Aetiology of hospital setting adverse events 1: limitations of the ‘Swiss cheese’ model

Introduction

An adverse event in health care is an injury resulting from a patient’s medical management rather than a consequence of the patient’s underlying medical condition or conditions. Adverse events are common and costly to the affected patients and the health-care system.

In the last two decades, the incidence, aetiology and outcomes from adverse events have been documented mostly in the hospital setting (Table 1). Taking these studies together, approximately 10% of hospital patient admissions have some sort of adverse event. Of these, half result in no long-term harm to the patient. However, 10% (of the 10%, i.e. 1% of all hospital admissions) of the affected patients suffer significant harm; they either die or are left with some sort of permanent disability as a result of the adverse event (Table 1) (Buist et al, 2003).

In 1995 the cost of adverse events to the Australian health-care system was estimated at $2 billion (AUD) dollars (Wilson et al, 1995). Attempts to reduce the incidence of adverse events and make hospitals safer have been largely unsuccessful (Shojania and Thomas, 2013). Like other diseases and conditions, an understanding of the underlying aetiology or pathophysiology of adverse events is important for the development of preventative strategies.

To date the predominant theory to explain adverse events in health has been the ‘Swiss cheese’ model developed by James Reason (1997) from his analysis of large scale industrial and organizational accidents. This article examines that theory and its limitations when applied to hospital systems, with specific reference to the deteriorating patient – the final common pathway for most adverse events when patients suffer harm. A second article (p. C175) proposes an alternative model called clinical futile cycles to explain hospital setting adverse events which takes into account some of the unique cultural systems that exist in hospitals (Buist and DeVita, 2010).

The ‘Swiss cheese’ model and hospital setting adverse events

In Managing the Risks of Organizational Accidents James Reason (1997) states that organizational accidents, as opposed to individual accidents, are predictable events. An individual accident is one in which a person or group of people makes an individual slip, lapse or error of judgment with the result being an adverse outcome either to the person or the people who erred, or to the person or people in the immediate vicinity. As such there is usually a relatively tight, simple explanation for cause and effect in an individual accident. On the other hand, organizational accidents have ‘multiple causes involving many people at different levels of an organization’ (Reason, 1997). These events, while usually infrequent, are often catastrophic. Analyses of such organizational accidents often reveal that the defences an organization has to prevent such catastrophes are breached by a unique series of sequential hazards that play out in an environment of latent conditions, the so-called Swiss cheese. It follows that, one can decrease the incidence of these organizational accidents by increasing the number of defences (more cheese slices) and/or by shrinking the size of the holes in each of the defences (Figure 1).

In 2008, Palmieri and colleagues published their ‘health care error proliferation model’ of adverse health-care events. This takes the Swiss cheese model and specifically adapts it to various factors that exist in health care (Figure 2). Most notably, they place clinician vigilance as a key defence at the ‘sharp’ or clinical end of the actual adverse event, in the form of clinical improvisation and localized workaround. This clinician vigilance repairs gaps produced by actions, changes and adjustments that are made at the ‘blunt’ or administrative end of the health-care organization. A good example of this is the use of high definition mobile telephone devices in rural and regional settings that allow almost immediate transfer of clinical information to an appropriate clinician at a referral centre. However, this clinical workaround and improvisation is clearly at odds with most organisations’ patient privacy policies that have been developed at the blunt administrative end of the organization (Palmieri et al, 2008).

Having for the most part accepted the Reason Swiss cheese model of adverse events and adapted variations, most hospitals’ response to adverse events has been to increase defences at the blunt end of the health-care organization’s administration (Buist and Middleton, 2013). In the hospital, these defences take the form of dedicated quality and safety units and committees, electronic event reporting systems, and the development of appropriate standards linked to hospital accreditation (Australian Commission on Safety and Quality in Health Care, 2015). Each of these blunt end defence layers aims to continually decrease the size of the holes in each layer, by more audits, meetings and root cause analysis projects, combined with the use of the quality improvement cycle. Inevitably what is generated is recommendations, guidelines, and more policy and procedure.

