THE IMPACT OF SURGICAL WARD NURSES PRACTISING RESPIRATORY ASSESSMENT ON POSITIVE PATIENT OUTCOMES

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ABSTRACT

Objective:

A literature review to examine the incorporation of respiratory assessment into everyday surgical nursing practice; possible barriers to this; and the relationship to patient outcomes.

Primary argument:

Escalating demands on intensive care beds have led to highly dependent patients being cared for in general surgical ward areas. This change in patient demographics has meant the knowledge and skills required of registered nurses in these areas has expanded exponentially. The literature supported the notion that postoperative monitoring of vital signs should include the fundamental assessment of respiratory rate; depth and rhythm; work of breathing; use of accessory muscles and symmetrical chest movement; as well as auscultation of lung fields using a stethoscope. Early intervention in response to changes in a patient's respiratory health status impacts positively on patient health outcomes. Substantial support exists for the contention that technologically adept nurses who also possess competent respiratory assessment skills make a difference to respiratory care.

Conclusions:

Sub-clinical respiratory problems have been demonstrated to contribute to adverse events. There is a paucity of research knowledge as to whether respiratory education programs and associated inservice make a difference to nursing clinical practice. Similarly, the implications for associated respiratory educational needs are not well documented, nor has a research base been sufficiently developed to guide nursing practice. Further research has the potential to influence the future role and function of the registered nurse by determining the importance of respiratory education programs on post-operative patient outcomes.

INTRODUCTION

Respiratory assessment is an important component of health assessment and is a valuable tool in patient management. However many nurses still regard these skills within the domain of the medical officer and not a 'legitimate nursing activity' (Wilson and Lillibridge 1995 p.117). Chest auscultation has not become part of the ritual of nurses' daily work as compared to the 'vital signs' of temperature, pulse, respirations and blood pressure. Yet it is becoming increasingly important as the scope of nursing roles and the very nature of clinical practice changes; the introduction of more technology does not reduce the need for nurses to use assessment skills, but rather increases it.

Stethoscopes are still not being used by nurses as effectively as they could be. Listening to lung sounds and accurately assessing the pattern and work of breathing are often absent from surgical nurses' routine practice; whereas oximetry, spirometry, blood pressure taking, pain and sedation scores are included. Increasing patient acuity levels in acute care facilities, particularly in general surgical wards, has emphasised the need for nurses working in these areas to diversify and expand the traditional definition of their role.

Enhancement of decision-making skills in the early recognition of potential problems can facilitate competent resolution of the challenging clinical scenarios that acute care nurses face (Rushforth et al 1998 pp.965–970). These include early intervention for pulmonary oedema, pneumonia and pulmonary embolus as well as exacerbation of asthma or chronic obstructive airways disease (COAD).

LITERATURE REVIEW

A systematic examination of current nursing literature identified significant gaps regarding the impact of education programs on nurses using respiratory assessment in acute patient care. A search of the *Cumulative Index to Nursing and Allied Health Literature (CINAHL), Pub Med and Medline* databases was performed and the table of contents from selected journals reviewed. Critical appraisal of the recovered articles was undertaken to reveal the quality and outcomes of the papers. In the articles reviewed, many authors agreed that competent respiratory assessment was a foundation requirement of nursing practice, whereby appropriately educated nurses have the ability to perform regular systematic examinations facilitating awareness of changes in patient condition (Longson and Copley 1989 pp.315-317; Goodfellow 1997 pp.6-8; Kessenich 2000 pp.170). There is good evidence to support the notion that sub-clinical respiratory problems contribute to adverse events (Considine 2005 p.624). There is also substantial support for the contention that technologically adept nurses who also possess competent respiratory assessment skills make a difference to respiratory care. The inclusion of respiratory assessment as a means of data gathering facilitates early intervention in response to changes in a patient's health status, with enhanced health outcomes (Cutler 2002 pp.286).

However despite papers advocating the efficacy of regular respiratory assessment, nurses are demonstrating an unwillingness to incorporate respiratory assessment into their clinical practice resulting in delays in essential treatment (Considine and Botti 2004 p.26). Therefore researching whether focused respiratory education of nurses will facilitate practice change, remains important. The impact of educational programs and their relevance as change agents to empower nurses' attitudes, skills and application to respiratory practice continues to be a challenge for nursing educators. The application of respiratory assessment to clinical practice was seen to be an issue by Lont in 1992 and remains a problem today.

