

**What factors influence suboptimal ward care in the acutely ill ward patient?**

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**Published**

2009

**Journal Title**

Intensive and Critical Care Nursing

**DOI**

[10.1016/j.iccn.2009.03.005](https://doi.org/10.1016/j.iccn.2009.03.005)

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## **Abstract**

### **Background**

The incidence of adverse events in the acute care sector is increasing nationally and internationally. For the acutely ill ward patient these adverse events appear to be related to the provision of sub-optimal care. Identification of the factors that contribute to sub-optimal care of the acutely ill ward patient may facilitate development of appropriate strategies to improve this care and subsequent patient outcomes.

### **Aims**

The purpose of this review was to critically analyse factors that contribute to suboptimal care in the acutely ill ward patient.

### **Methods**

MEDLINE, CINAHL, EMBASE and Cochrane databases were searched using the search terms suboptimal ward care, critically ill ward patients, acutely ill wards patients and adverse events. Studies published between 1995 and 2007 and written in English were included. Categories proposed by McQuillan et al<sup>1</sup> in relation to suboptimal ward care were used in an attempt to develop a conceptual analysis of the factors that influence suboptimal care of acutely ill ward patients.

### **Results**

Thirty nine papers addressed the topic and were reviewed however only twelve papers presented empirical data and are included in the review. Although there was evidence that failure to appreciate clinical urgency, failure to seek advice, lack of knowledge and failure of the organisation contribute to sub-optimal care, there was limited evidence of the impact of lack of supervision in this setting. Further, there was limited evidence of the impact of these factors on outcomes of acutely ill ward patients.

### **Conclusion**

A paucity of empirical data exploring the impact of systems failure on acutely ill ward patient outcomes currently exists. There is an urgent need to further explore and identify the factors that impact on this important clinical topic.

**Key words**

Care of the acutely ill ward patient, suboptimal ward care, adverse events, patient outcomes, quality of care

## **What factors influence suboptimal ward care in the acutely ill ward patient?**

### **Introduction**

Despite increasing emphasis on quality assurance frameworks, clinical governance and evidenced based health care, the incidence of adverse events (AE) in the acute care sector is increasing both nationally and internationally.<sup>1-4</sup> An adverse event has been defined as

*...an unintended injury that results in temporary or permanent disability, including increased length of stay, which is caused by health care management rather than the disease process.<sup>4</sup>*

Adverse events are a national and international concern. The frequency of in hospital adverse events is 16.6% in Australia,<sup>4</sup> 10.8% in the United Kingdom,<sup>3</sup> 7.5% in Canada<sup>5</sup> and 2.9-3.7% in the United States of America (USA).<sup>6</sup>

Evidence suggests that adverse events within the acute care patient cohort are related to suboptimal care.<sup>7,8</sup> Suboptimal care implies a lack of knowledge regarding the significance of clinical findings relating to dysfunction of airway, breathing and circulation<sup>1</sup> or problems related to system failures that inhibit care delivery. An exploration of factors that may contribute to, and influence suboptimal ward care in the acute care setting is therefore timely and important for a number of reasons. Acutely ill ward patients commonly experience unplanned admission to Intensive Care Units (ICU) which is associated with increased morbidity and mortality and prolonged hospital stays.<sup>1,9</sup> Patients may be discharged from ICU prematurely to facilitate the unplanned admission of acutely ill ward patients. Untimely discharge is also associated with increased morbidity and mortality.<sup>10</sup>

There is clearly a need for an exploration to elucidate the factors that contribute to suboptimal ward care of the acutely ill ward patient. This literature review critically analyses and synthesises published research focusing on the factors influencing suboptimal ward care in the acute care setting. Thus it aims to develop and enhance critical care practitioners' knowledge and understanding of this topic and therefore improve patient care outcomes.

