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The role of teamwork and communication in the emergency department: A systematic review

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Abstract The aim of this study was to develop a systematic review using international research to describe the role of teamwork and communication in the emergency department, and its relevance to physiotherapy practice in the emergency department. Searches were conducted of CINAHL, Academic Search Premier, Scopus, Cochrane, PEDro, Medline, Embase, Amed and PubMed. Selection criteria included full-text English language research papers related to teamwork and/or communication based directly in the emergency department, involvement of any profession in the emergency department, publication in peer-reviewed journals, and related to adult emergency services. Studies were appraised using a validated critical appraisal tool. Fourteen eligible studies, all of mid-range quality, were identified. They demonstrated high levels of staff satisfaction with teamwork training interventions and positive staff attitudes towards the importance of teamwork and communication. There is moderate evidence that the introduction of multidisciplinary teams to the ED may be successful in reducing access block, and physiotherapists may play a role in this. The need for teamwork and communication in the ED is paramount, and their roles are closely linked, with the common significant purposes of improving patient safety, reducing clinical errors, and reducing waiting times.

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Introduction

In Australia and many other Western countries, the emergency department (ED) is potentially a unique environment for effective teamwork and communication. This needs to

be explored in the context of the current ED system, and the dilemmas facing the modern ED need to be understood.

The traditional ED team consists of doctors and nurses only, however these practitioners work mainly independently due to conventional demarcations (Cronin and Wright, 2005). The practitioner has little control over the environment and the care delivery process is fragmented (Cronin and Wright, 2005). Work is often duplicated, for example patients could be asked to give their history a number of times to different staff members (Eisenberg et al., 2005). This autonomous work is time-consuming, in a workplace where there are already considerable time constraints, potentially causing inappropriately hasty decisions and unnecessary delays (Cronin and Wright, 2005). Also, to work independently is not efficient in an environment that is also characterised by multiple handovers between staff, frequent staff member substitution, uncontrolled workloads and high-risk diagnoses (Mercer et al., 2008). Staff sometimes need to deal with numerous patients with highly variable problems simultaneously (Eisenberg et al., 2005). There can be high levels of uncertainty due to incomplete patient histories and "...the need to make difficult decisions before critical data ... may be available" (Eisenberg et al., 2005, p. 391).

More recently, these problems have been compounded by the phenomenon of access block. Access block and overcrowding are the most serious issues confronting EDs worldwide (Forero and Hilman, 2008). In an Australian context, access block is defined as "...the percentage of ED patients who are admitted, transferred, or dying, whose total ED time exceeds eight hours" (Cameron, 2003, cited in Taylor et al., 2004, p. 683). Total attendances to Australian EDs have increased, and there has been a concurrent decrease in access to inpatient beds (Taylor et al., 2004). Other causes of access block include limited community-based treatments and service delivery issues such as insufficient hospital staff numbers (Cameron and Campbell, 2003). Also, shortage of aged-care places and lack of home support has increased the need to admit elderly patients, and this has been identified as the primary contributor to access block (Moss et al., 2002).

Taken together, the problems confronting traditional ED service and the more recent issue of access block contribute to the likelihood of errors in emergency care (Eisenberg et al., 2005). Effective teamwork can improve patient safety as it leads to planned and standardised processes, proper integration and execution of clinical activities, and increased control over the work environment (Kaissi et al., 2003). Studies have described the addition of a multidisciplinary team to the ED to address the ED service delivery issues (Moss et al., 2002; Taylor et al., 2004; Phillips et al., 2006). As collaboration amongst professions is necessary for the smooth conduct of the ED, such teams are becoming an essential component (Reddy and Spence, 2006). Morey et al. (2002) argue that a team is not a loosely coordinated group but has a more formal structure of physicians, nurses and technicians who are organised for a shift. Teamwork in the health care system may result in an increase in effectiveness, time efficiency, staff morale and patient satisfaction, as well as lower stress for staff and patients (Kaissi et al., 2003). However, the majority of current training in health care is focused on individual technical skills rather than teamwork (Kaissi

et al., 2003). Therefore, this systematic review will explore possible options for staff training focused on teamwork.