The Swiss cheese model does explain well some types of hospital adverse events, in particular patient falls, wrong side surgery and medication errors. In the case of medication errors, root cause analyses of these often highlight ‘holes’, such as poor transcription of medication prescriptions, and failure to do appropriate checks (Australian Commission on Safety and Quality in Health Care, 2013). In the case of patient falls, there is failure to identify the at-risk patient and put in place appropriate preventative strategies (Australian Commission on Safety and Quality in Health Care, 2012). Fixing the holes or at least reducing their size can reduce the incidence of patient falls and medication errors. This can be done with top-down policy and procedure and ensuring implementation of such. The

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1. **Introduction**

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<thead>
<tr>
<th>Study (year)</th>
<th>Reference</th>
<th>Methodology</th>
<th>Setting</th>
<th>Sample</th>
<th>Incidence (%)</th>
<th>Outcome death</th>
<th>Outcome permanent disability</th>
<th>Preventability</th>
<th>Negligent care</th>
<th>Cost (annual)</th>
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<tr>
<td>California Medical Association (1977)</td>
<td>California Medical Association (1977)</td>
<td>Random sample retrospective case note review</td>
<td>51 acute care New York State hospitals</td>
<td>30121</td>
<td>4.2%</td>
<td>N/A</td>
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<td>19.1%</td>
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<td>Utah and Colorado study (1992)</td>
<td>Thomas et al (2000)</td>
<td>Random sample retrospective case note review</td>
<td>28 different-sized acute care hospitals in two Australian states</td>
<td>14179</td>
<td>16.6%</td>
<td>4.9%</td>
<td>8.9%</td>
<td>51%</td>
<td>N/A</td>
<td>$2 billion (AUD)</td>
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<td>Quality in Australian health care study (1992)</td>
<td>Wilson et al (1995)</td>
<td>Two-stage random sample retrospective case note review</td>
<td>13 general acute hospitals</td>
<td>6579</td>
<td>11.2%</td>
<td>15% for both categories</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
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<tr>
<td>New Zealand public hospitals (1998)</td>
<td>Davis et al (2002)</td>
<td>Two-stage random sample retrospective case note review</td>
<td>Two acute care London hospitals</td>
<td>1014</td>
<td>11.7%</td>
<td>8.2%</td>
<td>6.3%</td>
<td>N/A</td>
<td>N/A</td>
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<td>UK (1999)</td>
<td>Vincent et al (2001)</td>
<td>Random sample retrospective case note review</td>
<td>One teaching, one large community and two small community hospitals</td>
<td>3745</td>
<td>7.5%</td>
<td>20% for both categories</td>
<td>36.9%</td>
<td>N/A</td>
<td></td>
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<tr>
<td>Canadian health care study (2000)</td>
<td>Baker et al (2004)</td>
<td>Two-stage random sample retrospective case note review</td>
<td>Three teaching hospitals in Rio de Janeiro</td>
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<td>7.6%</td>
<td>N/A</td>
<td>N/A</td>
<td>66.7%</td>
<td>N/A</td>
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<td>Brazilian hospitals (2003)</td>
<td>Mendes et al (2009)</td>
<td>Random sample retrospective case note review</td>
<td>21 acute care hospitals</td>
<td>7426</td>
<td>5.7%</td>
<td>12.8% for both categories</td>
<td>40.3%</td>
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<td>Dutch hospitals (2004)</td>
<td>Zegers et al (2009)</td>
<td>Three-stage random sample retrospective case note review</td>
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<td>1501</td>
<td>3.3%</td>
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<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Italian acute care hospitals (2008)</td>
<td>Sommella et al (2014)</td>
<td>Two-stage random sample retrospective case note review</td>
<td>Three acute care hospitals in Lisbon</td>
<td>1669</td>
<td>11.1%</td>
<td>10.8%</td>
<td>53.2%</td>
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<td>Euro 470 380 direct costs</td>
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<td>Portuguese hospitals (2009)</td>
<td>Sousa et al (2009)</td>
<td>Three-stage random sample retrospective case note review</td>
<td>Three acute care hospitals</td>
<td>1967</td>
<td>12.3%</td>
<td>3.0%</td>
<td>9.0%</td>
<td>70%</td>
<td>N/A</td>
<td>Euro 630 000 hospital bed days</td>
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best example of this has been the reduction in incidence of wrong side surgery, with the implementation of time out and completion of a checklist before surgery (Haynes et al, 2009).

