

Chronic care

## Waking up to chronic care

L Gask

The Chronic Care Model is an intelligent and pragmatic approach to restructuring care systems that deserves our close attention

We are currently experiencing in the United Kingdom something of a backlash against the recent assertions<sup>1</sup> that the National Health Service (NHS) has something to learn from the large Health Maintenance Organizations in the United States such as Kaiser.<sup>2</sup> Whatever the arguments about the relevance of comparisons between our systems, the Chronic Care Model (CCM)<sup>3</sup> is a transatlantic development that really does deserve our close attention because it is an intelligent and pragmatic approach to restructuring care systems. More than “disease management”, it offers a common technology that can be applied across several different chronic conditions. The central role played by the care manager in measuring progress and outcome of care, ensuring follow up, and enabling the “stepping up” or “stepping down” of the intensity of care provided when required according to data systematically collected is a revolutionary concept to many health professionals. This is because the model of chronic illness care in which they were trained and still deliver is actually acute care—managing crises as they happen rather than engaging the patient in self-management activities. I am as guilty of this as the next health professional, having at times in my career relied on haphazard follow up, “clinical impression” rather than systematic measurements of illness severity, disorganised case records, and my own (fortunately good) memory to try and achieve optimal outcomes.

One of the major barriers to implementation of system change to promote quality improvement for chronic conditions is the fractured nature of our care pathways which derive directly from the design of the NHS at its inception in 1948. The World Health Organization version of the CCM<sup>3</sup> rightly emphasises the importance of the policy environment (both local and national) in supporting change in many healthcare systems across the world. In the US this level seems to be absent, or at least to

amount to not much more than a series of locally driven experiments in changing delivery systems that are often on short term funding. In the UK we do have health policy (rather a lot of it), as do many other developed and developing countries across the world. However, the task of bringing together stakeholders from primary care trusts, mental health and social care, and acute trusts to agree to redesign delivery of care for people with chronic problems such as depression and diabetes can be difficult. We need to try to ensure that those who really need to get specialist care do so, and that effective care management is provided in the context of a coherent stepped care delivery system. But getting people together to work constructively on this task seems often to be beyond the remit of local NHS strategic management. Decision making and responsibility has rightly been shifted from the centre, yet we seem to lack the ability to plan clinical care pathways for populations across primary and specialist care. We have problems meeting the demand for acute care, yet these acute episodes of ill health are often merely acute flare-ups in the course of chronic illness. Crises that could be avoided with better organised and integrated care pathways for managing chronic illness thus end up resulting in potentially preventable admissions.

In organisations such as Kaiser where the CCM has been implemented, system change has been easier because of the integrated nature of the organisation. But this model and variants of it *have* been implemented successfully across the world and across system divides where there has been the will and leadership from both managers and clinicians to make things change. The model has also played a central role in the USA in the Chronic Care Collaboratives in the fields of diabetes, depression, heart disease and asthma, which have been successfully disseminated through a partnership between the Improving Chronic Illness Care Program in Seattle and the Institute

for Healthcare Improvement in Boston.<sup>5</sup> The CCM forms the structure around which the evidence for quality improvement for each disorder is organised, and participants are expected to focus on key aspects of implementation of the model during the lifetime of the collaborative. What is crucially important is that the collaboratives have focused on improving the quality of care for chronic illness using outcomes meaningful to clinicians and patients as their target measures rather than taking as their focus economic and managerial targets such as reducing the length of inpatient stay.

On the website of the World Health Organization devoted to chronic care,<sup>6</sup> a great deal of very useful information and examples can be found of how the CCM is already being applied across a range of conditions—from alcohol dependence to arthritis—in many countries of the world. For the purposes of a recent journey to the Russian Federation I was able to download material on the model and handouts in the Russian language. The healthcare organisation that I was visiting could not have been more different from Kaiser Permanente. In a basement lecture room with peeling plaster walls my audience—mostly general practitioners and some hospital specialists—were able to see clearly the relevance of the revised model with its emphasis on tripartite collaboration between community, health care, and patient and family. They were keen to set about redesigning care systems, and what they did not possess in monetary resources they made up for in energy and enthusiasm. Perhaps we could learn some important lessons from them too.