Effective communication, which includes face-to-face conversations, telephone conversations and the entry of text into a medical record, is essential to successful teamwork and fundamental to high-quality patient care (Mercer et al., 2008). Research suggests that poor communication is a likely cause of systematic error and preventable adverse clinical outcomes in the health system (Coiera et al., 2002; Spencer et al., 2004). Communication errors have been shown to be the leading cause of in-hospital deaths in Australia (Woloshynowych et al., 2007). In the emergency department, communication between staff is often challenged by interruptions and high levels of background noise (Xiao et al., 2007). These problems, as well as the frequency of multi-tasking that occurs in the ED, impose cognitive loads on clinical staff that can negatively affect memory (Coiera et al., 2002; Woloshynowych et al., 2007). However, "despite the acknowledged importance of communication, assessment of communication skills in team-based care settings has not been well-established" (Mercer et al., 2008, p. 220).

Physiotherapists have recently joined the multidisciplinary teams in many hospitals internationally, but their role in the ED has not yet been well-documented (Anaf and Sheppard, 2007). In an Australian context, the introduction of a physiotherapist to the ED team is very new, yet this service has been in place in UK hospitals for some time (Morris and Hawes, 1996; Kempson, 1996). This systematic review aims to set the scene for the integration of the physiotherapist into the Australian ED team by exploring current literature about teamwork amongst other health professionals. As poor teamwork and communication have been identified as possible causes of errors in the ED, this review seeks to investigate possible solutions to these problems.

This systematic review therefore considers the following question about the current available literature: What is the role of teamwork and communication in the emergency department, as reported in international literature, and how does this relate to physiotherapy practice in the emergency department?

Method

Identification of literature

A systematic search of electronic databases was conducted in October 2008 to identify literature. There were no time limits placed on the search, as there is no previous systematic review in this area and the scope of available literature was unknown. The accessed databases were CINAHL, Academic Search Premier, Scopus, Cochrane, PEDro, Medline, Embase, Amed and PubMed. These included medical and social sciences subject areas. These databases were searched using keywords that were chosen based on emergency department service delivery literature (Anaf and Sheppard, 2007). Initially, MeSH terms were considered, however it was found that some of the terms in the MeSH system were not relevant. The keywords used were:

- Team* (encompassing team, teams, teamwork).

- Communication.
- Emergency department [accident and emergency department; emergency room].

The keywords were used in Boolean combination, joined by AND. They were not joined by OR and were not searched separately in order to keep the results relevant and within reasonable limits. Reference lists of identified literature were searched to identify possible further studies. The title and abstract of each study was read, and the full-text article obtained if the researchers found that the study applied to the research question, based on previous literature.

Inclusion criteria

Articles that fulfilled the following criteria were included in the review:

- Full-text English language research papers.
- Primary study (no secondary references such as literature, narrative or systematic reviews or editorial, anecdotal or opinion pieces).
- Research related to teamwork and/or communication based directly in the emergency department.
- Publication in peer-reviewed journals.
- Related to adult emergency services, not paediatric.
- Research involving patients or any profession in the emergency department, not just physiotherapy.

All studies that did not meet the above criteria were excluded. There were no criteria placed on the type of intervention or outcome measures used by researchers, as this systematic review sought to include all relevant research, experimental and non-experimental. Due to the non-specificity of methodological design, a wide variety of quantitative and qualitative research was expected.

Critical appraisal

The Critical Review Form developed by Law et al. (1998) from McMaster University, Canada was used to critically appraise the studies. This appraisal tool was developed for an allied health systematic review, and has been used in a pre-

vious literature review focusing on the role of the physiotherapist in the ED (Anaf and Sheppard, 2007). There are two versions of the form, to be used for qualitative and quantitative studies, which is valuable as this systematic review sought to include all research papers on the topic, regardless of design.

The form uses a questionnaire format, and mostly involves checking either 'yes', 'no', or 'not applicable (n/a)' for a number of various headings, shown in Table 1. Included articles were assessed on their ability to best meet the requirements under each criterion. The 'yes' option was checked if the research paper adequately addressed that criterion, and each 'yes' resulted in 1 mark. If the paper did not adequately address the particular heading, or neglected to address it at all, the 'no' option was checked, resulting in no marks for that criterion. If the heading was not appropriate for the particular article, 'n/a' was checked, and no marks given.