Cutler asserted that many seriously ill patients, who are cared for in the general wards in the United Kingdom, would be in critical care areas in North America (2002 pp.162-166). She also contended that patient care on general hospital wards is often not 'well managed'. Both statements are relevant to Australian hospitals. Acutely ill and highly dependent patients are routinely being cared for in general wards in Australia.

Nurses working in these areas often lack skills relating to respiratory assessment, reflecting the need for more research and education in this area (Considine 2005 p.632). There are enormous clinical challenges facing nursing practice in ward areas, given that stethoscope use in clinical assessment was viewed as a post-registration specialist skill specifically for critical care nurses (Woodrow 2002 p.675). Nursing roles are continually evolving and developing and the impact of shorter hospital stays, rising patent acuity, an ageing population, a higher incidence of patient obesity and new technologies is reflected in the extra demands made on the surgical ward nurse. However the basic nursing skill of respiratory assessment continues to underpin best practice in postoperative care. Detection of the deterioration of an acutely ill ward patient is considered to be within the realms of 'basic nursing assessment' (Ahern and Philpot 2002 p.54).

There is no mention of the possible inclusion of listening to breath sounds and accompanying respiratory assessment in Zeitz and McCutcheon's 2002 study of postoperative vital signs in the general surgical setting (p.831). This is despite measurement or observation of oxygen saturation, colour, airway and gag reflex. A systematic review relating to vital signs conducted by the Joanna Briggs Institute for Evidence Based Nursing and Midwifery, also concluded that the focus of the majority of studies was on measurement and technique rather than duration or frequency issues (Joanna Briggs Institute 1999 p.41).

Early detection of changes in a patient's condition and subsequent preventive actions by critical care and emergency nurses has been shown to facilitate accurate and timely referral and continuity of care (Rushforth et al 1998 p.966). Increasingly, there are challenges for nurses working in the acute surgical wards to extend their knowledge base to also include respiratory assessment to enhance similar early interventions. From the trauma patient with multiple fractured ribs and broken limbs in the orthopaedic area to the elective surgery patient with asthma or COAD, the value of the inclusion of comprehensive respiratory assessment skills in a ward nurses' repertoire is becoming increasingly evident. When these skills include the accurate assessment of respiratory rate, work of breathing and auscultation together with the measurement of oximetry and spirometry trends and use and compliance with inhaled medications, the improvement of health outcomes is significant. Reliance on technology rather than using it as an adjunct to clinical care has lead to the typical response when reporting patient respiratory deterioration to colleagues, 'what does the oximetry show?'

The development of nurses' skills and knowledge in relation to respiratory assessment needs to be proactively included in nursing practice to ensure that patient care is delivered in a safe and timely fashion and technology augments nurses' clinical decisions (Trossman 2003 p.75; Coombs and Morse 2002 pp.200-210). However clinical emphasis has often been placed on the use of equipment such as chest x-ray, oximetry, spirometry, magnetic resonance imaging and computerised tomography scanning. Established respiratory assessment practices such as confirming the existence of normal breath sounds by auscultation and measuring respiratory patterns and

rate are often overlooked, missing vital early signs and symptoms. Critical evaluation by consumers of the quality of health care and increasing litigation has reinforced the need for health care organisations to comply with national standards of accreditation and for the nursing profession to maintain high standards of patient care (Leeder 1998 p.3).

Safety and quality agenda

Rapid technological changes coupled with a rise in consumer expectation and hospital stay related litigation has put increasing pressure on all health care professionals, including the nursing profession, to provide best practice standards of care. This focus on quality has become core business for health with consumers demanding 'near perfect results' (Barraclough 2004 p.90). However up to 80 per cent of critically ill patients in the United Kingdom were said to receive 'suboptimal care' in acute care wards leading to potentially avoidable deterioration (McQuillan et al 1998 p.1853). Similarly, the Quality in Australian Health Care Study Consortium in 1998, found that 16.6 per cent of admissions to Australian hospitals culminated in adverse events resulting in disability or a longer hospital stay. Of these, 51 per cent were considered preventable (Wilson and Runciman et al 1995 p.458). Given that the approximate cost of a hospital bed per day in Australia is between $700 and $800, this represents considerable extra pressure on the nation's health care budget not to mention the disadvantage to patients (Queensland Health 2006 p.50). Root causes of sentinel events reported by the Joint Commission on Accreditation Healthcare Organisation in 2001, included the need for education, communication and improvement in the patient assessment process (JCAHO 2001 p.9).

