Distinguishing between acute and chronic elements of ill health when assessing patients

Exploring the tools that help nurses assess the severity of acute illness and grade chronic illness in patients with long term conditions in acute care

INTRODUCTION
An increasing number of people live with long term conditions and they often experience frequent, episodic admissions to acute hospital services, to manage either exacerbations of their long term illness or an acute unrelated condition (Williams, 2004).

Assessment needs to incorporate both acute and chronic elements if optimal decisions are to be made about patients’ ongoing care needs. Therefore, the task facing nurses in the acute sector is to manage the acute element of a patient’s condition while ensuring the stability of long term problems.

This article aims to highlight how nurses can play a role in distinguishing between acute and chronic elements of ill health so they can ensure that appropriate, individualised management plans are put in place for inpatients. This involves an analysis of both nursing and medical assessment approaches to this problem and considers how appropriate ‘ceilings of therapy’ can be constructed.

Consider the following scenario:

Despite optimal medical management, a patient is deteriorating after recent admission to a ward due to a COPD exacerbation. Two contrasting options are available:

- Intubation and attachment to a ventilator while the acute element of the condition is active;
- Starting a palliative pathway as the chronic disease process is unlikely to abate.

Acute and chronic elements
Theoretically, the terms ‘acute’ and ‘chronic’ sit at opposite ends of a spectrum. In the healthcare setting, the former relates to a disease of rapid onset and relatively brief duration, while the latter signifies long duration with slow changes in patients’ conditions (Dorland, 2003).

Consequently, acute hospitals are intended for people needing short term medical and/or surgical management, while there is a growing trend for long term conditions to be managed mainly in community settings (Warrrell et al, 2003).

In practice the link between acute and chronic is less obvious and may involve one or a combination of the scenarios described below:

- A patient is admitted with an acute exacerbation of a long term condition – the example above described an exacerbation of COPD, where the patient has a worsening cough, alongside an increase in volume and/or consistency of respiratory secretions (NICE, 2004);
- A patient is admitted to hospital with an acute condition and one or more unrelated long term conditions – for example pneumonia with a background of chronic heart and/or chronic renal failure;
- A combination of acute and chronic ill health as follows:
  - Significant acute illness with mild chronic illness;
  - Significant chronic illness with a mild acute disease;

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Gathering information to ensure the correct decision is taken entails a deeper review of the acute and chronic elements of the patient’s condition.

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However, Tarlier (2005) argued that, in isolation, such information is insufficient to express the complexities of human beings. Consequently, a holistic approach that encompasses alternative data acquired through intuition (Welsh, 2001) and qualitative assessment or patient preference (Grypdonck, 2006) may be as beneficial for decision making in healthcare.

Finding the evidence to distinguish between acute and chronic illness states and to assess the severity or grading of each should, therefore, come from many diverse sources. It should involve an analysis of ‘soft’ (subjective or intuitive) as well as ‘hard’ (objective and quantitative) data (Offredy, 2007).

**Practice Points**
- The evidence to distinguish between acute and chronic illness states should come from many different sources.
- Assessing the severity of acute illness and grading chronic elements should involve both intuitive and quantitative data.
- Arterial blood gas analysis can be helpful in distinguishing between acute and chronic elements of a condition.

**Box 1. Community-acquired pneumonia in patients admitted to hospital: CURB-65 score**

Score one point for each feature present – a score of 3 or more means patients should be managed in hospital as ‘severe pneumonia’

- C new confusion
- U urea >7mmol/L
- R respiratory rate ≥ 30 breaths/min
- B blood pressure: systolic ≥90mmHg or diastolic ≥60mmHg
- 65 age ≥65 years

MEASURING THE SEVERITY OF THE ACUTE PROBLEM

Objective or ‘hard’ data can be obtained by calculating a patient’s early warning score. These scores have been used as a means of highlighting deteriorating patients (McArthur Rouse, 2001). A score is assigned to each observation and, when a preset trigger is reached an escalation policy is enacted (Table 1).

The application of early warning scores across the whole acute hospital is now an expected norm (NICE, 2007; National Confidential Enquiry into Patient Outcome and Death, 2005). While the debate over which parameters to use and where to set the appropriate trigger level continues (Duckitt et al, 2007), the strength of early warning scores appears to lie in their simplicity to compute and their holistic nature.

Yet no optimal early warning scoring system is likely to be reached, because of differences between hospitals in terms of case mix and specialties (Hancock and Durham, 2007).