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European Working Time Directive legislation

## Developing and implementing organisational practice that delivers better, safer care

W Reid

The impact of organisational changes such as the European Working Time Directive on doctors' hours should be evaluated in terms of its effect on the quality and safety of patient care

Significant improvements in patient care usually require major organisational change. In reality, this inevitably means disruption and upheaval of working practices that have evolved over decades. The prospect of change creates uncertainty and an inertia that gets in the way of progress and improvement. Arguments for the status quo can often supersede the argument for change.

In the UK—and presumably throughout Europe too—hospitals are being thoroughly exercised by the urgent need to implement the European Working Time Directive (EWTD).<sup>1</sup> This states that the working week must be limited to 48 hours. Because doctors have traditionally worked excessively long hours, the EWTD is being applied to them in stages. But, by 1 August 2004, doctors may only work 58 hours per week. The EWTD is set within the framework of Health and Safety at Work legislation. This makes sense. Long hours of work contribute to high stress levels within the profession<sup>2</sup> and overwork is a factor in adverse clinical incidents.<sup>3</sup> And it must be healthier to work for 58 than for 100 hours per week.

The organisational changes needed to create systems in which doctors' working hours are within the limits set by the EWTD are enormous. Even some of the least radical changes that have been proposed—such as the move from on call rotas to shift work—have caused anxiety that the alterations to working practice will create “risks to patient care”. Specifically, there are worries that shift working will cause a “loss of continuity of care” and reduction in time available for training. The inevitability of the introduction of the EWTD—which, unlike other directives on doctors' working hours, is in a legislative framework—has concentrated minds on solutions to these concerns. So, well directed, formal handovers have been championed as the “organisational antidote” that will preserve or even strengthen continuity of

care. The huge clinical and educational benefits of working within functional teams are now being understood. Shorter hours with new styles of work are recognised as compensating for the loss of the apprenticeship approach to experiential learning that was the norm. More of the training curricula will have to be taught, not simply experienced, and the competencies claimed will be assessed to a common standard.

Nevertheless, there remain many anxieties about these changes and the impact on the quality of patient care. But trying to “solve” the problem of doctors' hours in isolation from the whole healthcare system is a mistake. If the ultimate goal is to create systems in which patient care can be delivered well and safely, then care needs to be seen as a whole rather than in its constituent parts. Moreover, as health care changes, we need to develop systems that are appropriate for today's health care and will benefit patient care. An example of the sort of change that has an impact on patient care is described in two papers in this issue of *QSHC*.<sup>4,5</sup> Medical emergency teams (METs) are multiprofessional teams that can be activated by any member of the hospital staff who sees grave clinical deterioration. The impact on patient care was clear: as MET calls increased, cardiac arrests fell from 6.5 to 5.4 per 1000 admissions. The introduction of these teams is something that all acute hospitals need to consider, and the basis for doing so is clearly of benefit to patient care. Despite the potential advantages to patients, the implementation of this organisational change to traditional working patterns was not straightforward. Ensuring appropriate utilisation was difficult because of “cultural” barriers. It seems that those traditional hierarchical behaviours that dictate how doctors and nurses react and work got in the way of people calling these life saving teams.

It is just this sort of organisational change which has a clear emphasis on what works for patients that should be considered within the context of EWTD. In the UK some hospitals are taking an organisational approach to the challenge of EWTD by working out what work done at night is essential and then putting into place multiprofessional night teams staffed with people who have the range of relevant competencies.<sup>6</sup> Implicit in these “hospital at night” projects is the assumption that the work that should be done in the day must be done in the day, and that we need to move away from traditional ways of organising work. Teams need to be established that are linked to patient care. All characteristics of good team functioning—including leadership, communication, and shared goals—need to be understood and put into practice.

