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Supporting Communication in the Emergency Department

Funded by the NSW Department of Health

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Executive Summary

Effective communication is central to the smooth functioning of complex clinical environments. This report presents findings of a study that examined ways in which communication can be improved upon and supported in the clinical workplace. This study is the second phase of a two-year *Clinical Communication Research Programme* being undertaken by the Centre for Health Informatics at the University of New South Wales [1].

The aim of this phase of the research was to identify interventions that could improve and support communication in an emergency department (ED) setting. Two methods were utilised: observational studies using the Communication Observation Method [2] and clinician focus groups. Both quantitative and qualitative analysis methods were employed to examine communication practices and generate rich descriptions of communication patterns in the clinical setting.

Overall this study highlighted the varying communication patterns and issues experienced by clinicians occupying different clinical roles. An important finding of this study was that different staff members carried different communication burdens relating to their specific role, some of which could be reduced through targeted organizational, educational or technological changes.

The ED has been described as an interrupt-driven environment [3-7]. On examination of the interruptions experienced by clinicians in this study, the results indicated that some interruptions, for example those that were administrative in nature, could perhaps be minimized through being communicated by a dedicated non-clinical staff member, whereas other interruptions, related to patient and ward management, were a necessary part of effective team functioning.

Proposed interventions were drawn from the observation and focus group data and these related to: improving overall communication flows, reducing unnecessary interruptions and frustrations (eg streamlining telephone and paging processes), making explicit policy and protocol related to communication processes (eg formalising and disseminating the documentation process following a ward round), and strengthening teamwork through education (eg improving orientation process, improving understanding of other team members' roles).

This study has identified relevant interventions, within their organisational and cultural context, to improve communication in an ED setting. The next and often more difficult step is to implement the desirable interventions into the workplace. This requires adequate resources (such as money, time and staff) to champion, plan and implement the changes – allocation of which can be very challenging in an already heavily stretched environment.

Key Points

- Different ED staff members carried different communication burdens relating to their specific role, with more senior staff experiencing higher rates of interruptions
- Examining the nature of interruptions shed light on the types of interruptions; for example, interruptions relating to direct patient management were necessary and important for the safe delivery of patient care
- Certain organisational practices and cultural attitudes, such as insufficient orientation for junior medical staff and differences in perceptions regarding the responsibilities of roles within the team, were identified as impeding effective communication between ED team members
- Potential interventions to improve communication were identified, these included: streamlining telephone and paging processes, formalising and disseminating documentation processes, improving orientation processes and improving understanding of the roles and responsibilities of team members

SECTION 1

Introduction

This report presents findings of a study that examined ways in which communication can be improved upon and supported in the clinical workplace. The research involved the examination of Emergency Department (ED) clinical communication practices through observational studies and focus group discussions with clinicians. This project is part of a two-year *Clinical Communication Research Programme* being undertaken by the Centre for Health Informatics at the University of New South Wales [1].

In 1996, Coiera and Tombs [4] undertook an observational study of communication behaviours in a hospital setting in the UK. The study presented a new approach to investigating the communication patterns of clinicians and demonstrated that physician teams in hospital were subject to high levels of communication interruption. Clinicians also appeared to bear a much higher communication load than appeared necessary, given that accessing information sources rather than asking questions of people could accomplish many tasks.

In 2000, this method was modified and applied to two emergency departments in NSW [5, 8]. That study presented data that suggested communication processes continued to be of concern due to the high communication loads carried by individual clinicians. For example, clinical subjects spent 80% of their time in communication, with 30% of all communication events classified as interruptions (see *Glossary* in *Appendix 1*). Consequently an urgent need was highlighted by this study to measure communication loads within the NSW healthcare system and to develop appropriate systems to improve communication. Both studies also provided evidence of the value of the Communication Observation Method (COM) in measuring communication patterns within clinical organizations.

In 2001-2, we further refined the COM and produced a detailed manual describing the validated observational method [2]. As part of the validation, study results obtained from the 2000 study were compared with data collected using the COM. Results from the two studies were consistent and this suggested that the communication measures are relatively unchanged over a period of time. A comprehensive report detailing the process of refining the COM was presented to NSW Health in March 2002 [9].

The next and final stage in this research programme is to identify interventions that could potentially improve communication processes in the clinical setting, with a specific focus on an emergency department.

Background

Perhaps one of the greatest problems with human communication in organizational life is the assumption that communication is an easy thing to do well. This assumption is only half true: it is easy to communicate, but it is very difficult to communicate well [10].

Effective communication is central to the smooth functioning of complex clinical environments. Communication between health care providers accounts for 60 to 90% of all information transactions within the healthcare system [4, 11] and communication failures in the health system have been reported to be a large contributor to adverse clinical outcomes [12-14]. This section provides a review of studies that have examined: factors that influence communication in the clinical setting, communication patterns in clinical settings, and suggested approaches to support clinical communication.

Factors influencing communication in the clinical setting

In the past, health communication studies have tended to focus on clinician-patient relationships [15-18]. Whilst these studies are important they only account for part of the communication traffic that occurs in the health setting. Teams that provide or support patient care, both within and outside the hospital setting, are made up of many providers (Figure 1).

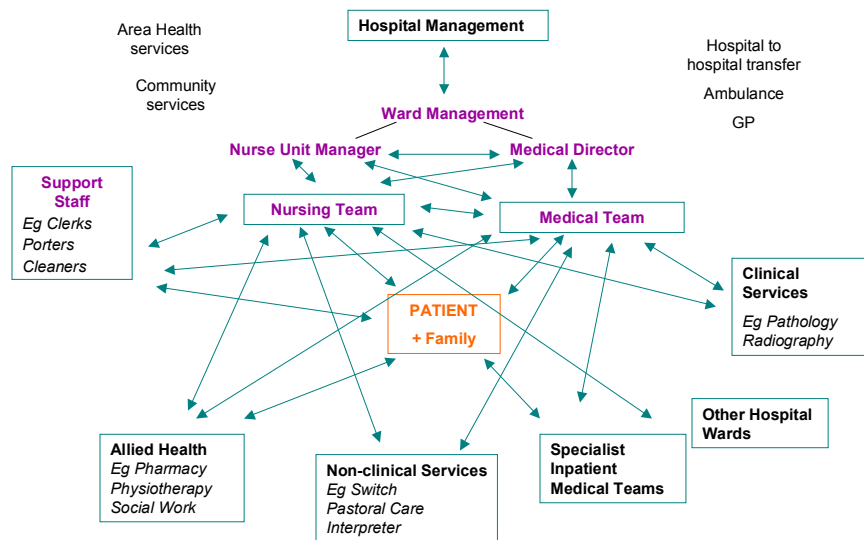


Figure 1: Some of the possible communication interactions between health care teams.

Providing optimal patient care requires the coordination of many different teams and services within the health system. Effective communication both within and between teams is essential for achieving this coordination [19, 20].

Effective communication can be characterised by being clear, complete, accurate, timely and requiring verification from the parties involved [21]. Verifying what has been communicated is important to the process, that is, the parties involved in the communication act need to ensure that the meaning of the sent message is understood and mutually agreed upon [10].

Intra and inter-team communication is influenced by a number of factors. These include both organisational and cultural (professional & team) factors (Table 1).