The Reason Swiss cheese model gives a good explanation of the adverse event when there is a high degree of face validity, usually when there is a relatively tight temporal relationship between the adverse event and possible preventative strategies. The adverse event itself in these circumstances is itself evidence that a mistake or error was made. With the Swiss cheese model there is usually a series of clear errors that can be identified. This model then allows preventative strategies to be implemented and, with the increasing move back to professional responsibility for compliance, in theory at least the ‘holy grail’ of the perfectly safe hospital should be attainable.

However, most adverse events in hospital, particularly the more serious ones, often do not have such clear errors with a high degree of face validity and obvious temporal relationships with the adverse event and the contributing errors. When the temporal relationship between the adverse event and the preventative strategies is not so obvious, hospital cultural factors start to be more significant, and the potential for policy and procedure to help is much less so, simply because it can be and often is ignored.

**Problems with the Swiss cheese model: why are hospitals different from other industries?**

There are three fundamental problems with the application of the Swiss cheese model to adverse events in hospitals. First, in the hospital, the distinction between individual and organizational accidents is not clear. The entire premise of the Swiss cheese model was the investigation of causation factors of large industrial accidents as opposed to individual accidents. In the hospital we do not have large scale accidents but, instead, multiple little accidents or adverse events daily, if not hourly, and in almost every setting.

The literature on causation of adverse events in hospitals overwhelmingly points to failures at the sharp end of care delivery to the patient by frontline staff. Analysis of the causative factors associated with the adverse events in the Quality in Australian Health Care Study found that cognitive failure was a factor in 57% of these adverse events (Wilson et al, 1999). In this analysis, cognitive failure included such errors as:

- Failure to synthesize, decide and act on available information
- Failure to request or arrange an investigation, procedure or consultation
- Lack of care or attention
- Failure to attend
- Misapplication of, or failure to apply, a rule, or use of a bad or inadequate rule

A two-hospital study from the UK, that looked at 100 sequential admissions to the intensive care unit from ward areas, found that fifty four had sub-optimal care on the ward before transfer (McQuillan et al, 1998). This group of patients had a mortality rate of 56%. Some sub-optimal treatment factors included failure to seek advice, lack of knowledge, failure to appreciate clinical urgency, and lack of supervision (McQuillan et al, 1998).

Adoption of the Reason Swiss cheese model for organizational accidents has led the whole quality and safety industry, and in particular hospitals, to focus almost exclusively on system solutions to what can be explained by individual competency and micro-environment cultural issues at the patient interface. In particular, a major rationale of Reason’s philosophy is to avoid individual accountability for errors and the culture of blame and shame. However, Reason himself noted the folly of this approach in the medical setting when he stated:

‘It is curious that such a bastion of discretionary action as medicine should be moving towards a “feed forward” mode of control when many other hitherto rule dominated domains – notably railways and oil
exploration and production – are shifting towards performance-based controls and away from prescriptive ones’ (Reason, 1997).

When Reason talks about human contribution to organizational accidents he describes two schemas of control. A ‘feed forward’ control system is one where human performance is determined by rules and procedures as determined by organizational standards and objectives. In this schema occasional accidents and incidents are analysed and then fed back into either an alteration of an existing rule or procedure or the creation of a new one. At the other end of the control spectrum there is the model where organizational output is largely determined by individual human performance.

