suboptimal in some hospitals under the EWTd.

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Bedside tipples

Alcohol hand-gel is now provided at all patient–staff contact points throughout the National Health Service as part of the Department of Health's "clean your hands" campaign. This potentially could adversely influence patient care as we found out in our hospital. A 53-year-old patient admitted with alcoholic liver disease and acute renal failure consumed about 350 ml of spirigel from the container at his bedside. Gastric lavage was not considered safe and he was monitored closely over the next two days. He did not manifest any signs of ethanol intoxication and was discharged in due course. Spirigel contains 70% ethanol and small quantities of glycerol, bitrex and triethanolamine. The features of toxicity are entirely due to the ethanol. The estimated fatal dose for this gentleman was about 600 ml. The presence of bitrex and the consistency of this product discourage ingestion. However, the easy availability of this rather rich source of

alcohol could prove tempting to patients known to misuse alcohol. It is perhaps prudent to put in place measures to limit access to alcohol-containing products for this type of patients.

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Using a sentinel adverse incident audit on a Medicine for the Elderly ward

Adverse events in healthcare occur more often in older people,^{1,2} and older people are more vulnerable to the effects of adverse events. Despite this, there are few studies that focus specifically on reducing adverse events in older people.³ Several problems have been noted with systems such as the incident reporting (IR1) system used in the National Health Service—lack of anonymity,⁴ failure of medical staff to fill in reports,⁵ bias towards certain types of events (eg, falls) and lack of feedback to ward staff. We therefore introduced an anonymous adverse incident reporting system on our Medicine for the Elderly ward in Ninewells Hospital, Tayside, Scotland to ascertain (a) whether additional events would be detected by this system and (b) to provide a driver for ward-based quality improvement activities.

The audit ran between November 2004 and October 2005. The tool was based on a tool previously developed by one of the authors, the trial for which was conducted in general medical wards in an Australian hospital.⁶ Before its introduction, an orientation session took place at the weekly ward multidisciplinary meeting. Reports were collated at three-monthly intervals by the middle grade doctor on the ward (MDW) and presented to the

multidisciplinary team in aggregate form. These aggregate reports were then used to select a small number of areas on which to focus ward-level quality improvement activities.

In all, 268 patients, all female, mean age 85.2 years, were admitted to the ward during the study period. Table 1 compares the audit results with IR1 reports from the same timeframe and from the preceding year. A total of 32 of 72 (44%) of sentinel audit incidents were reported by nursing staff and 37 of 72 (51%) by medical staff, with three reports not attributable. No incidents were reported by allied health professionals. There was no overlap in reports between the sentinel audit and the IR1 system.

The adverse incident audit was acceptable to staff, quick to use and generated additional adverse event reports to the IR1. Event categories for both the audit and IR1 were similar to those previously reported.^{7,8} The frequency and type of events reported using the IR1 system did not change when the sentinel audit was introduced, confirming that the audit collected new information. The results were easily fed back to the ward team, who initiated new ward-level quality improvement activities as a result. A simple, anonymous adverse incident audit can therefore provide useful additional information to drive quality improvement activities in a Medicine for the Elderly hospital service.

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Table 1 Adverse incidents captured by sentinel audit and IR1 reports

Category	Sentinel audit 2004–5	IR1 2004–5	IR1 2003–4
Delay in investigation or diagnosis or treatment	24	0	0
Prescribing error	14	0	0
No discharge summary or notes entry	5	0	0
Inappropriate treatment	4	0	0
Unplanned readmission	4	0	0
Cancelled or inadequate discharge	4	0	0
Adverse drug reaction	4	0	0
Unprescribed fluids or warfarin	3	0	0
Over-anticoagulation	2	0	0
Observations not recorded	2	0	0
Patients with slip, trips and falls	0	110	112
Drug administration error	0	5	3
Hospital-acquired infection	0	2	0
Patient missing	0	4	1
Theft or intruder	0	3	2
Violence and aggression	0	11	11
Other injury (staff or patient)	0	8	12
Unsafe staffing levels	0	0	3
Other	6	4	4
Total	72	147	148

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BOOK REVIEWS

Improving Patient Care: The Implementation of Change in Clinical Practice

Edited by R. Grol, M. Wensing, M. Eccles. Oxford: Elsevier, 2005, pp 290.

Imagine you received a large grant to create a new guideline on diabetes, and the grant included money to facilitate the use of the guideline in your city. After 3 years, you find that < 20% of doctors who participated in the study actually used the new guideline. What happened? Chances are, you have run into a problem of implementing change in clinical practice. Grol, Wensing and Eccles have written a book to help readers reflect on clinical practice, evidence and behaviour change. Research evidence begs for many behaviour changes in clinical practice to improve patient care, but habits are hard to break even when the evidence is within easy reach. The first few chapters of this book provide an intriguing summary of the literature on behaviour change from many disciplines. Their overviews of these theories are excellent, and the colour sidebars with historical examples of problems with implementation and summaries of theories make for easy reading. A full outline of several existing models is provided, borrowing elements from each for the creation of the new model introduced in this book. In their model, we start with a guideline or the identification of a good experience or practice. The initiation of an implementation process can come from either research findings (top-down) or experiences in the practice (bottom-up). Then we develop a targeted proposal, analyse the performance of the target group, and develop strategies to measure change, test the execution of the implementation plan and evaluate the plan.