Organizational	Cultural (professional & team)
Staffing levels [22]	Divisions of power and status [22]
Formalised policies and procedures regarding communication [4]	Understanding of own and others' roles [23, 24]
Informal communication practices [10]	Philosophies of care [24]
Department layout & geographical location of team members [22]	Education [20]
Shiftwork, handover at change of shift [22]	
Workload & time pressures [22]	
Available channels of communication [4]	

Table 1: Organizational and cultural factors influencing intra and inter-team communication

Communication patterns in clinical settings

In the mid 1990's, Coiera and Tombs [4] investigated clinical communication patterns in a UK hospital setting and found that physician teams were subject to high levels of communication interruption and appeared to bear a much higher communication load than necessary. Most importantly they found that simple interventions had the potential to reduce communication loads. Subsequently, a small number of other studies examining aspects of clinical communication patterns have demonstrated similar results [5-7]. High levels of interruption, in part, result from clinicians' preference for using synchronous communication channels (such as face-to-face conversation or the telephone) [4, 5, 20]. In general, interruptions are seen as a source of concern as they have the potential to impact negatively on a clinician's working memory processes [5, 25]. Whilst previous studies have pointed out that large numbers of interruptions occur in the clinical setting, and have hypothesised to some degree why this might be, further investigation is required to understand the nature of interruptions, for example, are some types of interruptions necessary in the clinical environment? In addition, relationships between interruptions and other variables, for example variations in interruptions related to clinical roles have not previously been investigated.

Unsuccessful coordination of patient care has also been largely attributed to ineffective communication between teams or team members [19]. A US hospital study [3] found that physicians and nurses reported experiencing similar communication difficulties, for example, delayed communication due to a slow and inefficient paging system. Delayed communication, such as being unable to contact the allocated doctor to obtain an order for analgesia, was reported to compromise the quality of patient care and caused feelings of dissatisfaction for the staff and patients involved.

These studies have just begun to describe some of the communication dynamics that occur in the clinical setting, giving some indication as to potential areas to target to improve communication. There is still a need to gain a deeper understanding of clinical organisation in order to identify the causes of communication problems and to unravel the complex factors impacting upon communication practices.

Supporting communication in the clinical setting

In health informatics a substantial focus has been placed on information systems and much less attention devoted to communication systems. Hence relatively few studies have looked at how to support communication flows in the health setting. Some examples of interventions to support clinical communication that have been proposed are shown in Table 2.

Non-technological	Technological
Individual workers to consider carefully the effects of their communication behaviour on their own efficiency and effectiveness as well as on that of others [4]	Supporting clinician mobility through the use of wireless technology such as: - mobile phones [4] - wireless alert pagers [26] - event notification system [27]
Education regarding communication skills for health professionals to support collaboration amongst clinical teams [20]	Increasing access to asynchronous communication channels (eg message boards, email, voicemail) with capacity to provide acknowledgement of message and the action taken [4]
	Electronic whiteboards to link geographically separated teams [28, 29]

Table 2: Examples of proposed interventions to support clinical communication

While little is genuinely known about how health communication systems function, there is enormous pressure to invest large amounts of money into telecommunication technologies. The current focus on technology may be blinding people to implementing obvious, cheap and non-technical solutions for clinical practice [30]. Before designing and implementing interventions, characteristics of the organisational setting and their staff need to be understood, as the successful implementation and adoption of interventions is influenced by a number of organizational, cultural and technological factors [31, 32]. Thus, in order to identify and design appropriate interventions that will support communication in the clinical workplace there is first a need to identify clinical communication patterns and issues within the specific organisational context.

A clinical setting in which effective communication is imperative for the timely delivery of patient care is the emergency department (ED). The ED plays an important role within the health system. It is the main entry point to hospital for unplanned patient admissions of varying levels of acuity. It is a dynamic, unpredictable and complex environment operating twenty-four hours per day requiring rotating shifts of clinical and support staff [22]. The managers, clinicians and support staff within the ED deal with a complex set of variables on a daily basis [33]. In such an unpredictable and complex environment ED staff are faced with many organizational challenges such as ensuring adequate staff numbers and a balanced skill-mix on each shift as well as dealing with access block (delay in accessing a hospital bed for patients that need to be admitted). For example, if there are no beds available on the wards, the patients needing to be admitted are unable to be transferred from the ED, this then impedes the intake of people from the waiting room. When the flow of patients keep coming in but patients are unable to be moved out of the ED, staff often have to attend to patients on trolleys in the corridors or doubled-up in cubicles until room becomes available. In order to work effectively, ED clinicians need to be able to navigate and negotiate their way through a complex and highly pressured system. To do so, they require communication structures that support and facilitate their day-to-day needs, which in turn allow them to attend to the needs of their patients.

The overall aim of this research is to identify interventions that will improve and support communication in an ED setting. This will be achieved through gaining a deeper understanding of clinical communication practices, which more specifically involves:

- a. Examination and understanding of communication patterns in an ED setting, with a particular focus on clinical roles and interruptions.
- b. Identification of communication issues as perceived by ED clinicians.

Outline of Methods

In order to examine ways in which communication can be improved upon and supported in the ED, two methods were utilised: observational studies using the Communication Observation Method [2] and focus groups (Figure 2).

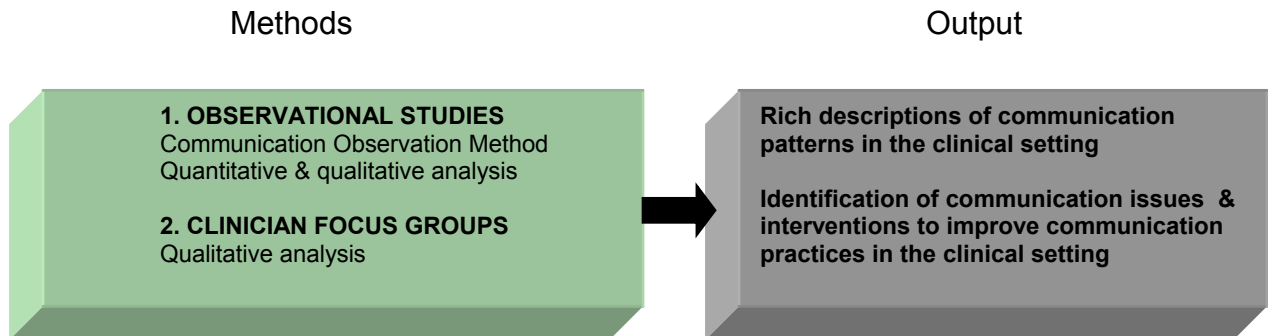


Figure 2: Utilised methods and output.

Both quantitative and qualitative analysis methods were employed to generate rich descriptions of communication patterns from the observational data. This was augmented further by the use of the focus groups to provide both validation of our primary analysis and to provide insights into clinicians' experiences in relation to communication issues together with their ideas about possible interventions that may improve communication practices.

The observations will be reported upon in *Section two* and the focus groups in *Section three* of this report. A discussion of the implications of all the findings will be presented in *Section four*.

Setting

The study was undertaken in the emergency department of a large metropolitan teaching hospital in Sydney, NSW. The hospital has around 450 beds and employs over 2600 staff. The emergency department operates 24 hours a day and on an average day treats more than 100 patients (about 40,000 patients treated per year). Typical ED staff allocation per shift is shown in Table 3.