A possible enhancement to the modified early warning score (MEWS) can be found in medical literature. ‘Disease specific severity scores’ have been developed by national and international bodies to estimate the relative severity of an acute condition. Severity scores published by the British Thoracic Society (2004) on community acquired pneumonia (see Box 1 for the CURB-65 score for hospital patients) and the internationally accepted sepsis classification (Dellinger et al, 2008) are used to highlight where patients sit on the continuum of acute illness.

Many other disease-specific scoring systems exist. Their acceptance by nationally recognised organisations can enhance their use in routine clinical practice.

From a qualitative or ‘soft’ angle, Green and Edmonds (2004) highlighted the importance of an ‘eyeball assessment’ – an initial visual impression which may cause immediate concern – which relies on practitioners’ ‘sixth sense’ or ‘intuition’ to inform them of the severity of illness. This subjective variable may be given a quantifiable score and then form an ingredient of a more holistic early warning scoring system.

Other studies have highlighted nurses’ reliance on such intuitive data as the first sign that patients are deteriorating (Ciuffi, 2000). When recording such concerns about patients, such intuitive data needs to be precisely communicated between healthcare professionals.

This may include a description of: patients’ colour (flushed, pale or showing evidence of cyanosis); behaviour (agitated, withdrawn, or aggressive); respiratory pattern (irregular, shallow breathing, use of accessory muscles); or cardiovascular status (the relative strength and regularity of radial pulse).

Further subjective information can be gathered directly from patients themselves or accompanying relatives, as Grossman and Wheeler (1997) found that nurses recognise that many patients tend to know when their condition is deteriorating.

An alternative approach to assessing the severity of patients’ acute illness is their current level of care (Table 2, p22). Harrison’s (2004) adaptation of the Intensive Care Society’s (2002) level of care definitions used patient dependency or acuity levels to identify level of care. This approach provides an alternative viewpoint, focusing on patients’ needs rather than their response to illness. A transition from level 1 to level 2 dependency may be represented by an increased oxygen requirement to >50% or a need for a non-invasive form of ventilation. This simple classification can be applied when, for example, there is a perceived need to move a patient from a ward location to a high dependency unit.

This eclectic mix of tools offers a holistic approach to assessing the severity of acute illness, yet may mislead nurses for a number of reasons.

Objective data obtained through early warning scores can be misinterpreted. Human individuality means that some patients’ ‘normal’ observations may score on the MEWS chart, but could highlight either chronic pathophysiology or acute wellbeing. These could include, for example, a patient with chronic respiratory disease who has a ‘normal’ respiratory rate of 24, or a healthy person with a resting heart rate of 48.

In some situations, it may be appropriate to reset the MEWS trigger, in order to ensure that teams are not called out when there are evidently no acute concerns with patients’ conditions.

Disease-specific scoring systems may be more useful in assessing mortality rates (the CURB-65 score again contains both acute and chronic elements in its assessment process) than the severity of acute illness. Likewise, subjective visual assessments – while valuable in recognising ill health – may not distinguish between acute and chronic elements of the disease process. For example, the pale complexion of a patient with cool peripheries may suggest a spectrum of possible diseases from chronic anaemia to acute MI.

Consequently, a review of patients’ acute problems may not lead to appropriate intervention. Such assessments need to be viewed in the context of co-morbidities or pre-admission health status (NICE, 2007).

<table>
<thead>
<tr>
<th>TABLE 1. MODIFIED EARLY WARNING SCORE (MEWS)</th>
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<tbody>
<tr>
<td>Score 3 2 1 0 1 2 3</td>
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<tr>
<td>Heart rate ≤40 41–50 51–100 101–110 111–129 ≥130</td>
</tr>
<tr>
<td>Respiratory rate ≤8 9–19 20–24 25–29 ≥30</td>
</tr>
<tr>
<td>Temperature ≤35 35.1–35.9 36–37.9 38–38.2 ≥38.3</td>
</tr>
<tr>
<td>Consciousness level New agitation or confusion Alert Responds to voice Responds to pain Unconscious</td>
</tr>
<tr>
<td>Urine output Nil &lt; 20ml/hr for two consecutive hours Chronic haemodialysis ≥200ml/hr</td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg) ≤70 71–80 81–100 101–199 ≥200</td>
</tr>
<tr>
<td>Oxygen saturations ≤85 86–89 90–93 ≥94</td>
</tr>
<tr>
<td>Inspired oxygen ≥50%</td>
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Note: at the Princess Royal Hospital, a trigger of 4 or more necessitates review by the patient’s team.