What readers will really like about this model is the fact that the authors know what they are talking about. How do I know this? Because of the 13 boxes in their flow chart, 5 boxes deal with contingencies when the

planned behaviour change does not take place, or the process for change has not been implemented as designed. There is overwhelming evidence in several chapters of even the most lavishly funded projects on clinical change ending with massive implementation problems and no improvements in patient care. The framework provides a roadmap that moves beyond defining success as the development of an evidence-based guideline; success is instead defined as a guideline that is used as planned. I was reminded of the classic text *Utilization focused evaluation* by MQ Patton (1997), which convinced many programme evaluators that an evaluation is nothing if it is not used. The diagnostic stage in the model emphasises an assessment of current practices and a delineation of realistic reasons as to why a doctor may or may not want to change their clinical routine. This stage is similar to the development of the “logic model” in the literature on programme evaluation, although this book customises the approach for health services research. The emphasis throughout the model is to plan, evaluate and plan some more.

Should change be required or facilitated? Should strategies focus on the organisation or people, appeal to intrinsic or extrinsic motivations and should the intervention be simple or multifaceted? The answers often seem to be “it depends”, but the reader will have an evidence-based understanding of the right questions to ask. From pages 261 to 268, the authors end with a framework for describing key features of an implementation of a change intervention—this in itself is worth the price of the book, both for the novice and the experienced academic.

I really have only one concern about this book. There was no evidence that this model was tested in real-world settings, or that it was compared with other existing models. Is it appropriate to adapt parts of different models to develop a new model, and still suggest that you are gaining from the basic propositions and intentions of the original model? For example, a new psychometric measure of intelligence cannot claim to be better because it has borrowed various good items from several established tests. There would need to be new calculations of factor structures, and new tests of reliability and validity. Do the same rules apply to merging conceptual steps from various existing models? A new chapter entitled “Development of the implementation model” would provide readers with answers.

You will find this book to be an indispensable primer on understanding the implementation of change in clinical practice for the novice student, experienced researchers, clinicians and policy makers. After a careful read, you will find yourself flipping through the pages whenever you are deciding on changing or adapting a clinical service, funding a health programme or designing a guideline.

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Resilience Engineering: Concepts and Precepts

Edited by E. Hollnagel, D. Woods, N. Leveson. UK: Aldershot, 2006, pp 397. ISBN 0754646416

In the patient safety world there is much talk of importing ideas and techniques from

other disciplines; unfortunately it remains largely a “do-it-yourself” field where few active participants have become deeply educated about the nature of hazard, risk, success, and failure in clinical work. This book illustrates the depth of the divide between modern safety science and much of what passes for thinking about safety in health care. Because of that, it should be required reading for anyone interested in reducing the burden of injury in clinical systems.

The authors and editors are longstanding participants in a vibrant multidisciplinary stream of research concerned with understanding human performance, accidents, and recovery in complex systems dating back to Three Mile Island, with roots in European “work ecology” studies. Most are non-clinicians and most of the examples are not drawn from health care, but analogies can easily be drawn and the general principles come through clearly. I found concise explanatory models for events in my own clinical experience in almost every section of the book.

The motivation for “resilience engineering” comes from a general sense of unease about the incompleteness of earlier approaches to safety such as chain-of-events models of accident causation, probabilistic risk analyses, reliability approaches. The authors do not dismiss these efforts as valueless but find them insufficient as explanatory or prescriptive guides for complex systems. The search for a new direction ultimately led to a symposium held in Söderköping, Sweden in October 2004 sponsored by Sweden’s Nuclear Power Inspectorate and its Civil Aviation Administration. The outcome of that conference—characterised as long discussions interrupted by short (both prepared and ad hoc) presentations—is this book.

Resilience here is distinguished from older conceptions of safety by being more dynamic and more situated in the relationships among components than in the components themselves. Thus, in this view, if safety is a system property it is not something a system *has* but rather something a system *does*. It is concerned not so much with the reliability of individual components (a view which characterizes much so-called “systems thinking” in health care) but rather with understanding and facilitating a system’s ability to actively ensure that things do not get out of control; to anticipate or detect disturbed functioning accurately and in sufficient time; to repair and recover; or to halt operations and avert further damage before resuming. Importantly, it is firmly grounded at the “sharp end”; it is concerned with “work as performed” by those on the front lines, not “work as imagined” by managers, administrators, guideline developers, technophiles, and the like.

Because the book is written for scientists and engineers knowledgeable about safety in complex systems, it makes some assumptions about readers’ knowledge that will challenge many in a health care audience. For example, concepts such as the abstraction hierarchy are occasionally referred to without a great deal of explanation because they are as basic to engineers as the germ theory of infection is to clinicians. However, I do not view this as a weakness for two reasons. Firstly, the basic precepts of resilience engineering are comprehensible to thoughtful readers despite the occasional unfamiliar idea. Secondly, these challenges can serve as stimuli to further learning. It would be a good thing if more safety researchers in health care understood