Role	Shifts		
	AM	PM	Night
Consultant	1	1	
Registrar	1	2	1
RMO	2	2	3
Intern	3	3	
RN	11	11	10
Clerks	3	3	2

Table 3: Typical ED staff allocation per shift

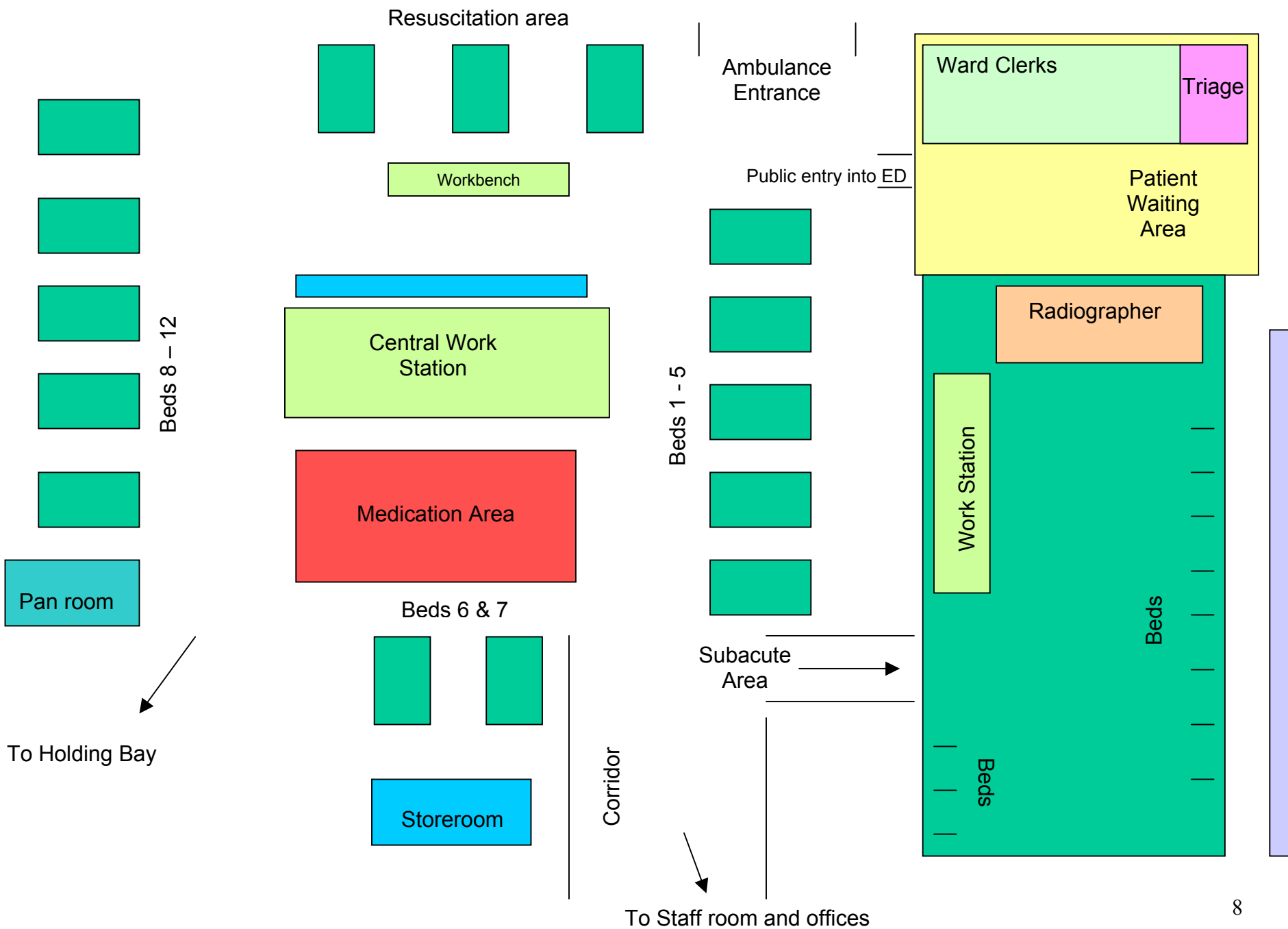
The physical layout of the ED

As the physical environment influences the geographical location of team members and therefore affects communication flows, Figure 3 provides a guide to the physical layout of the ED.

It is a large department and the central workstation is often a hub of activity. There is a ward clerk situated in this area. Clinicians both from within and outside the ED come to this area to read and write in patient medical records, use the telephones - of which there are five, use one of the five computer terminals to access for example, pathology results and EDIS¹. A variety of request forms as well as policy and procedure manuals and a hospital phone directory (paper hard copy) are also located in this area. There are notice boards with various bits of information relating to the ward as well as a white board with staff names and the areas they are working in for each shift, no patient names are contained on this whiteboard due to confidentiality reasons. There is a porter call button and a small whiteboard where instructions for the porter can be written.

A second smaller workstation is located in the subacute area. Here there are two phones and two computer terminals. There is also a whiteboard with staffing allocations and some patient details, as this whiteboard is in an area that is much less exposed to passing traffic.

¹ The Emergency Department Information System (EDIS) is a computerised information system that records data on emergency department activity including volume of presentations, waiting times for each triage category and access block [34].



SECTION 2

Observations

Method

The Communication Observation Method (COM)

The COM aims to measure the communication patterns within clinical organizations. This is done through the observation of the routine work of individual clinicians. As the clinician goes about their work, for a given time period, all communication interactions are recorded by an observer and audio taped. This process captures information about who the clinician is communicating with, the channel of communication, the purpose of the communication interaction, the type of communication interaction and who is initiating the communication event (*see Glossary in Appendix 1*). Following the data collection phase, the data are transcribed, marked up, coded, entered into a database and then further analysed.

Data collection

The COM was applied in the emergency department of a metropolitan teaching hospital in Sydney between July and September 2001. Four registered nurses and four medical officers participated in the observations. Subjects volunteered following an information session and consent was obtained prior to data collection. Subjects were shadowed for two to four hours by a researcher during the morning, afternoon or night shift of varying days of the week. The subject's conversations were audio recorded. Non-participatory observation techniques were used with the researcher observing from a distance, timing events and taking written field notes. The field notes captured information not able to be audio-recorded, such as the subject writing in the medical record. Ethical approval was obtained from the relevant hospital and university ethics committees.

Quantitative analysis – Patterns of communication

The audio-recordings were transcribed verbatim, merged with the field notes and then transformed into formal descriptions of observed events using a prescribed list of coding rules [2]. The data were entered into a database and descriptive statistics were generated using Excel™ and SPSS™. Subjects were further divided into and analysed according to their clinical roles, namely: RN coordinators, RNs with an allocated patient load (APL), registrars, and junior doctors (Table 4).

Registered Nurse Coordinator (RN Coordinator)	A senior registered nurse responsible for coordinating the overall activities within the Emergency Department during each shift. The RN coordinator is not allocated a specific patient load.
Registered Nurse with an allocated patient load (RN with an APL)	A registered nurse responsible for the direct nursing care of patients within a specified area.
Emergency Department Registrar	A senior medical officer and trainee in the study of emergency medicine [34].
Resident Medical Officer (RMO)*	A junior medical officer in the second or subsequent year(s) of hospital clinical practice [34].
Intern*	A junior medical officer in the first postgraduate year of hospital clinical practice [34].

Table 4: Description of observed clinical roles.

* The *junior doctor* category consists of interns and resident medical officers.

Qualitative analysis – Nature of interruptions

Qualitative analysis of the observational data was undertaken to provide a richer description of the interruptions. Using the software package N-Vivo [35] to facilitate analysis, the communication events identified as interruptions were coded using thematic content analysis [36]. Systematic records of themes were captured within the transcripts with broad categories developed to reflect the nature of the interruptions. This process was collaborative between two researchers.

Limitations

There are several limitations that need to be taken into account when interpreting the observational study results. The representativeness of the findings is limited by the relatively small sample of subjects and shift times observed for each role. In addition, the sampling did not capture all the clinical roles found within the ED, for example emergency consultants and triage nurses were not directly observed. Our sample was a convenience sample in which participants volunteered to be observed; this perhaps biased the sample to those that were more confident in their skills and work practices. The observer's presence is also likely to have had an effect on the behaviour of study participants; we tried to minimize this through regular workplace visits prior to the actual observations to allow the participants to become habituated to the observer's presence.

Results

Quantitative data – Patterns of communication

The total study observation time was 19 hours and 52 minutes. Within that time, 831 distinct communication events were identified (Table 5) representing a rate of 41.8 communication events per person per hour.