Traditional hierarchical consultant led teams rely on fixed points of contact such as the consultant ward and informal reporting “up the line”. Teamwork in this long established medical sense is perhaps better described as “didactic leadership”. This worked very well in the past but is now less effective and too cumbersome, fragmented, and insecure to maintain good care and clear communication, especially when several doctors of the same grade are responsible to one consultant. Moreover, the combination of the drive to reduce hours and increasing sub-specialisation has increased the number of doctors seen by an individual patient in one admission. Too many people in the decision making hierarchy can cause potentially harmful diagnostic or therapeutic delays. In complex clinical situations, standardised shared protocols are safer than multiple individual approaches to decision making. Despite these arguments, it will be difficult to move away from well established working practices, even if they are well past their “use by date”.

Meeting the requirements of the EWTD is daunting, but there is an accruing amount of experience that can be used to inform the necessary changes. The MET study is one of these. It demonstrates one approach to organising patient care that may be of direct relevance. It also shows that implementation will be tough; old habits die hard. But a crucial lesson which we should all take from this study is the importance of evaluating the impact of any such change in terms of its effect on the quality and safety of patient care. The argument for new ways of working, such as the “hospital at night” project, will only be won when it can be shown that there are clear benefits to patients. EWTD legislation aims to improve the

lives of doctors and other healthcare staff. It will only achieve this if we can also define processes that provide better care.

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Quality indicators

## Developing quality indicators to assess quality of care

A Clarke, M Rao

### Different measures of quality require different methods

In our era of “assessment and accountability” in health services it is important to be able to assess quality. Much has been written about measuring quality and quality assessment,<sup>1,2</sup> and there are some valuable and well known frameworks available for doing this.<sup>3,4</sup> Quality frameworks tend to include a number of different dimensions. It is clear that the concept of quality must be multidimensional but it is surprisingly difficult to map the frameworks onto each other.

Maxwell<sup>3</sup> offers us an apparently comprehensive six dimensional framework (effectiveness, efficiency, equity, acceptability, appropriateness, and accessibility) which can be used to assess the quality of health services but, in Maxwell’s framework, certain key and essential elements such as (Donabedian’s) structure and process<sup>4</sup> or attention to a more holistic approach to anticipatory health care offered to the individual are omitted.

Toon’s framework<sup>3</sup> for conceptualising quality in the primary care setting in the UK is less well known. It includes four dimensions of quality: biomedical, business, teleological, and anticipatory. The biomedical dimension relates to the technical quality of care—how well care is offered from the point of view of known effective and appropriate interventions; the teleological dimension is related to the acceptability and humanity of care; the business dimension is about process and efficiency; and the anticipatory dimension is about offering holistic care—not just dealing with expressed demand but also with unmet need.

It is possible that frameworks differ because of fundamental differences in conceptualising the measurement of quality. For example, among health service

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since there is no point in offering ineffective care more equitably or more humanely. But one of the reasons for the apparent mismatch between quality frameworks may be that “quality” of services depends on one’s viewpoint.<sup>8</sup>

It appears then that there may be differing viewpoints from which quality frameworks are constructed and used—the population perspective; the external auditor or evaluator’s perspective; the individual practitioner, patient or carer perspective; the payer perspective. Frameworks may differ because of these differences of perspective. And although it might be thought that an ideal framework for assessment of quality would incorporate all the essential elements from the different frameworks, it is likely that this might make for an unwieldy and potentially unusable quality measuring tool.