The numerical scoring system was used to allow research papers to be compared and contrasted more easily. The maximum possible score for quantitative studies was 15, and the maximum possible score for qualitative studies was 24, as this form used more criteria. All included studies were critically appraised by one reviewer, then a random selection of half the studies ($n = 7$) was reviewed independently by two additional reviewers. The use of a common review form with explicit criteria and discussion between reviewers to ensure a common understanding of criterion definitions ensured the critical appraisal methods were applied consistently.

Results

Initially, 20 studies were identified, yet six were excluded due to their anecdotal nature (Poulton and West, 1993; Patrick and Alba, 1994; Kelly, 2005; Seibens, 2005; Lynch and Cole, 2006; McKeon et al., 2006). Fourteen studies were found to meet the inclusion criteria. Before and after ($n = 5$) and descriptive case studies ($n = 5$) were the most common methodological approaches, and the latter included the one qualitative study identified. Other studies used a descriptive cross-sectional ($n = 4$) design. The majority of studies ($n = 7$) were conducted in the United States,

Table 1 Critical appraisal scoring system.

Quantitative research	Maximum score	Qualitative research	Maximum score
Study purpose	1	Study purpose	1
Literature	1	Literature	1
Design	1	Design	3
Sample	2	Sample	3
Outcomes	2	Descriptive clarity	3
Intervention	3	Procedural rigour	1
Results	4	Analytical rigour	2
Conclusions	1	Auditability	2
		Theoretical connections	1
		Trustworthiness	4
		Conclusions	2
Maximum score	15	Maximum score	24

Table 2 Summary of reviewed articles.

Authors	Study aim	Design and sample	Setting	Outcome measures	Interventions	Results
Coiera et al. (2002)	To measure communication loads on ED clinical staff and describe the pattern of informal and formal communication events	Observational case study. Sample $n = 12$ (3 nurses and 3 medical practitioners from each ED)	ED in a 200-bed rural hospital in NSW. ED in a 540-bed urban tertiary teaching hospital in NSW	Observed time spent in communication. Communication events involving concurrent communication tasks. Interruptions experienced by subjects	Not applicable	30% of communication events were classified as interruptions and 10% as multi-tasking. Face-to-face conversations were the dominant method of communication
Morey et al. (2002)	To evaluate the effectiveness of aviation-based Crew Resource Management training for ED staff members	Before and after with control group. Sample $n = 1058$ (physicians, nurses, technicians, admitting unit nurses and ED patients)	Six EDs in the US as the experimental group. Three EDs in the US as the control group	Team Dimensions Rating Form. Subjective workload measures. Observed errors. Admission Evaluation Survey. The ED Staff Attitude and Opinion Survey. Patient Satisfaction Survey	Implementation of Emergency Team Coordination Course (ETCC) in the experimental group	The ETCC resulted in a statistically significant improvement in quality of teamwork, increase in ED staff's attitudes towards teamwork and decrease in clinical error rate. There was no significant difference in subjective workload
Moss et al. (2002)	To evaluate the service provided by a Care Coordination Team (CCT)	Before and after. Sample $n = 176$ (113 medical, nursing and clerical ED staff, 47 patients, and 16 community service providers)	Melbourne ED	Patient population, assessment and management. Nature of CCT referrals. Admissions to the ED. Staff, patient and community service provider satisfaction	Not applicable	The CCT (including a physiotherapist) resulted in decreased hospital admissions and repeat presentations. There was a high level of satisfaction with the CCT amongst staff, patients and community service providers
Kaissi et al. (2003)	To measure teamwork and patient safety attitudes in high-risk hospital areas: the operating room (OR), ED, and intensive care unit (ICU)	Descriptive cross-sectional survey. Sample $n = 261$ nurses	The ED, OR and ICU of two metropolitan and two suburban hospitals in the US	Researcher-developed staff attitudes questionnaire	Not applicable	Majority of staff support team decision-making and communication strategies, and believe teamwork improves patient safety and reduces clinical errors
Eisenberg et al. (2005)	To gain a better understanding of the communicative aspects of emergency medicine at two major US hospitals	Observational qualitative study. No sample size given	Two academic EDs (one inner city, one suburban) in the US	Not applicable	Not applicable	Four routine communication processes were identified that were crucial in determining the quality of care and likelihood of adverse events: triage, testing and evaluation, handoffs, and admitting