	Medical	Nursing	Total
Total observation time (hr:min)	8:42	11:10	19:52
Total event time (hr:min)	7:59	9:41	17:40
Number of events	302	529	831
% Time in events	91.9	86.7	88.9
Number of interrupts	107	188	295
Total time in interrupts (hr:min)	1:48	2:27	4:15
% Events classified as interrupts	35.4	35.5	35.5

Table 5: Summary of the number of communication events, total observation time, total event and interrupt time and number of interruptions for doctors, nurses and the combined total.

On average, 89% of clinicians' time was spent in communication events, with synchronous communication channels such as face-to-face contact or the telephone being used in 84% of events. Just over one third (36%) of communication events were classified as interruptions, giving a rate of 14.8 interruptions per person per hour.

Clinical Roles

The following results are presented according to the observed clinical roles (Table 4) in relation to interruptions rates, channels of communication, other parties, and purpose of communication events.

	RN (APL)	RN Coordinator	Jnr Doctor	Registrar
Number of events	200	329	186	116
Total observation time (hr:min)	5:44	5:25	6:24	2:17
Total event time (hr:min)	4:49	4:51	5:54	2:04
% Time in events	83.9	89.6	92.2	90.6
Number of Interrupts	53	135	53	54
Total time in interrupts (hr:min)	1:01	1:25	1:00	0:49
% Events classified as interrupts	26.5	41.0	28.5	46.6

Table 6: Summary of the number of communication events, total observation time, total event time and number of and time spent in interruptions for RNs with an APL, RN coordinators, junior doctors and registrars.

Table 6 summarises data relating to communication events and observation time for each clinical role. The RNs and junior doctors were observed, on average, for around 6 hours, the registrars were observed for less than half that time.

Interruption rates

There was considerable variation between clinical roles and interruption rates (Figure 4). Registrars and RN coordinators experienced the highest rates of interruption, respectively 23.5 (95%CI 18.8-28.44) and 24.9 (95%CI 21.9-27.9) interruptions per hour. By contrast, RNs with an allocated patient load and the junior doctors had lower rates, respectively 9.2 (95%CI 6.9-11.4) and 8.3 (95%CI 6.2-10.2) interruptions per hour.

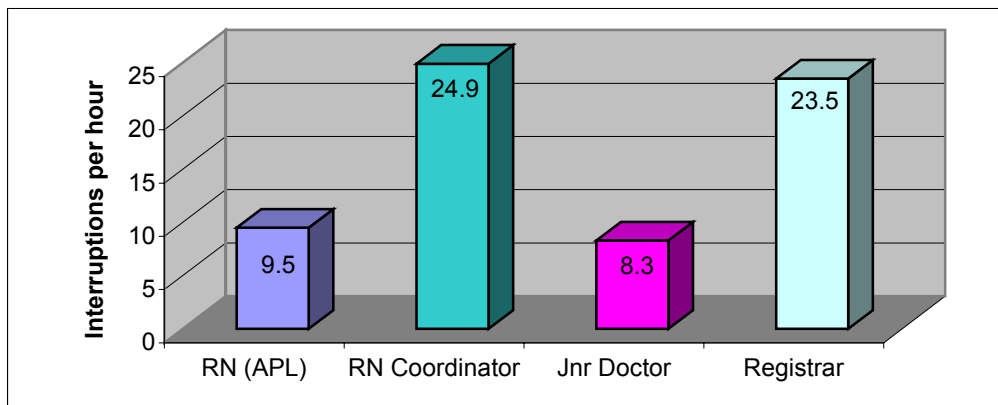


Figure 4: Interruption per hour and clinical role.

Interestingly, the percentage of overall time spent in interruptions for each clinical role also varied (Figure 5). The registrars spent the greatest amount of time (35%) and the junior doctors the least amount of time (16%) in events classified as interruptions.

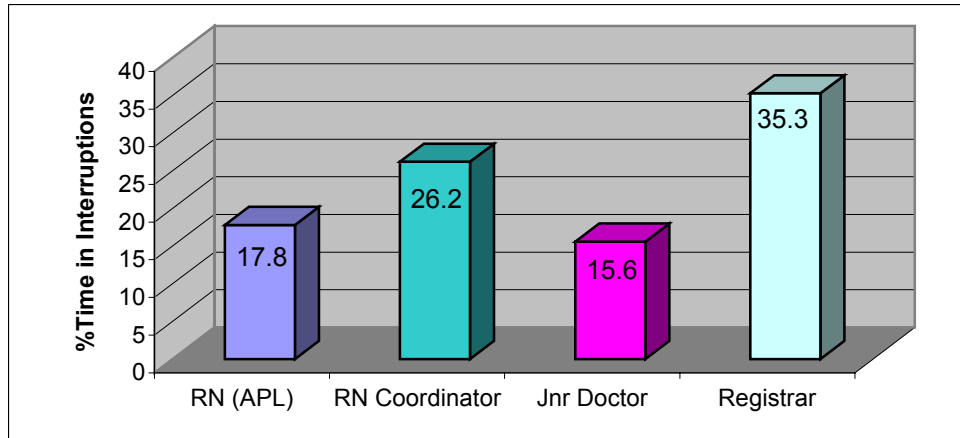


Figure 5: Percentage of observed time spent in interruptions for each clinical role.

Although the RN coordinator experienced high rates of interruptions per hour, on average the RN coordinator spent the least amount of time per interruption event when compared to the other clinical roles (Figure 6).

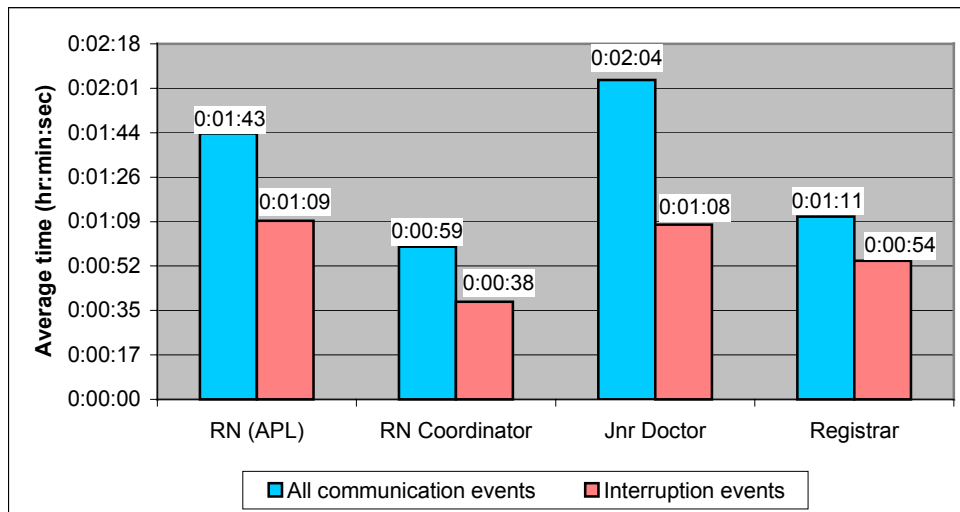


Figure 6: Average time spent per communication event (n=831) as compared to average time spent per events classified as interruptions (n=295) for each clinical role.

Channels of communication

Clinicians chose to use synchronous channels of communication more frequently than asynchronous channels (Figure 7).