## **Methods**

Databases that were searched to locate relevant studies included MEDLINE, CINAHL, EMBASE and Cochrane. In an attempt to demonstrate a transparent decision making process an explicit inclusion and exclusion criteria was developed. Literature was included if it was published from 1995 to 2007. This span of 12 years was chosen to provide the articles that were most appropriate and relevant to current practice. Also, it was acknowledged that the concept of suboptimal care of the acutely ill ward patient appeared to emerge from literature published in the late 1990s.<sup>1</sup> Search terms that were used included suboptimal ward care, critically ill ward patients, acutely ill wards patients and adverse events. Literature was excluded if it was not written in English or if it concentrated more on strategies aimed at identifying acutely ill patients for example early warning scores. One hundred and ten papers were identified for potential inclusion. These papers were critically evaluated using a recommended framework described by Polit and Beck.<sup>11</sup> The use of a theoretical framework for critical evaluation ensures a systematic approach to reviewing the literature. Following this critical review 39 papers dealt with the topic and were reviewed, however only twelve papers presented empirical data and are included in the review.

McQuillan et al.<sup>1</sup> identified that suboptimal care can be categorised in five distinct categories. These categories have been repeatedly cited in the literature as factors contributing to suboptimal ward care in the acutely ill ward patient population.<sup>12-16</sup> These five categories include; failure to appreciate clinical urgency, failure to seek advice, lack of knowledge, failure of the organisation and lack of supervision. The literature has been appraised in these five categories to determine whether this classification adequately describes suboptimal care of the acutely ill ward patient.

### **Suboptimal care and acutely ill ward patients.**

Failure to seek and provide appropriate and timely interventions to at risk patients has led to the concept of 'suboptimal care' of acutely ill ward patients. A significant proportion of hospitalised patients experience serious adverse events (AEs). During the late 1990s a number of seminal studies were carried out that established that AEs are frequently preceded by physiological abnormalities.<sup>1 3,9,17 18</sup> The findings from these influential studies have significantly impacted on health care policy.

A confidential inquiry into the quality of care before admission to intensive care units demonstrated that the management of airway, breathing and oxygen therapy in the acutely ill ward patient may be suboptimal.<sup>1</sup> This inquiry is often considered the seminal paper on the subject of suboptimal ward care. However, methodically the paper has some limitations. McQuillan and colleagues<sup>1</sup> relied on the chosen reviewers' unspoken and implicit assessments of suboptimal care because they argued that explicit and objective definitions of suboptimal care were difficult and problematic, however the use of expert reviewers as a method has been criticised as being subjective and unscientific.<sup>19</sup> The reviewers were not blinded to the patients' outcomes, and this may have influenced their clinical reasoning. For example the

reviewers may have been more likely to cite evidence of suboptimal care if the negative patient outcome was evident. Finally McQuillan et al's.<sup>1</sup> study utilised a very small sample size so accurate assessment of the extent of suboptimal care within the ward patient population was problematic.

Despite these limitations this study has been particularly useful in categorising some of the causes of suboptimal care. These five categories include:

- Failure to appreciate clinical urgency
- Failure to seek advice
- Lack of knowledge
- Failure of the organisation
- Lack of supervision

Since this study, numerous papers refer to these categories in relation to suboptimal care of ward patients.<sup>13-16,20-22</sup> This current review uses the categories proposed by McQuillan and colleagues<sup>1</sup> in relation to suboptimal ward care in an attempt to develop a conceptual analysis of the literature to the factors that influence suboptimal ward care and acutely ill ward patients.

### **Failure to appreciate clinical urgency.**

Three important studies concluded that suboptimal ward care is associated with healthcare providers failing to appreciate the clinical urgency of patients' status (Table 1).<sup>9,17,23</sup> Two of these studies used a retrospective analysis of patient records<sup>9,23</sup> and one study used a case series approach.<sup>17</sup> An Australian study<sup>23</sup> investigated the nature and timing of premonitory signs and symptoms in patients prior to a "critical event" (cardiac arrest or unplanned ICU admission) and concluded

that critical events in hospitalised patients were preceded by premonitory abnormal vital signs. Importantly, 76% of critical events occurred in non ICU patients and were accompanied by premonitory signs that were present for more than one hour before the critical event. In one third of these critical events documented instability continued for more than 24 hours prior to the cardiac arrest or unplanned admission to ICU. Buist et al.<sup>23</sup> did not identify the number of patients who developed acute physiological changes without declining into cardiac arrest and thus the number of serious adverse events may be much higher than actually reported.