Grogan et al. (2004)	To evaluate participant reactions and attitudes to Crew Resource Management (CRM) training	Before and after. Sample $n = 489$ (288 nurses and technicians, 104 physicians and 94 administrative personnel)	The trauma division, ED, OR, cardiac catheterisation lab, and hospital administration of a US hospital	Participant reactions to the training, using an End-of-Course critique. Participant attitudes, using the CRM Human Factors Attitude Survey	CRM training with the goal of reducing medical errors	95% of staff agreed or strongly agreed CRM training would reduce medical errors. 86% agreed or strongly agreed CRM training would improve safety and quality in health care
Hobgood et al. (2004)	To gather preliminary data on how ED physicians, nurses and out-of-hospital personnel differ in error identification, disclosure, and reporting	Descriptive cross-sectional survey. Sample $n = 161$ (42 physicians, 33 registered nurses, and 41 emergency medical technicians)	Tertiary care academic medical centre ED in the US	Researcher-developed survey on staff experiences with identification, disclosure and reporting of medical errors	Not applicable	The majority of errors were self-identified, and when errors did occur there was little interdisciplinary information transfer, suggesting a lack of interdisciplinary collaboration
Taylor et al. (2004)	To determine the nature and extent of changes implemented across Melbourne's EDs in order to cope with the problem of access block	Descriptive cross-sectional survey. Sample $n = 17$ public hospitals surveyed	Public hospital metropolitan Melbourne EDs	Not applicable	Not applicable	The Care Coordination Team (CCT) was the most common new service, implemented in 12 EDs. Eight CCTs included a physiotherapist
Spencer et al. (2004)	To determine if there are differences in role-related communication patterns in the ED and if specific clinical roles are particularly at risk of high communication loads	Observational case study. Sample $n = 8$ (4 registered nurses and 4 medical officers)	Metropolitan ED in NSW	Purpose of communication. Parties involved in communication. Channel of communication	Not applicable	89% of clinicians' time was spent in communication. Face-to-face conversations and telephone conversations were used in 85% of events. One third of communication events were classified as interruptions
Cronin and Wright (2005)	To explore the concept of the Rapid Assessment and Initial Patient Treatment team (RAPT) within the ED	Before and after. Sample $n = 64$ patients seen by the RAPT team	A public hospital emergency department in the UK	Not applicable	5-day trial of the RAPT team, consisting of a senior clinician, A&E nurse and an emergency support worker	Staff reported increased job satisfaction and fulfilment. Patients responded positively to the immediate treatment. Overall waiting times decreased and duplication of work decreased (continued on next page)

Table 2 (continued)

Authors	Study aim	Design and sample	Setting	Outcome measures	Interventions	Results
Wisborg et al. (2006)	To describe and assess the feasibility of a multi-professional training course for hospital trauma teams in order to improve communication, coordination and leadership	Before and after. Sample $n = 28$ hospitals	18 primary hospitals 8 secondary hospitals 2 tertiary university hospitals in Norway	Participants self-report	One-day multi-professional training course	Participants reported leadership and communication to be major obstacles during trauma team participation and believed training was a valuable experience. Researchers found team simulation training to be feasible
Woloshynowych et al. (2007)	To identify the features of the communication load on the nurse in charge of ED	Observational case study. Sample $n = 11$ nurses in charge	Inner-city hospital ED in London	Frequency of communication, interruptions and multi-tasking. Communication channel and purpose. Interaction types. Unresolved communications. Effect of staffing and communication levels	Not applicable	41% of communication events were interruptions and 14% involved multi-tasking. 83% of events involved synchronous communication. The more nurses on duty, the lower the communication load on the nurse in charge. The more patients, the more communication events
Heinrichs et al. (2008)	To present three virtual world studies for team training and assessment in acute-care medicine	Description of three case studies. 1st project $n = 30$ students/interns. 2nd project $n = 16$ paramedics, EMT team members, ED physicians and nurses. 3rd project $n = 7$ physicians and 6 nurses	A university hospital in the US	1st project: emergency medicine crisis resource management (EMCRM) rating scale. And participant survey. 2nd project: participant satisfaction 3rd project: participant survey	All three projects used virtual reality simulation training	Participants found the simulation programs easy to use. Training caused a positive change in attitudes about working in an ED team, and increased confidence in leading a team and responding to incidents
Mercer et al. (2008)	To tailor a validated instrument, the Communication Assessment Tool, for use in Team settings (CAT-T), and test the feasibility of collecting patient perspectives of communication with medical teams in the ED	Cross-sectional study. Sample $n = 105$ patients	Academic, tertiary, urban, Level 1 trauma centre in the US	Patient perception of communication with the medical team using an adaptation of the Communication Assessment Tool	Structured interviews with individual patients immediately following discharge or on admission	69% of patients reported the following aspects were excellent: treating patient with respect, paying attention to the patient, and showing care and concern.