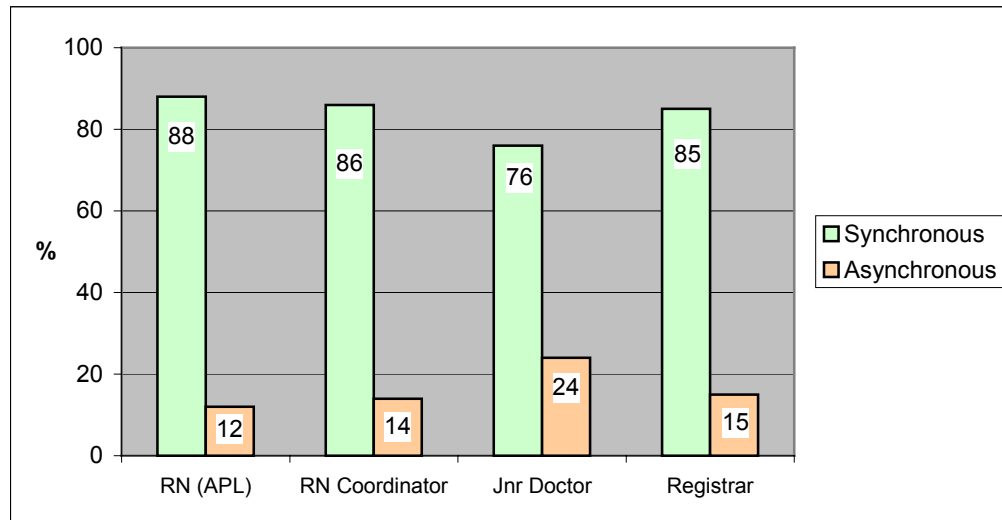


Figure 7: Percentage use of synchronous and asynchronous communication channels.

The synchronous channels observed comprised of face-to-face communication and telephone conversations (Figure 8).

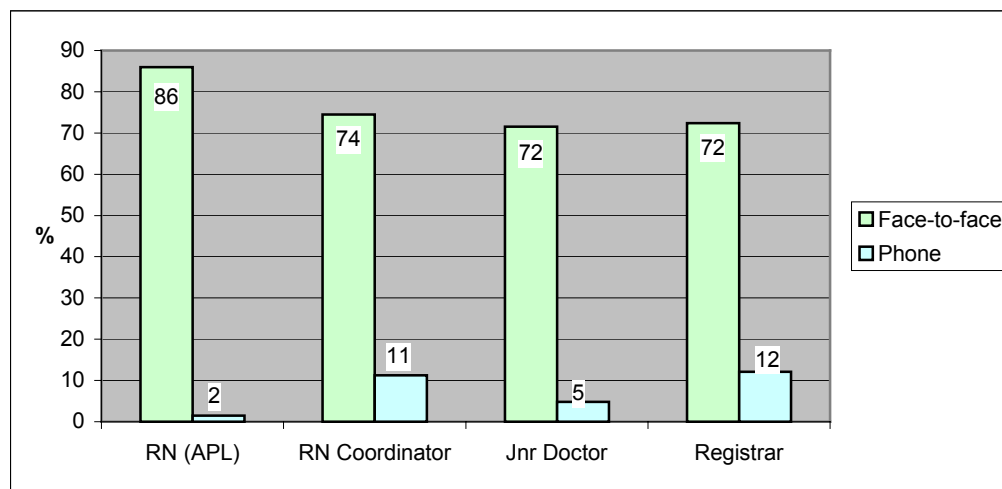


Figure 8: Percentage use of synchronous communication channels.

There was significant variation between clinical roles and rates of telephone conversations (Figure 9). These data include subjects both initiating and receiving phone calls. RN coordinators and registrars experienced the highest rates of phone calls, respectively 6.8 (95%CI 4.7-8.9) and 6.1 (95%CI 3.1-9.2) phone calls per hour. By

contrast, RNs with an APL and the junior doctors had lower rates, respectively 0.5² (95%CI -0.1-1.1) and 1.4 (95%CI 0.4-2.3) phone calls per hour.

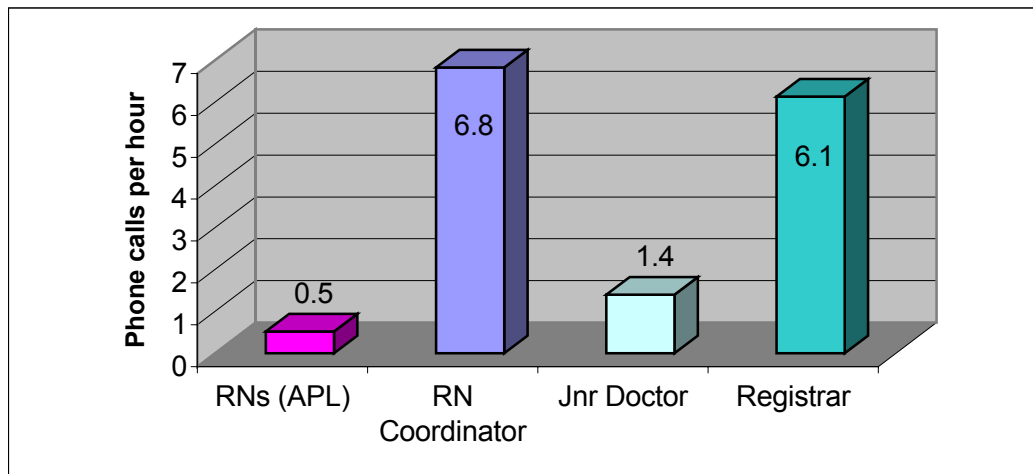


Figure 9: Clinical roles and phone calls per hour.

Although the registrars and RN coordinators had similar rates of phone calls per hour, the registrar spent the greatest amount of time communicating via the telephone, nearly twice that of the RN coordinator (Figure 10).

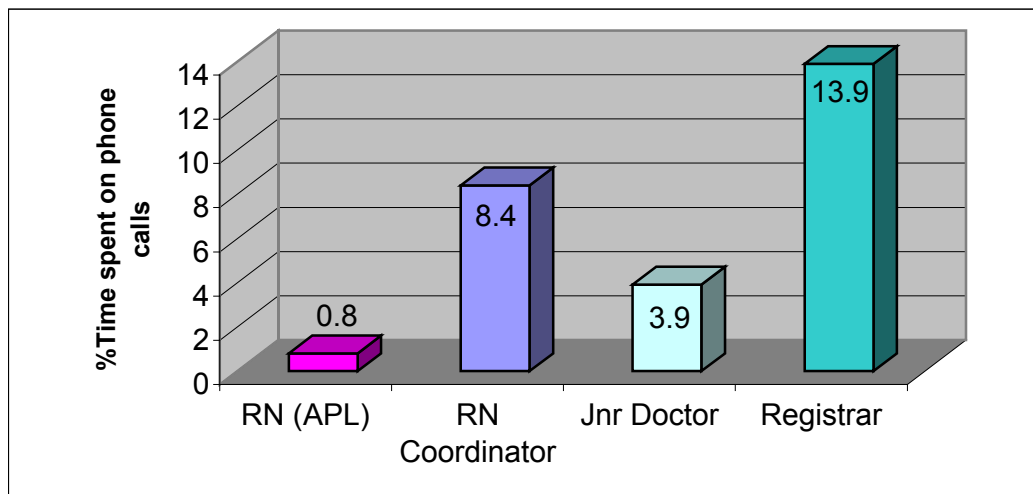


Figure 10: Percentage time spent on phone calls for each clinical role.

² This figure may not accurately reflect the phone call traffic experienced by RNs with an APL as one of the RNs was observed during a night shift, whereas all other observations were carried out during morning and afternoon shifts.

Interruptions and phone calls

The majority of interruptions experienced by all observed clinicians were due to face-to-face conversations. However, RN coordinators and the registrars experienced more than double the interruption rates (16.3% and 20.4% respectively) due to phone calls compared to the RNs with an APL and the junior doctors (1.9% and 7.9% respectively).

Asynchronous channels

As seen in Figure 7, asynchronous channels made up only a small proportion of communication channels used, Figure 11 shows the breakdown of asynchronous channels used by each clinical role.