An educated nursing workforce has been shown to contribute positively to patient outcomes. A recent study of surgical patients in the United States has found that each 10 per cent increase in the proportion of RNs holding a bachelor degree was associated with 5 per cent lower mortality rates (Aitken et al 2003 p.1617). Continuing educational development of nurses in relation to clinical competencies was strongly recommended in the *National Review of Nursing Education* (2002 p.24) and is a major component of clinical governance frameworks. The major tenet of clinical governance includes health professionals' access to educational programs (Harvey 2000 pp.2-4).

The Australian Council for Safety and Quality in Health Care in its third report to the Australian Health Ministers' Conference in 2002, focused on high priority areas such as infections. A national approach was coordinated to improve clinical practice. The relationship between nursing expertise and reduction in the incidence of adverse events, including infection rates, has been clearly demonstrated by a number of studies. As nursing competence and proficiency within a ward or unit increases, the incidence of adverse events, declines (Deutschendorf 2003 pp.52-53 and Houser 2003 p.46). These papers are endorsed by similar findings relating to post operative complications. In a group of surgical patients admitted to 232 acute care North American hospitals, the positive effects of a 10 per cent increase of RN staffing were associated with a 9.5 per cent decrease in pneumonia (Cho et al 2003 p.71). Cho et al's 2003 study noted the strong links between adverse events and increases in both morbidity and mortality especially in relation to pneumonia, which was associated with a 1.74-fold increase in the patient's length of stay and a 3.39-fold increase in the death rate (2003 p.76). The authors contend that postoperative pulmonary infections could be avoided by surgical patients with the provision of 'attentive lung care' by knowledgeable, skilled RNs.

Incidence of respiratory complications

Postoperative pulmonary complications such as pulmonary emboli are more common in the aged and obese, while patients presenting with co-morbidities of chronic obstructive airways disease, asthma and cardiac disease are considered a high risk group for postoperative respiratory problems (Kremer 1998 pp.467-468). Specific concerns regarding overweight patients include appropriate respiratory assessment, provision of adequate oxygenation relating to decreased lung compliance and difficulties in mobilisation in the immediate postoperative period (Keller 1999 pp.109-112).

Older patients, who constitute about twenty per cent of patients undergoing surgery, present different clinical issues to younger patients. There is a higher likelihood of patients over seventy developing atelectasis or lung infection, complicated by the presence of chronic lung disease, diabetes and/or pre-existing risk factors such as high abdominal or thoracic incisions, smoking, obesity and prolonged periods of anaesthesia (Bailes 2000 pp.186-205). The classic symptoms of infection and pulmonary oedema are often absent, vague or non-specific meaning special nursing vigilance is required.

Nurses and Respiratory Assessment

Respiratory assessment skills have been part of undergraduate education in North America and Canada since the early 1970s (Reese et al 1979 pp.662–665), with Australia following in the late 1980s (James and Reaby 1988 pp.51–52). A survey of twenty-five Australian tertiary institutions offering undergraduate nursing programs conducted by James and Reaby in 1987, found that respiratory assessment was included in the curriculum of only four establishments. Of these institutions, 76 per cent included general assessment skills such as taking vital signs, assessing wounds and fluid balance status in their programs, affirming the need to teach more advanced assessment skills.

Respiratory assessment programs have continued to develop over the past decade with most universities now including assessment skills in their core curriculum (Wilson and Lillibridge 1995 p.117). As nursing practice has diversified and expanded, the ability to undertake comprehensive health assessment, including respiratory assessment, has become an integral part of the nurse's role in intensive care units, coronary care units and Departments of Emergency Medicine. The advent of the nurse practitioner role in Australia, New Zealand and the

United Kingdom in the late 1990s has also encouraged expansion of the nurses' role in relation to respiratory assessment. Competent respiratory assessment is now considered by many to be a foundation requirement of nursing practice (Longson and Copley 1989 pp.315-317; Goodfellow 1997 p.8; Kessenich 2000 p.170). However there are barriers for respiratory assessment being incorporated into everyday nursing practice.

Barriers to respiratory assessment.

In terms of barriers to changing nursing practice in relation to respiratory assessment, a number of studies have found that nurses lack confidence in their ability to competently perform physical assessment and have divergent perceptions of what physical assessment meant in its application to clinical practice (Rushforth et al 1998 p.970; Lillibridge and Wilson 1999 pp.29-37). Rushforth et al discuss the lack of support to incorporating physical assessment skills into practice and the many inappropriate non-nursing tasks still carried out by nurses (1998 p.968). Nursing colleague's attitudes to respiratory assessment have been cited as an additional obstacle. Common barriers to the planned introduction of research findings into clinical practice were identified by a study conducted by Funk et al (1991 pp.90-95), including resistance to change and perceptions that nurses have insufficient time or authority to implement new practices. Lack of support from both colleagues and nursing administration was also established. Creation of a professional practice climate where the nurse was 'enabled to practice' was recommended to facilitate change in both the organisation and the nurse (Champagne, Tornquist and Funk 1996 p.221).