The basis for this model is that, in the first instance, the humans are generally highly trained and that performance is controlled by continual performance reinforcement against a known or standard comparator. The best example of this, in hospitals, is specialist medical practice. To ever start specialist training there have been many years of training and experience (medical school, house officer jobs, and pre-specialty registrar placements) followed by a period of mentoring and, in essence, apprenticeship to learn the specialty to the known standard of the comparator; the standard of practice as maintained by the specialty colleges. Taking these two schema one can immediately see the trouble with health care in hospitals. It is a large industry with community and political expectations that are more congruent with the ‘feed forward’ schema (Figure 3), yet with most of the actual clinical activity being undertaken by the ‘human performance’ schema (Figure 4).

Thus what we have seen in the construction of hospital adverse event defences is an over-reliance on the administrative blunt end of the organization, in terms of policy and procedures, with the assumption that the health-care professionals at the patient end are competent and will be compliant. The shift to looking for hospital-wide problems has come at the cost of avoiding the issue of individual professional accountability and associated issues, most notably the education and certification of health care professionals. Several studies in Australia (Buist et al, 1999, 2001; Harrison et al, 1999) and the UK (McQuillan et al, 1998), indicate that the medical undergraduate syllabus does not provide graduates with the basic knowledge, skills and judgment to manage acute life-threatening emergencies. These studies identified deficiencies in cognitive abilities, procedural skills and communication. Despite this, undergraduate and postgraduate curricula have been slow to embrace a patient safety culture (Stevens, 2002; Cooper, 2004).

The second fundamental problem with the Swiss cheese model and the Palmieri variation of this is that they are overly simplistic and do not take into account the complexity of the patient and the hospital system. When a patient enters a hospital system, he/she enters a system where the patient will be exposed to a variety of hazards which, in turn, have numerous defences in place to prevent an adverse patient outcome. Operations, anaesthesia, medical interventions and procedures, drugs and fluids and even oxygen therapy constitute the hazards.

Most defences in health care are reliant on the competence of the health-care professional and as such are ‘soft.’ ‘Hard’ defences are those that are impossible to overcome, for example in anaesthesia where the administration of hypoxic gas mixtures is physically prevented. The soft defences in health care include treatment policies and procedures, manual alarm systems, and ad-hoc hierarchical and lateral human checking systems. Soft defences are very reliant on the training and education that health-care workers receive and the culture of compliance. Superimposed on these layers of hazards and defences that confront a patient, there are the latent conditions that exist, most obviously within the patient, but more insidiously within the hospital as an organization. A patient’s past medical history, family history, social history, associated comorbidities, drug regimen and allergies largely constitute his/her latent conditions. These conditions, and their relation to the current presenting complaint that brings the patient into the hospital system, is territory that individual health-care workers are usually extremely well trained in and familiar with. Hospital latent conditions are not so explicit, particularly to the patient or the frontline health-care worker. They are made up of a complex matrix of production and cultural imperatives such as the financial operating environment, political and societal imperatives, medico-legal and insurance concerns, compliance issues imposed by various regulatory bodies (often with associated financial incentives or disincentives) and workforce and workplace issues. Thus in the hospital system, unlike any other industry, we have a high degree of ever-changing complexity; complex patients and a complex system where adverse events are essentially prevented by a whole host of predominantly soft defences (Buist, 2011). The Swiss cheese model is a static model with fixed defences in terms of the layers and the size of holes in each layer. This
The ‘Swiss cheese’ model was developed to understand causation of large scale organizational and industrial accidents. In principle it looks for holes in the defense layers of a large organization that are largely administrative and not the fault of individuals that may be directly involved with the accident.

This model has limitations when applied to health care, where most of the errors or accidents are individual technical errors or competency deficiencies.

The use of the Swiss cheese methodology has led to an over-reliance on looking for system issues in health care. This has resulted in decreased focus on the individual performance of the health-care professional and avoidance of difficult cultural workplace issues.