An English study<sup>9</sup> investigated the incidence of unexpected deaths and the relation of these to suboptimal care in a six month audit on general wards. This study concluded that a gradual deterioration was observed in ward patients' physiological and/or biochemical variables, but appropriate action was not taken, arguably because health care providers failed to appreciate the clinical urgency of the situation. McGloin and colleagues<sup>9</sup> study supports the findings of other studies in relation to suboptimal ward care and failure to appreciate clinical urgency. The use of retrospective case analysis is a common method employed by researchers investigating suboptimal ward care.<sup>9,23</sup> However this form of data is often incomplete, making an objective and unbiased judgement problematic.

Franklin and Matthews<sup>17</sup> American study investigated the frequency of premonitory signs and symptoms before a cardiac arrest in patients on a general medical ward and how nurses and physicians responded to these signs. Franklin and Matthew argue that their findings confirmed nurses failed to notify a physician of changes in patients' mental status, again suggesting this may be the result of failure to appreciate the clinical urgency of the situation. However the inclusion criteria of this study consisted of patients who had experienced a critical incident defined as either a



cardiac arrest, unplanned admission to ICU or death. Only 150 patients fulfilled this criterion. Arguably by widening the inclusion criteria and clearly defining a critical event or using the definition supplied by Wilson et al<sup>4</sup> a much larger sample would have been recruited and this may have been a more reliable indicator of the true prevalence of suboptimal care of the acutely ill ward patient.

Accordingly, data suggests that most adverse events are preceded by a period of physiological instability and clinical deterioration and that the clinical urgency of this physiological instability is not recognised, acted on, or appreciated by ward nurses.

### **Failure to seek Advice**

Failure to seek advice was examined in only four studies (Table 2). Two descriptive Australian studies highlighted that nurses often utilised intuitive judgement rather than objective physiological data when seeking support and advice.<sup>24 25</sup> Although both of these studies focused on nurses' decision making when activating a Medical Emergency Team, (MET) the findings support the assumption that the subjective nature of intuitive judgement may render it ineffective and undervalued by nurses and medical officers. It is generally acknowledged that successfully accessing a medical review for ward patients requires the utilisation of objective and quantifiable data. This is supported by a British study<sup>26</sup> which argued that from a nursing perspective it is much more difficult to access medical support if subjective evidence is presented, for example:

*Yeah you have to wait until you know their deterioration really kicks in before you can do anything about it because they don't take any notice of you...You couldn't ring up a doctor and say: their resp rate is a bit funny. You need other numbers and physical things to tell them don't you. So that's a way of*

*formulizing what their problems are ...so you learn to become more precise because that's what's going to get a better response.*<sup>26</sup>

A 1994 Australian study by Daffurn and colleagues<sup>27</sup> explored nurses' opinions, knowledge and use of the MET using hypothetical clinical scenarios to identify if nurses used physiological criteria to activate the MET. Worryingly only 17% of nurses would activate the MET for patients who clearly met the objective physiological criteria identified in the MET calling criteria and as many as 41.5% of nurses would choose to call a medical officer instead of activating the MET. Similar to other studies<sup>24,25</sup> this study focused on nurses' knowledge and decision-making in relation to the MET and these models of care are still not available to all ward nurses. Nurses who do not have access to these systems of care may therefore employ very different decision-making when seeking advice in caring for acutely ill ward patients. Three studies<sup>24-26</sup> used exploratory methods and therefore the findings of these studies cannot be generalised to other health care settings. The only study that used a quantitative methodology<sup>27</sup> is now over twenty years old and the questionnaire was distributed in a single site to only 140 nurses and thus the findings may not reflect nurses' current clinical reasoning and decision-making when summoning emergency assistance to acutely ill ward patients. Despite these methodological limitations, findings from these studies highlight that nurses appear to lack confidence in their judgements and clinical decision-making. This may be detrimental to acutely ill ward patients. Poorer outcomes in acutely ill ward patients are associated with delays in appropriate intervention.<sup>28-30</sup>