with four Australian studies, two from the United Kingdom, and one Norwegian study comprising the rest of the sample. Although the search had no time limits, the included articles were relatively recent, dating from 2002 to 2008. [Table 2](#) outlines the characteristics of the identified studies, in regard to:

- aims;
- methodological design;
- sample;
- setting;
- outcome measures;
- intervention; and
- results.

The majority of resources identified ($n = 10$) focused on nursing and/or medical staff in the ED, with the possible inclusion of other professions such as technicians, clerical/administrative staff, and community service providers. One study used only ED patients as the sample population, and only two studies mention the profession of physiotherapy in the ED, as part of an allied health team.

Staff teamwork training

Six of the fourteen identified studies support teamwork training ([Morey et al., 2002](#); [Heinrichs et al., 2008](#); [Kaissi et al., 2003](#); [Grogan et al., 2004](#); [Wisborg et al., 2006](#); [Hobgood et al., 2004](#)). Two studies used aviation Crew Resource Management (CRM) training as an intervention, with the main goal of improving patient safety ([Morey et al., 2002](#); [Grogan et al., 2004](#)). CRM training focuses on behaviours that require specific training, including: teamwork, communication, managing fatigue, and recognising adverse situations ([Grogan et al., 2004](#)). In aviation, CRM has reduced errors, and it is effective in other workplaces that share many of the EDs characteristics, such as time–stress, multiple roles, complex information, and high-stakes outcomes ([Morey et al., 2002](#)).

The Emergency Team Coordination Course (ETCC) developed by [Morey et al. \(2002\)](#) was drawn from CRM programs. Compared with three control EDs, the six experimental EDs showed significant improvements in quality of teamwork, clinical error rate, and staff attitudes towards teamwork. Similar positive staff feedback was received in the study by [Grogan et al. \(2004\)](#): 86% of respondents strongly agreed that CRM training had the potential to improve safety and quality in health care, while 95% agreed that CRM training could reduce medical errors. [Morey et al. \(2002\)](#) highlighted the importance of leadership within teams, as they found the success of teamwork implementation was greatly dependent on the leader commitment. The authors argue that "...teamwork is not a natural product of working together" ([Morey et al., 2002, p. 1572](#)) due to discrepancies in staff attitudes towards teamwork, and it is better to gradually introduce teamwork behaviours into the ED rather than implementing them all at one time. [Grogan et al. \(2004\)](#) inferred from participant opinion that, in order to change teamwork behaviours, staff must be subjected to continual training, as one intervention alone would not be effective. This conclusion could assist hospital administrators who are considering introducing a teamwork training course.

The literature suggests that medical and nursing staff would be receptive to a teamwork training intervention. After surveying nurses in high-risk hospital areas, including the ED, one study found a positive perceived effect of teamwork, with the belief that it reduces clinical errors and allows for better decision-making, and that good communication is as important as technical proficiency for patient safety ([Kaissi et al., 2003](#)). However, a smaller percentage of respondents believed that effective teamwork was already practiced in their department, and there was no general agreement that teamwork improves efficiency. Determining staff attitudes towards teamwork is the first step in developing interventions focused on changing the behaviour of team members ([Kaissi et al., 2003](#)). Issues raised by this study include confusion over who is leading the health care team, and reluctance to raise patient safety issues with team leaders, both of which can cause failures in communication ([Kaissi et al., 2003](#)).

Two studies with the common aims of improving communication, cooperation and leadership explored the use of simulation team training, which may be beneficial as patient presentation can be unpredictable ([Wisborg et al., 2006](#); [Heinrichs et al., 2008](#)). Neither study assessed whether teamwork training causes improved treatment results, but participants reported high levels of satisfaction. Although these two studies focus on trauma cases, in which physiotherapists would be less likely to be involved, they reinforce the importance of each team member being aware of other members' roles, being able to communicate effectively, and coordinate duties as members of a team.