The Swiss cheese model gives a poor explanation of the multitude of insidious individual accidents that occur in hospitals and is too simplistic for the complexity of most patients and the complex matrix of health care that is provided in a hospital. Most importantly, the focus on system issues while valid and important, has detracted from what is really needed; focussed attention on clinical competence and accountability at the patient interface.

Conclusions
The Swiss cheese model gives a poor explanation of the multitude of insidious individual accidents that occur in hospitals and is too simplistic for the complexity of most patients and the complex matrix of health care that is provided in a hospital. Most importantly, the focus on system issues while valid and important, has detracted from what is really needed; focussed attention on clinical competence and accountability at the patient interface.


Aetiology of hospital setting adverse events 2: ‘clinical futile cycles’

Introduction
The first (p. C170) of these two articles examined the James Reason model of ‘Swiss cheese’ that to date has been the predominant theory to explain health-care adverse events (Reason, 1997). It described the limitations when applied to hospital systems, with specific reference to the ‘deteriorating patient’ – the final common pathway for most adverse events when patients suffer harm.

This article proposes ‘clinical futile cycles’ as a model for the explanation of many hospital setting adverse events. A clinical futile cycle describes clinical activity and actions that do not help or improve a patient’s condition (Buist et al, 2007; Buist and DeVita, 2010). In this model weight is given to the influence of the variable nature of the hospital micro-culture and, in particular, the traditional hierarchical referral model of care that occurs at a departmental, unit and ward level. Clinical futile cycles best describe hospital setting adverse events where causation is complex, prolonged, and there is involvement of numerous clinical staff across profession, discipline and seniority. Root cause analysis of these complex adverse events with the lens of the clinical futile cycle should lead to recommendations and interventions at the level of the individual clinician, clinical team, and ward or unit.

This article first describes what a clinical futile cycle is and that of clinical futile cycles. It concludes by recommending the use of the concept of clinical futile cycles to better understand more complex hospital setting adverse events with the aim of designing interventions that are more focused on a hospital’s core business; the patient and the staff who manage that patient (Bodenheimer and Sinsky, 2014).

Clinical futile cycles and the traditional hierarchical referral model of care
The term ‘futile cycle’ is used in cell biology and biochemistry to explain the conversion of one substance to another and back to the original substance by two, always on, reciprocal enzymatic pathways. However, despite the enzymatic activity and energy utilization there is no net output or gain from this energy-consuming and active process. This is exactly what we see with many hospital adverse patient events; a lot of clinical activity, none of which effectively alters the trajectory of the patient towards the adverse event. The clinical activity occurs in a traditional hierarchy referral model of care, that by its very nature is often either unresponsive or slowly responsive and where the hospital policy and procedures are often variably implemented or simply ignored (Buist et al, 2007; Buist and DeVita, 2010).

In the hospital, the clinical futile cycle (Figure 1) often starts at the bedside with the interaction between the junior nurse and the patient. With a clinical abnormality, be it an observation, a wrong drug order, or a procedural failure, the junior nurse needs to make a decision as to the significance of the abnormality and the importance of reporting it to a more senior team member, either a senior nurse or the most available and usually junior doctor. However, that decision to escalate the issue depends very much on the workplace culture that exists in the particular micro-environment of that bedside and that ward at that time.

If the concern or abnormality is escalated it is to the next person in the care hierarchy of the team looking after that patient. This is often the junior doctor who then needs to attend, assess and then make a decision again about whether or not to escalate the

Figure 1. Clinical futile cycles. From Buist et al (2007).
issue to the next person in the hierarchy. This is important because for the most part the junior doctor does not have the skills or emotional intelligence to appropriately manage a lot of these clinical situations (Buist et al, 2001; Stevens, 2002; Cooper, 2004).