Wenger *et al* developed the original quality indicators for use in assessing the quality of clinical care for vulnerable elderly people in the US,<sup>7</sup> and they occasionally used telephone interviews with patients to assess whether the care provider had complied with the quality indicators. Steel *et al* suggest that this might be a good idea in the UK because case note review is often difficult and time consuming. It is important, however, that, if these quality indicators are to be used in the UK in interviews with individuals, then they should be independently validated for that purpose with elderly people and with their carers. There is currently little evidence to support the contention that the technical quality of care is best assessed by patients themselves. To what extent are the proposed quality indicators comprehensible and assessable by means of an interview? To what extent do they relate to the concerns of the elderly people themselves? It may be that issues relating to humanity, acceptability, equity, or the holistic nature of health care are not covered—but they are key concerns of elderly people.

The objectives, the viewpoint, and the potential costs and drawbacks as well as the potential benefits of any quality assessment need to be very clearly understood before it is undertaken. The quality indicators developed by Steel *et al* are a good start, but they will need more

work before they can be widely or routinely used in quality assessment across the UK, and the context in which they are used will be crucial.

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FMEA and RCA

## FMEA and RCA: the mantras\* of modern risk management

J W Senders

FMEA and RCA really do work to improve patient safety

For a number of years root cause analysis (RCA) has been used when an adverse event has occurred. It is generally accepted that adverse events do have causes, and that a careful analysis of the actions of persons and the states of the system in which the event occurred will reveal the causal agents. It remains only to select the most reasonable cause from the myriad of competing causes to bring the RCA to completion. RCA is obviously a reactive process taking place after the harm has been done.

Failure mode and effects analysis (FMEA) is less familiar to the medical world. It has little history in medicine although its military and industrial origins go back almost to World War II.<sup>1</sup> FMEA is a proactive process aimed at predicting the adverse outcomes of various human and machine failures, and system states.

FMEA and RCA cannot be separated. FMEA seeks to know the effects of each of all possible causal sets. RCA seeks to know the causal set of each of all possible effects. The underlying assumptions are that for every effect there must exist a set of causes (excluding the null set); and for every set of causes there must be some effect (including the null set). FMEA is the temporal mirror of RCA reflected in the “now” moment.

\*Mantra: Sacred words or sounds invested with the power to transform and protect the one who repeats them.

FMEA looks forward in time; RCA looks backwards.

It is important to examine the underlying assumptions and logic of both processes. In its most primitive form, FMEA asks for the effect of a component failure. “If the shaft of this pump failed, what malfunction would follow?” Then, if the malfunction was unacceptable, the shaft might be redesigned or a duplicate pump might be installed to take over when the first failed. RCA, confronted with an unacceptable malfunction, asks: “What component caused this malfunction?” and discovers that the pump shaft had failed. A thorough RCA would examine every antecedent action and state in identifying the set of causes of the event. A thorough FMEA should ask its question about every component. If FMEA could do exactly what it is claimed to be, there would be no need for RCA. A complete proactive analysis would have identified all the causal sets and the outcomes that would have occurred. Unfortunately, things do not work out that way. Neither analysis is able adequately to deal with human failures—the inevitable errors that occur in any system involving people.

When the failure in question—whether hypothetical (FMEA) or actual (RCA)—is a human error, the analysis techniques become complicated, particularly in FMEA. There is no component failure but rather a probabilistic deviation from intention and expectation. An error

may have a general form—a substitution, for example—but how that form is expressed in the environment depends on what there is that *can* be done wrong and the number of ways there are of doing it wrong. The analyst must be able to imagine the unthinkable. A mere tabulation of all those errors that have so far occurred is not adequate.

FMEA has been around for a long time in engineering practice and its use in engineering has become common and sophisticated. In medicine, however, there are relatively few reports of actual use of FMEA. When it has been used it appears to have been beneficial, and there has been little objection to its use. It is a non-threatening technique. RCA is more common in medicine, driven by the large number of adverse events that must be explained. It also generates more argument because of the legal and ethical implications of causal assignment (usually to human error). Medicine can learn much from engineering usage of FMEA.<sup>2–4</sup>

FMEA today is very big business. A Google search on FMEA yielded 150 000 hits; a combined search with “engineering” yielded 40 000 hits while a combined search with “medicine” yielded only 3000. Many hits are offers of manuals, forms, software, and training programs on FMEA. It is easy to spend large sums of money but it is not easy to assess the quality of the products. The use of FMEA in medicine is growing and it is in medicine to stay: JCAHO Standard LD.5.2 requires facilities to select at least one high risk process for proactive risk assessment each year.