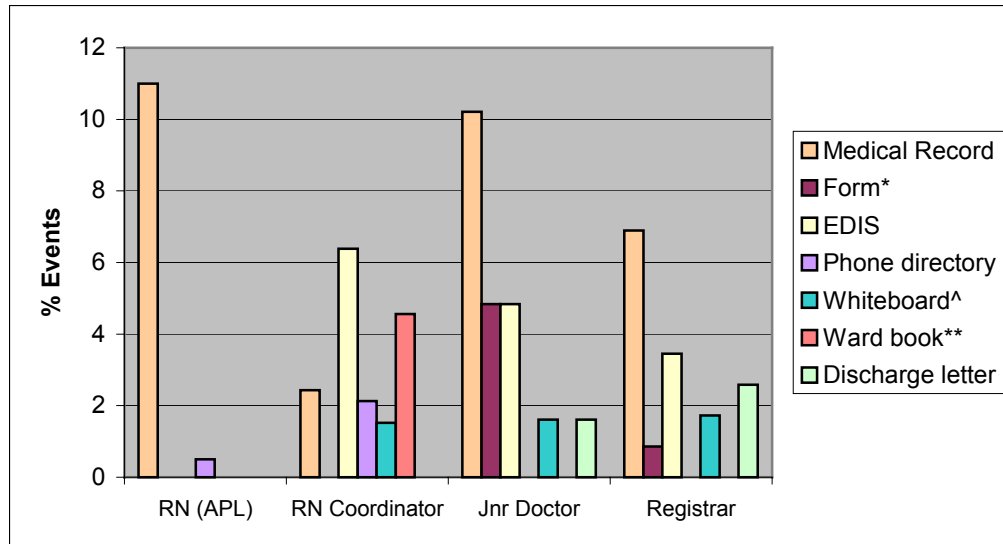


Figure 11: Percentage use of asynchronous communication channels for each clinical role.

*Forms for ordering tests. **Contains information such as patient name, bed allocation and admitting doctor. ^The observed RNs with an APL were not in an area where whiteboards were being regularly used.

RNs with an allocated patient load most frequently used the medical record, whilst the RN coordinator used a number of asynchronous channels, in particular EDIS and the ward book. The registrars and the junior doctors used a range of asynchronous channels, with junior doctors predominately using the patient medical record, EDIS and forms for ordering tests.

Purpose of communication

The broad purpose categories for communication events, that is, the reason the communication event was undertaken are described in Table 7.

<i>Patient management</i>	A broad category encompassing all activities related to patient care. It can be divided into: direct patient care (eg assisting patients with activities of daily living, giving medication, providing explanations to patients and their relatives); and indirect patient care (eg documentation, organising procedures, updating or discussing patient care with a colleague).
<i>Handover</i>	Refers to the exchange of information for the specific reason of handing over the care of a patient, for example at the change of shift, when transferring a patient to another ward or handing over information that needs to be addressed by a team member occupying a specific clinical role.
<i>Consult</i>	Refers to the giving or receiving of specialist information to or from clinical staff members, for example an orthopaedic registrar giving specialist advice regarding the management of a patient who presented with a fracture; or when the ED registrar gives specialist advice to a GP calling the hospital (admitting call).
<i>Ward management</i>	Categorises activities related to running the ward, eg bed allocation, rosters, coordinating staff activities etc.
<i>Administration</i>	Encompasses tasks that are of a clerical nature (that is, a clinical staff member does not necessarily need to carry out these tasks) such as answering phones, transferring calls, locating medical records.
<i>Social</i>	Refers to communication exchanges that are not directly work oriented. Often conversations categorized as ‘social’ will occur at the beginning or end of an interaction that had a direct clinical purpose. Interactions involving social exchanges can help build rapport amongst team members, going some way to creating an environment conducive to good communication as “social linkages are a precondition of information exchange” [37].

Table 7: Communication purpose category descriptions

Within each clinical role, patient management was the primary reason clinicians engaged in communication (Figure 12).

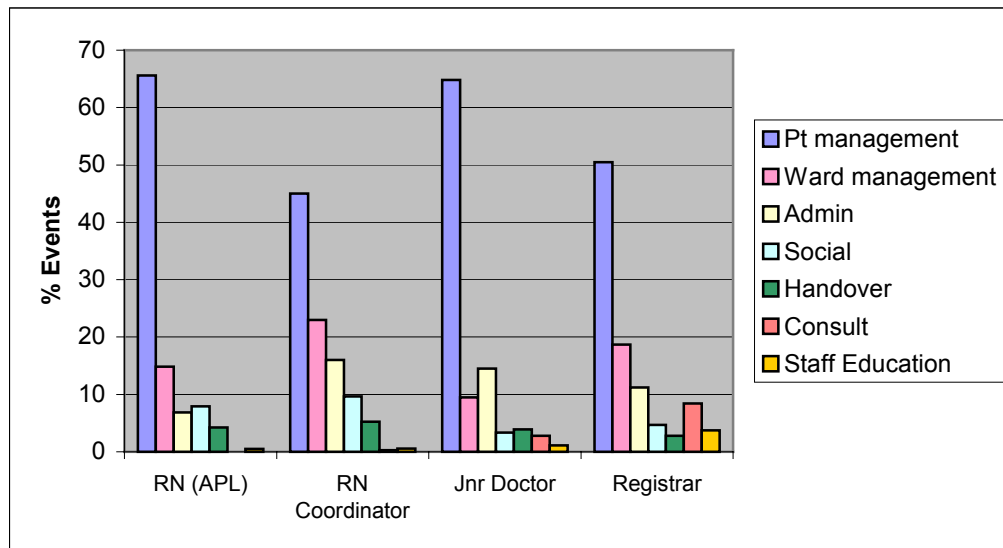


Figure 12: Broad purpose categories for communication events for each clinical role.

The patient management category can be divided into activities related to direct and indirect patient care. The majority of communication events the RN coordinator and the doctors engaged in related to indirect patient management (Figure 13), whereas the RN with an APL was involved in direct patient care for more than half of their observed events.

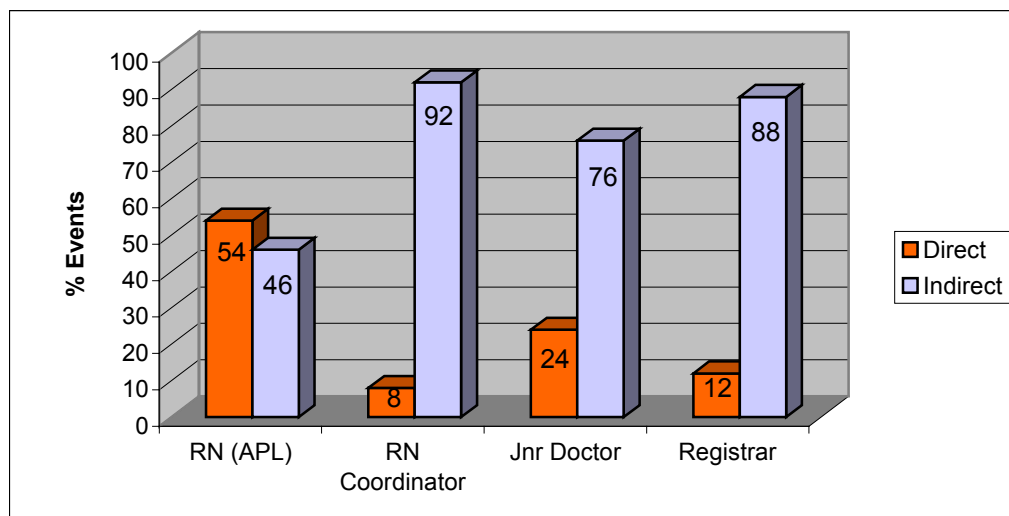


Figure 13: Percentage of events related to direct & indirect patient management for each clinical role.