Next the issue is escalated to often a middle grade doctor, one who is often a specialist in training, and who as such may be difficult to find. Unlike their juniors often this grade of doctor does have the technical and clinical abilities to deal with the particular issue. However, they are often over-committed with ward rounds, clinics and operating theatre. Additionally this grade of doctor is diagnosis focused and they often give instructions (usually appropriately) for specialized investigations and other speciality consultations. There is nothing wrong with this process, and it works well when all the calls and reviews are done in a timely manner. However, often calls are not made and reviews delayed which puts the patient at risk of further deterioration (Buist et al, 1999).

Hospital setting adverse events: human factors or hospital system errors?

In support of the clinical futile cycles model is the limited literature that has looked at the causation of hospital setting adverse events. These studies can assign almost all causation to three human factor issues at the patient interface: competency, cognition (or failure thereof) and culture. Analysis of the causative factors associated with the adverse events in the Quality in Australian Health Care Study found that cognitive failure was a factor in 57% of these adverse events (Wilson et al, 1999). In this analysis, cognitive failure included such errors as:

- Failure to synthesize, decide and act on available information
- Failure to request or arrange an investigation, procedure or consultation
- Lack of care or attention
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- Misapplication of, or failure to apply, a rule, or use of a bad or inadequate rule (Wilson et al, 1999).

A two-hospital study from the UK, that looked at 100 sequential admissions to the intensive care unit from ward areas, found that 54 had sub-optimal care on the ward before transfer (McQuillan et al, 1998). This group of patients had a mortality rate of 56%. Some of the sub-optimal cultural and cognitive factors included failure to seek advice, lack of knowledge, failure to appreciate clinical urgency, and lack of supervision (McQuillan et al, 1998).

Perhaps the most disturbing example of this was described in the MERIT study – a randomized cluster control study of medical emergency teams in 23 Australian hospitals in 2002 (Hillman et al, 2005). Nearly 500 cardiac arrests occurred during the 6-month study. In more than a third of these cardiac arrests staff took abnormal patient observations in the 15 minutes before the cardiac arrest, but did not activate an emergency response. This was despite the presence of explicit policy and procedure to do so at least in the hospitals randomized to the medical emergency team intervention.

Put another way, in your average Australian hospital in 2002, if you looked as if you had and had documented abnormal signs in the 15 minutes before a cardiac arrest, up to 40% of the time the staff were not going to call for help by activating some sort of emergency response team. Furthermore, in the intervention hospitals that had an intense education process on the new medical emergency team activation policy and procedure, the incidence of calling for help was only 10% greater than the control hospitals. It is here at the bedside with the pre-cardiac arrest patient that the staff are trapped in a clinical futile cycle, unable to get out of it either as a result of clinical incompetency (not able to recognize and act for the pre-arrest patient) and/or culture whereby calling for help (Buist, 2008) may be considered not the norm in that ward, on that shift at that time (Kitto et al, 2015).

A case of clinical deterioration: Swiss cheese or clinical futile cycles?

The case presented here is reproduced from Buist (2011): 'A middle aged, previously completely well, male underwent a semi-elective thoracotomy for an empyema. He had previously been admitted 3 weeks ago with three fractured ribs after a motor vehicle accident. The surgical procedure and anaesthetic were uneventful. The patient returned to the ward at 15.00 hours with a heart rate of 130 beats per minute. Otherwise his observations were unremarkable. The surgical registrar was concerned about the heart rate and the patient’s inability to pass urine postoperatively. The registrar instructed the house officer to insert a urinary catheter if the patient failed to pass urine by 18.00 hours. At 18.00 hours there was no urine output, the heart rate was 140 beats per minute. Despite the house officer’s insistence, the patient refused to have a urinary catheter inserted. Otherwise the patient’s condition was stable. The house officer handed over the patient in a verbal report to the night resident medical officer at 22.00 hours.

