggests is optimal patient care.[1] In neonatology, systematic reviews indicate that prophylactic surfactant treatment of high risk preterm infants reduces risk of death and pneumothorax by 40%, and that earlier treatment is more effective than later treatment.[2 3] Despite this evidence, few such infants routinely receive prophylactic surfactant treatment, and many infants, particularly those born at outlying hospitals, receive delayed treatment.[4]

Various strategies for promoting behaviour change and evidence based practice have been proposed.[5–8] Experience from the Vermont Oxford Network suggests that multidisciplinary collaborative quality improvement based on four key "habits" (change, evidence based practice, systems thinking, and collaborative learning) modifies practice in neonatal intensive care units, improves clinical outcomes, and reduces costs.[9 10]

We therefore conducted a cluster randomised controlled trial to test whether teams in neonatal intensive care units exposed to a multifaceted collaborative quality improvement intervention based on the four key habits would administer the first dose of surfactant sooner after birth, and achieve improved patient outcomes for preterm infants of 23-29 weeks' gestation.

## Methods

### Eligibility, enrolment, and randomisation

Of the 300 North American hospitals in the Vermont Oxford Network (see bmj.com),[11] 178 were eligible to enter the trial and 114 enrolled. A secure computer program assigned enrolled hospitals to one of two study arms using a completely randomised design.

### Components of the multifaceted intervention

*Audit and feedback*—In July 2000 intervention hospitals received confidential, individualised feedback from the Vermont Oxford Network including site-specific

*The full version of this paper is on bmj.com*

*Participants in the Vermont Oxford Network, and details of the intervention workshop appear on bmj.com*