The Institute for Safe Medication Practices (ISMP) became interested in FMEA around 1990<sup>5</sup> and uses it in the analysis of potential medication errors. Its website presents a straightforward description of FMEA and shows how it can be applied to problems in medication safety:

“These pitfalls can be avoided by using a process known as Failure Mode and Effects Analysis (FMEA) to examine the use of new

products and the design of new services and processes to determine points of potential failure and what their effect would be—before any error actually happens.”

“FMEA is a proactive process used to look more carefully and systematically at vulnerable areas or processes. FMEA can be employed before purchase and implementation of new services, processes or products to identify potential failure modes so that steps can be taken to avoid errors before they occur.”<sup>7</sup>

Like RCA, FMEA induces thoughtful consideration of the causal complexities of classes of medical adverse events. If used with care and intelligence it can reveal potential hazards and instruct ways to mitigate them. The paper by Apkon *et al*<sup>8</sup> in this issue of *QSHC* is an encouraging example of what can be done. What neither process can do is to reveal the complete consequential and causal sets of any singular error or adverse outcome. Thus, an RCA may appear to show that a physician’s error was the cause of a patient injury. However, if one subscribes to the notion that *all* manifested behavior is caused, then one must push the RCA deeper into the central nervous system and so ad infinitum. Similarly, one might attribute the singular patient injury to the fact

that the physician’s alarm woke him/her in time to get to the operating room. The wake up call and the error are equipotent in “causing” the injury. If either had not occurred, that physician could not have caused that injury.

Similarly, an FMEA may appear to show that a specific error could cause a specific injury, but whether it would actually do so requires an analysis of the actions of all other persons and of all states of all systems and devices that might possibly be involved. In fortunate truth, most human errors do not lead to adverse outcomes.

FMEA and RCA really do work to improve the safety of patients, and they really are mantras. When the names are repeated in court along with records showing that the procedures they stand for were performed, they may protect you against ruinous litigation costs and losses by showing that you did everything you could think of to avoid preventable injury to a patient.

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## ECHO

### Guidelines based on presenting problems cut invasive procedures in children with diarrhoea or seizures



Please visit the Quality and Safety in Health Care website [[www.qshc.com](http://www.qshc.com)] for a link to the full text of this article.

Unnecessary invasive tests and treatment could be avoided for many children presenting as emergencies with diarrhoea or seizures if evidence based care guidelines were widely adopted, according to a UK hospital study.

Better management and significantly fuller clinical records resulted after guidelines for diarrhoea (with or without vomiting) and seizures (with or without fever) in children aged 0–15 years were implemented in the accident and emergency department. More children with diarrhoea had optimum rehydration according to their needs. Unnecessary intravenous infusions fell from 11 to one, as did the proportion of children undergoing invasive tests—for full blood count (4% *v* 11%) and urea and electrolytes (5% *v* 12%). Similarly, in children with seizures tests were significantly lower for urea and electrolytes (17% *v* 29%) and calcium concentration (10% *v* 23%).

The guidelines significantly speeded up assessments, though they raised the relative risk of admission—an outcome measure—for children with diarrhoea. These admissions were for observation and shorter stays than previously. Relative risk of admission for seizures was unchanged.

The prospective study was performed in 502 children with diarrhoea and 398 with seizure attending directly or referred by their general practitioner. Process and outcome measures were assessed for four months in early 1997 and a further four months two years later, after guidelines had been introduced.

Care pathways providing a clinical management “map” for doctors should improve management but have always been based before on diagnosis, not presenting problems.

▲ *Archives of Disease in Childhood* 2004;**89**:159–164.