Only one study focused exclusively on medical errors in the ED, specifically how error identification, disclosure and reporting can improve care delivery ([Hobgood et al., 2004](#)). They surveyed physicians, registered nurses, emergency medical technicians and paramedics, and found that all disciplines lacked formal instruction in how to inform patients of medical errors. The most experienced providers were more likely than novice providers to disclose errors to patients. The majority of errors were self-identified, indicating a lack of interdisciplinary collaboration, which would be improved by specific teamwork training ([Hobgood et al., 2004](#)). Such training may also assist staff in interdisciplinary transfer of information once an error is identified, as the results showed that this information transfer was minimal ([Hobgood et al., 2004](#)).

Overall, the six studies support teamwork training by demonstrating high levels of staff satisfaction with certain training interventions, a reduction in clinical errors following implementation of the ETCC, and positive staff attitudes towards the importance of teamwork ([Morey et al., 2002](#); [Kaissi et al., 2003](#); [Grogan et al., 2004](#); [Wisborg et al., 2006](#); [Heinrichs et al., 2008](#)).

Introduction of a new team

The two studies that refer to physiotherapy practice in the ED, as part of a Care Coordination Team (CCT), were both Australian ([Moss et al., 2002](#); [Taylor et al., 2004](#)). Although further literature specifically investigating the profession of ED physiotherapy is available, mainly from the UK, these studies were not retrieved in the systematic search due to their lack of relevance to teamwork and communication

(Morris and Hawes, 1996; Jibuikie et al., 2003; Richardson et al., 2005; McClellan et al., 2006). CCTs have been introduced in many Australian EDs in an attempt to address access block by preventing unnecessary hospital admissions, minimising repeat presentations, and providing effective discharge (Moss et al., 2002). Also, as this team targets the older population, it plays an important role in decreasing the large amount of hospital resources consumed by elderly people (Taylor et al., 2004). Australian CCTs range from comprising one person to a multidisciplinary team of eight, and services provided include home care, personal care, physiotherapy, occupational therapy, transport and child-care (Moss et al., 2002; Taylor et al., 2004). Other team members involved include social workers, registered nurses, dieticians, and drug and alcohol workers (Taylor et al., 2004). Twelve months after the implementation of the CCT, Moss et al., (2002) found that significantly fewer patients required admission and there was a downward trend in the number of repeat presentations. Patients reported that the CCT assisted in the provision of safe and effective discharge and provided a high-quality service, while community service providers reported that the CCT is a model worth recommending to other EDs (Moss et al., 2002).

One other study describes the introduction of a new team to the ED (Cronin and Wright, 2005). The Rapid Assessment and Initial Patient Treatment team (RAPT team) worked in a designated area, and provided patients with rapid medical assessment immediately upon arrival, in an attempt to improve patient management and flow. The team, consisting of a senior clinician, accident and emergency nurse, and an emergency support worker, saw only patients entering the 'majors' stream, and therefore this study may not relate to ED physiotherapy. Patients responded very positively to the immediate treatment, and staff reported increased job satisfaction and fulfilment (Cronin and Wright, 2005). The five-day trial of the RAPT team resulted in decreased overall waiting time and improvements in ambulance turnaround times. It also caused a reduction in the duplication that results from various professionals obtaining patient histories, as the team was able to refer patients directly to specialty teams. The study found that the multidisciplinary nature of the team promotes teamwork by increasing learning opportunities and reducing the traditional boundaries between medical, nursing and support staff. The team is well organised, as each member has pre-defined tasks during the initial patient assessment, for which the team collectively takes responsibility (Cronin and Wright, 2005). Similar to CRM training, a principle of RAPT team training was team decision-making, for example when deciding on referral for further specialty assessment.

Although the evidence for the effectiveness of the introduction of a new team to the ED is very limited, the results of the three studies identified suggest such teams may be successful in addressing the issue of access block, and physiotherapists appear to play a role in this.