Figure 14 shows that RNs with an APL spend the majority of time engaged in direct patient care, whereas the RN coordinator and registrar spend the majority of their time engaged in indirect patient care. Interestingly, although the junior doctors are involved in less direct patient care events they spend half of their time engaged in these events.

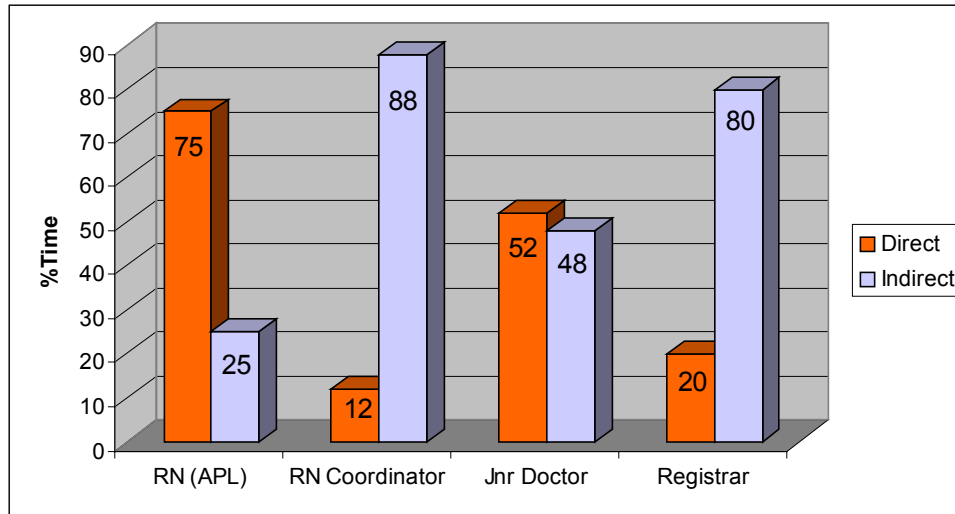


Figure 14: Percentage time spent in direct & indirect patient management for each clinical role

The most common purpose groups and the channels used are shown in Figure 15. Face to face communication dominated both patient and ward management, however when it came to administrative tasks, the phone and the computer were used more often than when clinicians were engaged in patient or ward management.

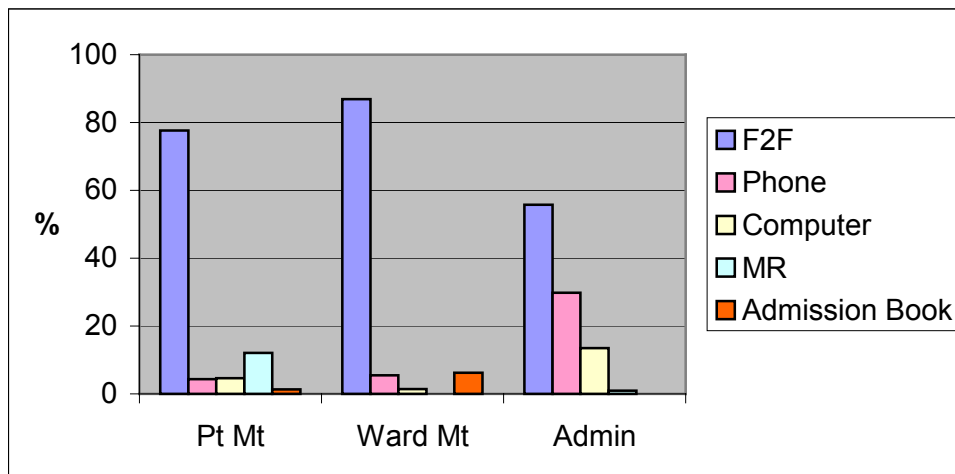


Figure 15: Percentage of events for communication purpose and channels.

Interruptions and purpose

Overall, the RN coordinators and the registrars were interrupted for a greater variety of reasons than the RNs with an APL and the junior doctors. Within each clinical role, patient management remained the most frequent reason for interruptions (Figure 16).

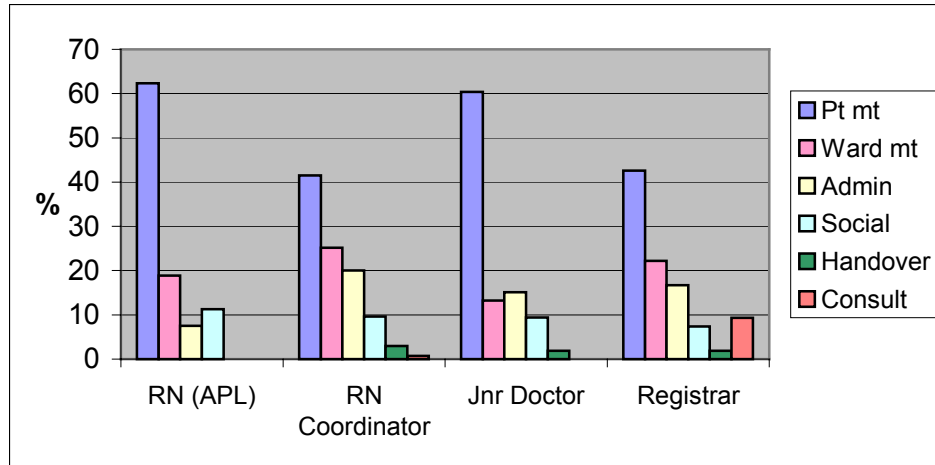


Figure 16: Percentage of interrupts within communication purpose categories for each clinical role.

For the RNs with an APL and junior doctors the proportion of interruptions for patient management were similar (62.3% and 60.4% respectively) and were around 20% greater than the proportion for RN coordinators and the registrars (41.5% and 42.6%).

The RN coordinators had a greater proportion of interruptions for ward management (25%) and administrative reasons (20%) than all the other subject roles. Of their interrupts described as administrative, 85% were categorised as information seeking (that is, the subject received a request for information). The registrars and junior doctors experienced similar proportions of interruptions categorised as administrative, however the registrars were observed to have around ten percent more ward management related interruptions than the junior doctors.

Parties involved in communication

The parties involved in communication varied depending on the clinical role of the observed subject. For example, RNs with an APL communicated with patients more often (36% of events) than the other observed clinical roles, that is the junior doctors, registrars and RN coordinators (16%, 9% and 5% respectively). Figure 17 shows the proportion of parties involved in all communication events, which included events that were initiated by the subject and events in which the subject was interrupted.

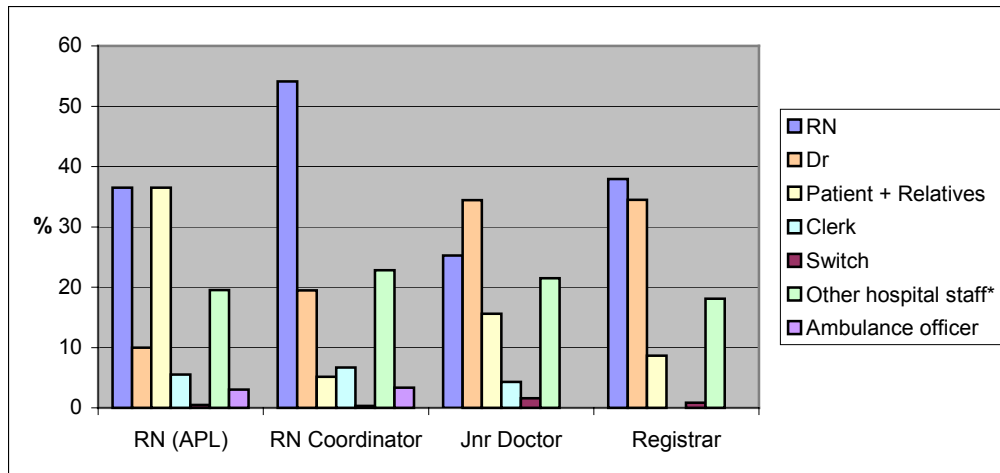


Figure 17: Percentage of parties involved in communication events for each clinical role.
 *Other hospital staff included: radiography, pharmacy, pathology, porters, physiotherapy, and managerial staff.