### **Lack of Knowledge**

As surgical and technological developments continue to offer patients with multiple co-morbidities and chronic health conditions more invasive treatment options patient

acuity increases. The ability to recognise physiological abnormalities is a key factor in the prevention of an impending adverse event. The recognition and interpretation of physiological abnormalities is primarily a nursing responsibility.<sup>31</sup> Respiration rates are increasingly cited as one of the most sensitive and important indicators of an impending adverse event.<sup>2,32,33</sup> Despite this there is increasing evidence that nurses do not routinely assess, record or document this important physiological parameter.<sup>32-36</sup> Accurate and timely assessment is therefore a vital component of holistic patient care and is suboptimal when patient assessments are not comprehensive.<sup>1,32</sup> West<sup>32</sup> argues that contemporary nursing practice needs to embrace all aspects of structured physical assessment to ensure safe and effective care. Andrews and Waterman<sup>26</sup> in their grounded theory study highlight that nursing staff lack confidence to articulate their theoretical knowledge to patients and other health care providers. It has been argued that the lack of biological sciences within the pre-registration nursing curriculum disadvantages both nurses and their patients. Nurses are unable to apply the theory of biological science to their practice<sup>37</sup> and thus communication with other health care providers may become fragmented, disjointed and even antagonistic.<sup>26</sup> This delays the medical review of acutely ill ward patients and predisposes them to detrimental outcomes and suboptimal care.

Lack of knowledge has been cited as a factor in failure of medical staff to detect patient deterioration (Table 3). Two studies<sup>15,17</sup> have explored the impact of medical knowledge in relation to the care and management of acutely ill ward patients.<sup>38,39</sup> Smith and Poplett's<sup>38</sup> study used a questionnaire to demonstrate that many trainee doctors have significant gaps in their knowledge and understanding of the signs of acute illness. Arguably, this impedes their ability to effectively and efficiently identify an impending adverse event. Accordingly, although responsible for the care and management of perhaps one of the most complex and challenging patient groups, trainee doctors are poorly prepared to identify and treat acutely ill ward patients. If

senior house officers and registrars have significant gaps in their knowledge and understanding in relation to this complex patient cohort it is likely that these findings could also be applied to nurses' knowledge and understanding although this assumption would require further investigation.

Only one study to date has explored the experiences of nurses caring for acutely ill ward patients.<sup>13</sup> This exploratory descriptive study involved interviewing ward nurses caring for acutely ill ward patients. The participants in this study did not identify that they lacked knowledge in relation to caring for acutely ill ward patients although they appeared to have difficulties in identifying their educational needs in relation to caring for this patient group. This creates what Cutler<sup>40</sup> refers to as a paradox in that "insiders" or the ward nurses are unaware of their educational needs.

### **Failure of the organisation**

There is a lack of published evidence linking suboptimal ward care to failure of the organisations. However a number of studies have identified that nursing workloads can influence patient outcomes.<sup>41,42</sup> Arguably then, workload allocation and hospital recruitment and retention policies can be situated under failure of the organisation.

Clarke and Aiken<sup>43</sup> have applied the term failure to rescue in an attempt to examine ways nurses influence patient outcomes. They define failure to rescue as:

*Clinician's inability to save a hospitalized patient life when he (sic) experiences a complication (a condition not present on admission).*<sup>43</sup>

It is important to explore how failure to rescue differs from suboptimal care and adverse events. Clarke and Aiken<sup>43</sup> choose not to explore this concept in their discussion. Nonetheless, failure to rescue is becoming a familiar term within nursing literature and is increasingly linked to suboptimal ward care of the acutely ill patient.<sup>20,43-45</sup>