The requirement to assess changing health status suggests that stethoscope use by nurses should be regarded as an essential nursing tool to listen to respiratory, heart and abdominal sounds. O'Neill suggests that normal, decreased, or absent as well as abnormal sounds can all be detected following appropriate education, (2003 p.392). However evidence of nurses' use of comprehensive respiratory assessment, including stethoscope use as a routine part of practice, is variable. Lont (1992 p. 93) contended that the combination of 'complex medical technology, increased surgical interventions' and decreased length of hospital stay requires that all levels of RNs are able to 'accurately judge a patient's changing health status', including stethoscope use, and make an appropriate decision regarding intervention.

DISCUSSION

The inclusion of respiratory assessment as an additional means of gathering information following surgery facilitates early intervention in the event of changes in a patient's health status. This can be especially valuable in the initiation of timely clinical referral following comparative analysis of clinical data. Nurses face increasing challenges to provide high quality services at reasonable costs within appropriate time frames. The inclusion of comprehensive respiratory assessment in routine surgical nursing practice has a number of potential benefits. As nurses are with the patient twenty four hours a day, they are in the best position to incorporate a mix of technological and assessment skills together with use and compliance of associated inhaled medications into everyday practice. Early identification of respiratory problems and subsequent referral has the potential to reduce clinical complications, such as atelectasis, pneumonia, pulmonary emboli, pneumothoraces and exacerbation of COAD or asthma. Further, professional nursing practice standards require competent nursing assessment that results in earlier initiation of specific nursing actions and referrals to appropriate health professionals (Yamauchi 2001 pp.213-214).

Nurses play a pivotal role in the prevention of adverse events relating to respiratory dysfunction, a well-recognised predecessor of cardiac arrest and medical emergencies resulting in increased mortality (Considine 2005 p.624). Specific clinical indicators include changes in respiratory rate and the onset of tachypnoea, dyspnoea and hypoxaemia (Considine 2005 p.624). High risk patients exhibiting clinical instability related primarily to respiratory problems can progress to adverse events such as cardiac arrest and death unless aggressive management measures are instigated early to correct physiological abnormalities (Buist et al 2002 p.387). Varying periods of clinical instability, where potentially reversible changes in predominantly respiratory vital signs are evident precede approximately 80 per cent of cardiorespiratory arrests (Buist et al 1999 p.25). When respiratory assessment is practiced by clinically competent nurses, learning and experience is combined in their everyday practices and is instrumental in achieving early medical input, subsequent intervention and optimal patient outcomes (Oliver and Butler 2004 pp.21-26).

CONCLUSION

Respiratory assessment was considered to be a momentous new nursing challenge by Reaby in 1990 and Lont in 1992. However this particular clinical skill remains a challenge to surgical nurses in 2007. The literature suggests that barriers to implementing this nursing practice change include a lack of confidence among nurses, limited education and lack of emphasis regarding respiratory assessment at both undergraduate and postgraduate levels. Other obstacles include nurses' attitudes with regard to using a stethoscope and incorporating respiratory assessment in their everyday clinical practice. Importantly, the literature fails to address the issue of implementing and sustaining practice change. While it may be concluded that respiratory assessment contributes to improved patient outcomes and consequent reduction of overall health care costs by reduced lengths of patient stay, the best way to achieve such practice change remains inconclusive. At a time of increasing budget restrictions, increasing complexity of care and never-ending new technologies it is essential for the nursing profession to have a good understanding of how efficient and effective that care provision is.

RECOMMENDATIONS

Post operative monitoring of vital signs should include the fundamental assessment of lung fields using a stethoscope, oximetry and spirometry where indicated. Research in this area should be expedited to determine whether respiratory education programs and practical supervisory assessment in the clinical area generate a proactive solution to the early detection of respiratory problems post-operatively. The research should explore the current body of nursing knowledge regarding nurse use of respiratory assessment, to both inform undergraduate and staff development education programs and identify categorically whether focused respiratory education of nurses facilitates practice change and makes a difference to patient outcomes.

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