Communication

Three observational case studies considered communication loads on ED medical practitioners and/or nurses (Coiera et al., 2002; Spencer et al., 2004; Woloshynowych et al.,

2007). The results highlight the high communication loads on ED staff, with subjects involved in communication events 80% of the total observed time (Coiera et al., 2002). In this study, interruptions comprised nearly one third of communication events, while multi-tasking comprised 10% of communication events. Face-to-face conversations, a form of informal and synchronous communication, were by far the most dominant form of communication (Coiera et al., 2002). However, synchronous communication (when two parties exchange information simultaneously) may not be appropriate for all tasks, and reducing its incidence, for example through staff education, could result in decreased interruption rates (Spencer et al., 2004). The results of these three similar studies support the belief that specific communication training in EDs is necessary to reduce the incidence of interruptions and multi-tasking, which can both affect memory and lead to medical errors. However, there was no study identified which tested the belief that such training can improve clinical outcomes. Other strategies include increased use of asynchronous and communal communication tools, such as message boards (Coiera et al., 2002).

Three studies recognised the importance of communication between staff with patients and relatives (Cronin and Wright, 2005; Eisenberg et al., 2005; Mercer et al., 2008). This can be greatly affected by the stressful environment and heavy patient load, leading to lack of critical patient information (Eisenberg et al., 2005). The researchers suggest that efforts should be made to gain more contextual information when the patient presents to the ED. By seeing patients immediately, the RAPT team trialled by Cronin and Wright (2005) played an essential role in improving communication with patients and preventing consequent patient anxiety. Mercer et al., (2008) sought to collect patient perspectives on communication within the medical team by tailoring the validated Communication Assessment Tool for use in Team settings. Sixty-nine percent of patients said they were treated with respect, were given attention and had been shown care and concern. This percentage suggests there may be a need for staff training in patient communication as well.

The one qualitative study included identified four routine communication processes crucial in determining the quality of care: triage, testing and evaluation, hand-overs and admitting (Eisenberg et al., 2005). This research highlighted the degree of hierarchy that can occur between ED staff, and the amount of pressure placed on doctors to appear certain on a diagnosis, even if the case was not clear. This increased the probability of adverse events due to the possibility of an incorrect diagnosis and treatment, while conflicting professional perspectives are also likely to affect patient vulnerability (Eisenberg et al., 2005). The two EDs involved in this study did not have an area where staff members were able to communicate without patients in earshot; the researchers suggest such a backstage area could lessen misunderstandings and mistakes.

The studies that focused on communication in the ED differed from those that focused on teamwork in that they were mainly observational and did not test the effectiveness of an intervention aimed at improving communication. However, they demonstrate the high communication loads on staff and the problems within the ED that can influence communication effectiveness. Identification of such

problems is crucial in determining possible solutions, which include staff communication training and education. Such training is closely related to teamwork training, as the two are essential to each other, and could be combined into one program.

Methodological quality

Fig. 1 shows the critical appraisal scores given to each quantitative study. The one qualitative study, which scored 19/24, is not included in the graph as it was considered inappropriate to compare it with the group of quantitative studies. Studies were evaluated to determine their level in the hierarchy of evidence described by the National Health and Medical Research Council (NHMRC) (2008). Although there was significant variance in the critical appraisal scores of the identified studies, there was similarity in level of evidence, with all studies categorised as Level IV in the hierarchy, with the exception of Morey et al., (2002), which meets the requirements for Level III-2. As the studies generally fall into the lowest level of evidence as described by NHMRC (2008), and the majority of studies were given mid-range quality scores, this must be considered when interpreting the findings. The identified literature can therefore not be fully relied upon without other higher quality research to support it. However, the research findings can assist with administrative decisions and provide valuable information for future research into this area.

Discussion

The literature suggests that teamwork and communication play a role in four main areas in the ED: improving patient satisfaction, improving staff satisfaction, reducing clinical errors and improving patient safety, and positively affecting access block.