Clarke and Aiken<sup>43</sup> argue at least two possible phases are involved in rescuing patients from the possible dangers they are exposed to whilst an inpatient: surveillance and timely identification of complications and the launching of a successful rescue response. Because of nurses' close and continued monitoring of patients they are often the first to detect the early signs of physiological derangements and this continued surveillance ensures they are ideally positioned to launch a successful rescue operation. The success of the rescue operation however depends on a number of important factors for example an effective patient staff ratio is essential to facilitate effective surveillance. The ability to mobilise hospital resources is also an important factor in a rescue operation whilst nurses may be able to survey and monitor patients but this becomes meaningless if their role within the organisation is not valued and their voices and concerns neither listened to nor acted upon. Clarke<sup>45</sup> believes that these organisational characteristics fundamentally affect healthcare providers' abilities to initiate these phases, therefore contributing to patients' potential exposure to suboptimal care. This argument has not yet been empirically demonstrated, although evidence highlights that patient staff ratios are an important indicator of quality of care.<sup>42,46,47</sup> Clarke<sup>45</sup> argues that organisational features are directly related to failure to rescue. Clarke and Aiken<sup>43</sup> contend that failure to rescue is a better indicator of a hospital's quality than the rate of adverse events alone. Thus, in relation to patient safety it is important to consider the characteristics that are responsible for adverse events as well as incidence and occurrence.<sup>48,49</sup> By focusing solely on the incidence and consequences of adverse events the emphasis is shifted away from the importance of examining organisational systems that promote adverse events and facilitate suboptimal care. Arguably, there needs therefore to be an organisational shift committed to developing and adopting a robust quality assurance model that enables and encourages exploration of all the relevant issues rather than continued concentration on the clinical issues. Given that

nurses provided most of the direct and ongoing patient care it can be assumed that nursing care structures and processes are important determinants of patient mortality and therefore an indicator of quality and patient safety.

Needleman et al<sup>41</sup> examined the relationship between indicators of nurse staffing and failure to rescue and found that higher proportions of registered nursing hours were associated with lower failure to rescue interventions for medical patients. In a study of surgical patients each additional patient in excess of a four patient workload resulted in 7% increase in mortality and 7% increase in the odds of a failure to rescue occurring.<sup>42</sup> Many of these studies have been conducted on specific patient cohorts, for example surgical patients,<sup>42,50</sup> medical patients<sup>41</sup> and critical care patients<sup>51</sup> and therefore it is difficult to generalise these findings to the wider hospital in-patient population.

Clearly many different factors and variables influence hospitalised patient mortality and control and manipulation of these factors is problematic within the acute care hospital environment. Traditionally, studies that explored the link between nursing staffing levels and hospital mortality relied on administrative data.<sup>41,42</sup> This form of data can be restrictive in relation to the range of background factors that can be reviewed. Data may be missing or incomplete thus making an objective and unbiased judgement difficult.

Needleman and Buerhaus<sup>52</sup> argue the impact of nurse staffing on hospital mortality although seductive is not yet conclusive. Thus, there is lack of empirical data directly linking organisational culture and its relationship to suboptimal care.

### **Lack of supervision**

The final criterion that contributes to suboptimal ward care is lack of supervision.<sup>9</sup> Interestingly no empirical studies were identified that demonstrated that lack of supervision is associated with suboptimal ward care of the acutely ill patient. An understanding of the term supervision and its role in developing practice is imperative in understanding its importance and value in promoting safe and effective patient care.

Supervision has been defined as an exchange between practicing professionals to enable the development of professional skills.<sup>53</sup> Recently, clinical supervision has been seen as a more contemporary approach to supervision and has been widely adopted within the English health care system in response to the clinical governance model and quality assurance drivers. Clinical supervision has been defined as a process that brings practitioners and skilled supervisors together to reflect on practice with the aim of identifying solutions to problems and improving practice.<sup>54</sup>

In its embryonic stage clinical supervision was viewed as a democratic process focussing on professional growth and development rather than quality assurance outcomes. However, clinical, demographic and educational changes witnessed the clinical supervision profile within the British health care system become more evident, transparent and strategic. If clinical supervision contributes to improving quality levels of service delivery and reducing costs this should impact on the number of adverse events and reduce suboptimal care. However, the clinical supervision model has tended to be introduced as a professional development activity rather than a management supervision activity. It is therefore seen as voluntary, non hierarchical and democratic thus it has proven problematic to fully evaluate the effects and impact of this model on patient outcomes.

Bureaucratic organisations like health care institutions however may obstruct the learning process; employers are punished for failure and this leads to reluctance to learn from mistakes. Supervision in any form is therefore regarded as a tool of management and viewed with suspicion and fear rather than being embraced by health care employers as a development opportunity.