The night resident medical officer was summoned urgently to see the patient at 23.30 hours when the patient dropped his blood pressure to 85/60 mmHg. The heart rate was now 150 beats per minute. The resident medical officer assessed that the patient was hypovolaemic and administered 2 litres of intravenous fluid, and ordered a blood transfusion. With this intervention, the blood pressure improved and the resident medical officer went about his other tasks. There were no further observations on the patient until 02.30 hours when the blood pressure was observed to be 75/55 mmHg. The resident medical officer again responded promptly and commenced further fluid resuscitation. Again there was a transient improvement in the patient’s condition. At about 04.00 hours the resident medical officer was concerned enough about the patient to telephone the on-call, but off site, surgical registrar. The resident medical officer explained the patient’s condition to the registrar. The surgical registrar was concerned and stated that he would come in early at 07.00 hours to review the patient before the start of his operating list. At 05.30 hours, the patient lost consciousness, and the nursing staff, put out a cardiac arrest call. Despite the best efforts of the anesthetic registrar and the intensive care unit registrar, the patient could not be resuscitated and he was deceased at 06.00 hours.’ (Buist, 2011).

Root cause analysis of this man’s death using the Swiss cheese model would be quite simple, most notably that at multiple times various members of staff failed to call the hospital rapid response system. This failure occurred despite a very clear and well-implemented policy and procedure for the activation of the rapid response system. A reasonable recommendation would be to...
Clinical futile cycles can be dangerous when a patient’s clinical condition is deteriorating, when often well-intentioned clinical actions fail to improve a patient’s clinical condition.

The traditional hierarchical referral model of care in hospitals can mean that in one clinical episode there can be multiple clinical futile cycles from the most junior bedside staff up to and including consultant level clinicians.

An understanding of clinical futile cycles during a patient’s clinical deterioration should lead to alternative and more effective clinical actions to improve the patient’s condition, e.g. more timely activation of staff or teams with resuscitation expertise.

Rapid response teams (such as critical care outreach, hospital at night, and electronic track and trigger systems are all useful tools to decrease the deleterious effects of clinical futile cycles.)

Conclusions: using clinical futile cycles to safety proof health from the sharp end back

The model of clinical futile cycles allows for more directed interventions to prevent hospital setting adverse events. In particular, there needs to be more resource and attention directed to how clinical teams operate and interact with each other. Within these clinical teams, there also needs to be more scrutiny of individual competence and capability along with more explicit understanding of the ever-changing clinical team, unit and ward micro-culture.

The importance of the clinical futile cycle to the individual clinician regardless of profession, area of specialisation, experience or seniority, is quite simply the cognisance of being caught in one during a clinical episode. This recognition, particularly when confronted with patient deterioration, should result in a change of strategy to a more effective intervention. Such interventions could be as simple as activation of a rapid response system or obtaining an urgent review by intensive care staff (Harrison et al, 2004).

For the hospital understanding clinical futile cycles should lead to the implementation of systems that decrease their deleterious effects such as rapid response systems (Jones et al, 2011a), hospital at night (Hamilton-Fairley et al, 2014), and electronic track and trigger systems (Jones et al, 2011b).

We need to focus attention on the core business of health care; the interaction at the bedside and clinic between the patient and the various health-care professionals. Clinical futile cycle gives a practical platform to understand this culture. We need to accept that an abnormal or inappropriate workplace culture, along with some significant issues of professional competency, is at the heart of every major inquiry into the quality of hospital care (Hindle et al, 2006). These issues cannot be fixed by administrative policy and procedure that focus on system issues. Every report into these enquiries recommends change, yet 30 years on from Bristol (Department of Health, 2001) we had mid-Staffordshire (Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry, 2013). So what have we really learned from the reports and thousands of pages of recommendations? Nothing that is discernible at the bedside.

We need a different strategy – one that puts the patient and his/her wellbeing first.

This should be followed by the implicit understanding that our core business is that interaction with the patient from the most basic and junior levels. The bedside health-care team needs to be trained, credentialed and supported to deliver better health care, not as individual players, but as members of a team. BJHM


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British Journal of Hospital Medicine, November 2016, Vol 77, No 11