GRADING CHRONIC PROBLEMS

As with acute illness severity scores, chronic illness states can be graded by applying nationally or internationally accepted scores/
TABLE 2. LEVELS OF CARE DEFINITIONS

<table>
<thead>
<tr>
<th>Level of care</th>
<th>Example of care required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 0</td>
<td>Patients whose needs can be met through normal ward care</td>
</tr>
<tr>
<td>Level 0/d</td>
<td>Patients needing increased nursing support</td>
</tr>
<tr>
<td>Level 1</td>
<td>Patients at risk of condition deteriorating, recently relocated from a higher level of care or needing additional support/monitoring/input from that normally given on an acute ward</td>
</tr>
<tr>
<td>Level 2</td>
<td>Patients needing &gt;50% oxygen</td>
</tr>
<tr>
<td>Level 3</td>
<td>Patients needing two or more organ system monitoring and support</td>
</tr>
</tbody>
</table>

Source: adapted from Harrison (2004)

grading systems for long term conditions. Some of these may be physiologically based, such as spirometry to grade COPD (NICE, 2004; Table 3) or estimated glomerular filtration rate (eGFR) before acute admission as a guide to grade chronic renal failure (NICE, 2008). Such evidence can also be enhanced by radiological investigations relevant to the disease processes involved.

More qualitative markers may include measures of 'breathlessness' or 'exercise testing'. For example, the respiratory field often refers back to the Medical Research Council’s dyspnoea scale as a means of assessing perceived respiratory disability (Bestall et al, 1999). Cardiac fields may apply the internationally recognised heart failure assessment tool to grade patients’ limitation in physical activity from one to four (Dolgin, 1994).

These latter tools have the advantage of giving patients a perception of the degree of ill health suffered because of chronic illness as well as providing clinicians with useful data.

If time allows, extensive patient questionnaires can be used to measure functional assessment or quality of life scores. The St George’s Respiratory Questionnaire was used by Seemungal et al (1998) to report the effect of COPD exacerbations on individual patients and contains 50 components to evaluate symptoms, activity levels and impact on the individual.

ADDITIONAL EVIDENCE

While a plethora of blood tests can be taken to ascertain abnormalities in individual patients, one in particular – arterial blood gas analysis – can be instrumental in distinguishing between acute and chronic elements of a condition.

The severity of the acute illness may be evidenced by an abnormality in pH. The human body will always attempt to sustain a pH in the range of 7.35–7.45, but with increasing severity of an acute illness this ability to sustain normality is lost (Lynes, 2003).

In comparison, the grading of chronicity may be depicted by the level of compensation required to sustain a normal pH. In COPD the response to chronic hypercapnia is a gradual rise in bicarbonate levels to ensure the pH is maintained at normal levels. However, evidence of chronic compensation on a blood gas is not conclusive evidence of disease chronicity.

Additional benefits of a blood gas result may include:

- An accurate assessment of patients’ oxygenation status; taken when they are in a stable state at home, the result can guide practitioners on the usefulness of home oxygen to manage chronic hypoxia. In the acute state, the result clarifies the percentage of oxygen required to sustain organ function and may therefore be linked to patients’ dependency needs referred to in Table 2;
- The lactate level – a useful marker in assessing severity of sepsis (Dellinger et al, 2008).

Good technique and optimal timing of the blood gas should ensure the result yields highly sensitive data to guide patients’ ongoing management.

This vast array of assessment tools, pooled from medical as well as nursing domains, can help healthcare practitioners make decisions about the appropriate ceiling of treatment a patient receives and the optimal location in which this treatment should be provided. Reviewing the appropriate ‘ceiling’ on patients’ therapy ensures early decision making, with the result that:

- Interventions are given speedily to those patients who need critical care facilities;
- Life is not unnecessarily extended for those who would either not want such intervention or this would lead to a degree of chronic ill health unacceptable to all;
- Appropriate palliative care can be initiated in a seamless fashion rather than enacting ‘crisis management’ when a patient deteriorates on the hospital ward.

CONCLUSION

Many people admitted to acute hospitals bring with them a history of chronic ill health. Unless attempts are made to make a
clear distinction between patients’ acute admitting problem and co-morbidities, inappropriate treatment plans may be instigated.

While visual, hands-on assessment is of primary importance for all healthcare professionals, nurses often find it difficult to fully articulate their concerns about patients through this method. However, more objective scoring systems which purport to assess acute ill health often fail to fully differentiate between acute and chronic illness states.

Nurses need to use an eclectic mix of ‘hard’ and ‘soft’ patient data to help the multidisciplinary team draw up a management plan, which ensures that appropriate ceilings of therapy are put in place in line with the degree of ill health. This will ensure that patients receive the most appropriate care and treatment.

Optimal assessment practice appears to lie in holistic application of a wide range of assessment tools alongside the appropriate use of arterial blood gas analysis.

REFERENCES


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