Arguably, health care institutions need to change their culture and philosophy before any form of supervision can be introduced and implemented; supervision needs to be integral to and embedded within the organisation's culture. Although effective supervision may impact positively on patient care outcomes, reduce the incidence of adverse events and promote effective and safe care, empirical evidence demonstrating this relationship is not yet available. The argument presented here concludes with the notion that effective supervision seems to be closely related and intrinsically bound to organisational failure.

### **Implications for practice and research**

The findings of this literature review have a number of important implications for practice and research and the acute and critical care environment. The review confirms that suboptimal care of the ward patient exists. Patients who have been exposed to suboptimal care and have experienced serious deterioration are significantly more likely to be admitted to ICU as an unplanned admission. These patients spend longer in ICU and have higher morbidity and mortality than patients who are admitted to ICU as a planned admission. Clearly there is an urgent need to identify the factors that influence suboptimal ward care so that patient care outcomes can be optimised and scarce resources can be utilised efficiently and effectively.



Of particular concern is that the majority of the papers analysed do not reflect the casemix and acuity of contemporary hospitals and to date studies have not included experimental designs. Clearly there is an urgent need for more contemporary valid and reliable research that explores the factors that contribute to suboptimal ward care of the acutely ill ward patient.

The literature consistently argues that the root of suboptimal ward care lies in the five distinct categories identified by McQuillan et al.<sup>1</sup> This review has analysed the literature related to these categories in an effort to identify if these factors are indeed responsible for suboptimal ward care. Whilst there is increasing emphasis on systems failure in relation to suboptimal ward care this review been unable to clearly demonstrate that system failure is a factor in suboptimal ward care. There are a number of challenges in undertaking research with acutely ill ward patients and these require consideration. Patient acuity and serious clinical deterioration are likely to impact on ethical issues related to informed consent and this therefore limits the research method than can be used and the type of data that can be collected. The nature of the topic dictates retrospective data is used. However this form of data is often incomplete, making an objective and unbiased judgement problematic.

From a practice perspective this review has highlighted the role and importance of accurate and systematic patient assessments in recognising acutely ill patient deterioration. Clinical nurses therefore need to develop their knowledge and clinical skills in performing and conducting systematic and objective assessment in order to ensure acutely ill patients receive appropriate and timely management and interventions. An evaluation of the impact of improved and enhanced clinical assessment skills on patient outcomes would also therefore be beneficial.

Acutely ill ward patients do exhibit premonitory signs of clinical deterioration which may be recognised but not acted on. In recent years systems have been developed to assist ward staff in managing these acutely ill patients. Considerable resources have been invested in relation to developing these services and more recently evaluating their impact on patient outcomes although, evidence remains inconclusive in relation to their effectiveness and efficiency. Many of the factors regarding suboptimal ward care of the acutely ill ward patient remain unexplored. Increasingly the care of the critically ill patient takes place outside the confines of the critical care unit. This important clinical problem needs to be constructively addressed. Given the economic and workforce challenges facing the acute care sector the lack of high quality studies in the area is concerning. There is a lack of evidence exploring nurses' knowledge, and understanding in relation to caring for the acutely ill patient. The importance of nurses in delivering, co-ordinating and evaluating care is evident.<sup>52</sup> Clearly this is an area that requires further research. Consequently ongoing evaluation of the strategies and systems that have been designed to identify patients at risk of clinical deterioration in the ward setting would be beneficial.

## **Conclusion**

McQuillan et al<sup>1</sup> identified that suboptimal care can be categorised in to five distinct categories. These categories have been repeatedly cited in the literature as factors contributing to suboptimal ward care in the acutely ill ward patient population.<sup>12-16</sup> This has witnessed the development of innovative new models of care that provide a continuum between acute ward and critical care unit settings. These new models of care have been extensively evaluated for their effectiveness and efficacy in relation to acutely ill ward patients' outcomes. However what is lacking within the literature is

a coherent, logical and empirical study that clearly demonstrates the factors that are responsible for suboptimal ward care of the acutely ill patient.

Further exploration of the factors that lead to sub-optimal care of the acutely ill ward patient is necessary. In addition, continued development of models of care that target the factors identified by McQuillan et al<sup>1</sup> to reduce the incidence of sub-optimal care should be encouraged.

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