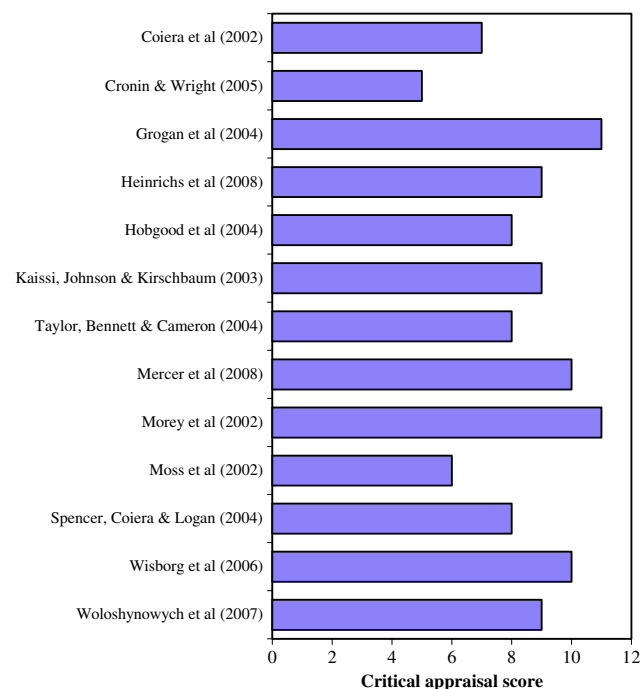


Figure 1 Critical appraisal scores.

The introductions of the CCT and RAPT teams to the ED lead to increased patient satisfaction and relieved patient stress, due to a number of reasons including decreased waiting time and the provision of reassurance (Moss et al., 2002; Cronin and Wright, 2005). The RAPT team also decreased duplication of work, which can benefit patients as they are no longer required to repeat their history a number of times (Cronin and Wright, 2005).

Less duplication also benefits staff, and staff generally reported very high levels of satisfaction with the RAPT team, as well as for other forms of teamwork training (Morey et al., 2002; Grogan et al., 2004; Cronin and Wright, 2005; Wisborg et al., 2006; Heinrichs et al., 2008). Other positive outcomes of teamwork training for staff include increased learning opportunities, decreased traditional demarcations between staff, and increased role fulfilment (Morey et al., 2002; Cronin and Wright, 2005). However, successful widespread implementation of teamwork training programmes may be difficult to achieve due to established traditional roles. Opposition to changes in clinical roles may be encountered, particularly from senior members of the team.

A reduction in clinical errors and improvement in clinical work leads to a positive impact on clinical outcomes, quality of care, and patient safety (Coiera et al., 2002; Morey et al., 2002; Kaissi et al., 2003; Hobgood et al., 2004; Woloshynowych et al., 2007). The research indicates that the majority of ED staff recognise the importance of teamwork and communication in their work in order to improve patient safety. Morey et al. (2002) was the only one of the four studies that designed and implemented specific ED teamwork training to evaluate the effectiveness of this training by demonstrating a reduction in clinical error rate. Therefore, further studies are needed, including randomised controlled trials, to build the methodological quality of research in this area and confirm these findings.

Similarly, further research is necessary to support or negate the suggested findings that improved teamwork in the ED will assist in reducing access block. The limited evidence indicates that it has the potential to do so, as RAPT team was found to decrease overall waiting times while the CCT provided of safe and effective discharge from hospital and reduced unnecessary admissions and repeat presentations (Moss et al., 2002; Cronin and Wright, 2005).

There is very limited evidence regarding teamwork and communication in the ED related to physiotherapy practice. This may be because the introduction of the physiotherapist to the ED team is a relatively new development in ED care, and there is a lack of research into this area (Anaf and Sheppard, 2007). Physiotherapy practice in the ED is referred to in two of the fourteen identified studies, as part of a CCT, yet there is limited description of the role of the physiotherapist in this team (Moss et al., 2002; Taylor et al., 2004). As part of this multidisciplinary team, it appears that physiotherapists play a part in improving service delivery and positively affecting access block.

Conclusion

This systematic review confirms that the ED is a unique environment due to the volume of work and the need for accuracy under pressure. Teamwork and communication are

paramount, but remain difficult to quantify. Their roles in the ED are closely linked, with the common significant purposes of improving patient safety, reducing clinical errors, addressing the issue of access of block and reducing waiting times. The findings of the literature should be viewed with caution given the methodological designs and subsequent mid-range critical appraisal scores of the identified studies. It is clear that further research is needed into finding possible solutions to the current problems facing the ED, yet the intrinsic nature of the ED defies high-quality research, for instance it would be difficult to implement a blinded trial. There remains a large scope for further research into how a physiotherapist can contribute to the multidisciplinary team in the ED.

Recommendations for practice

The role of teamwork in contributing to ED outcomes is evident. However this unique environment requires consideration. Due to the issues facing EDs worldwide of crowding and increasing demand for services, it is evident that system changes are required. Recommended changes include the development of multidisciplinary teams, introduction of new team members, and specific training of all team members. ED staff, by prioritising the importance of teamwork and communication can improve quality and safety in ED care.

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