Interruptions and other parties

Figure 18 shows the parties involved in events that were classified as interrupting the observed subject.

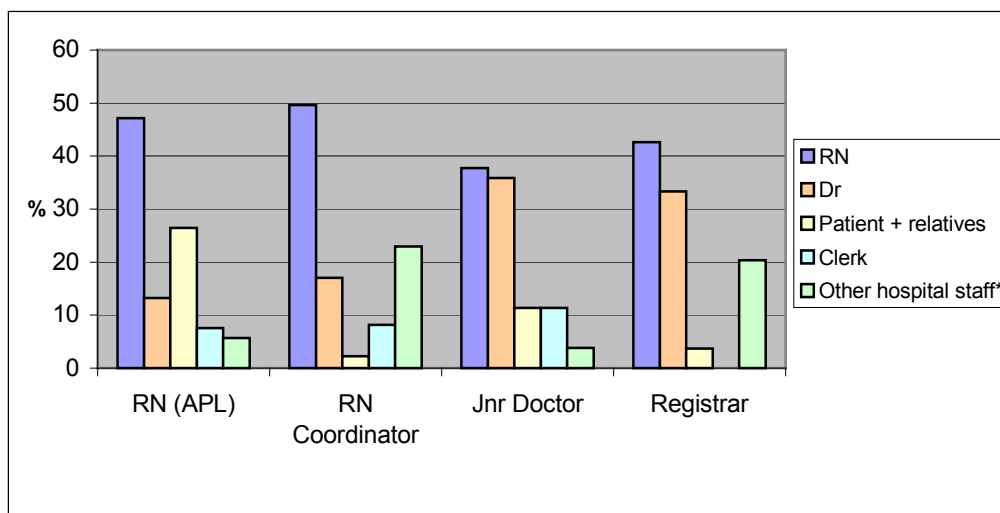


Figure 18: Percentage of interruptions from other parties for each observed clinical role.
 *Other hospital staff included: radiography, pharmacy, pathology, porters, physiotherapy, and managerial staff.

The RNs with an APL and the RN coordinator experienced similar proportions of interruptions from registered nurses (47% and 50% respectively), while the registrars received slightly more interruptions from nurses than the junior doctors (43% and 38 % respectively). The junior doctors were interrupted to a similar extent by both the nurses and doctors (38% and 36% respectively). Just over 23% of the RN coordinators interruptions came from other hospital staff.

During the observations, the ED clerks did not interrupt the registrars. The RN coordinator and junior doctors received the highest proportion of interruptions from this source, (8% and 11% respectively). The RNs with an APL received one quarter of their interruptions from ED patients (26%). The junior doctors received around 11% of their interruptions from ED patients, whereas patients interrupted the RN coordinator and the registrars less often (2% and 4% respectively).

Summary

This analysis has highlighted the variance in communication patterns experienced by different clinical roles in an emergency department setting.

- Synchronous channels of communication were used more frequently than asynchronous channels (84% v 16%)
- RN coordinator and registrars had significantly higher rates of interruptions than the junior doctors and RNs with an APL
- Registrars spent more time than the other roles involved in events classified as interruptions
- Average time spent within each event classified as an interruption was longer for RNs with an APL and junior doctors
- RN coordinator and registrars had significantly higher rates of phone call traffic than junior doctors and RNs with an APL
- Registrars spent more time than the other roles communicating via the telephone.
- Patient management was the main purpose for engaging in communication events and for interrupting the observed subjects
- The RNs with an APL and the junior doctors spent the majority of their time engaged in direct patient management activities whereas RN coordinators and registrars spent the majority of time in indirect patient management activities
- The telephone and computer channels were more often used for administrative tasks than for patient or ward management

Results

Qualitative data – Nature of interruptions

Thematic content analysis [36] was used to further examine the interruptions experienced by the observed clinicians. Themes were identified from the transcripts and organised into five main categories. Many of the themes were interrelated and highlighted the complex nature of the ED work environment. Results reported in detail here reflected themes that are common to all of the clinical roles and are supported by verbatim extracts from the observation transcripts. The interruption categories included:

1. Updating
2. Confirming
3. Locating
4. Role based tasks
5. Supervision

Updating

This category related to interruptions whereby staff members sought to increase their situational awareness, or that of other team members, through requesting or giving updates. These updates were associated with updating knowledge and/or information on patient management, ward management, educational, and administrative issues. For example, requests for bed numbers, information requests regarding patient flows in and out of the department, request for and receiving updates regarding patient care, discharges and admissions were all reasons for interruptions.

RN: **** has just given us 3 beds on ward X, so bed 1, ****
RN Coordinator: Oh yes, yes ****
RN: She's got a bed and two other patients down there have got them
RN Coordinator: Ok, who has been here the longest?

NUM: **** can I just let you know
Registrar: Yep
NUM: This guy, um, was sitting in a chair in the corridor, he's a haemodialysis patient querying peritonitis, he has been taken by the CNC up to the ward.
Registrar: Brilliant

RN: Mrs ****, what are you doing with her?
Intern: Well she is being admitted
RN: But we're not doing anything with her at this point in time?
Intern: I haven't really done much, I haven't done anything since she was handed over to me.

Whilst all of the clinicians observed were interrupted in order to provide or receive updates, the RN coordinators appeared to be a central conduit for varied information, both patient and non-patient care related. The junior doctors and RNs with an APL mainly received requests for updates or to be updated about direct patient care issues and were often interrupted by patients requesting updates on their treatment plans or test results.

Patient: *The X-rays?*
Resident: *The x-rays looked ok actually. They looked fine, but I think in view of everything, with the blood tests...*

Several of the update requests related to organizational or professional matters. The information requested during these interruptions may have had a direct or indirect effect upon patient care or professional practice. Interruptions related to staff requesting or giving information relating to organisational changes within the emergency department or hospital such as changes in bed management, ordering stock and equipment.

RN: *I'm doing **** job next Monday*
RN Coordinator: *Yes you are*
RN: *Drug pharmacy still down on Monday?*
RN Coordinator: *Yes*
RN: *And IV flows and all that?*

Interruptions also included requests from colleagues for clinical information or professional updating regarding treatment protocols and department policy and procedure.

RN2: *Can I ask a dumb question, hyperfix?*
RN: *Mm, that's it*
RN2: *That sort of stuff*
RN: *Yeah it's exactly the same*
RN2: *Put that over the top?*
RN: *Yeah, what's that for?*
RN2: *Burns*
RN: *Are you putting it straight on the burn?*
RN2: *Yeah, does it go straight on the burn?*
RN: *It does.*

Confirming

This category related to staff interrupting one another in order to confirm existing information or check for a change in status before taking action or progressing with patient treatments, movements or discharge. For example an RN interrupting the RN coordinator to confirm that a patient had a bed on another ward or to confirm discharge plans for a patient.

RN: *Has this guy got a bed on ward X and is it definite?*
RN Coordinator: *Yep*
RN: *Ok.... I just wanted to see if it was ready that's all.*

RN: *Mrs ****, it's got in the book query home, hospital and then home.*
RN Coordinator: *Yes, she's gone*

Locating

This category included interruptions that occurred when clinicians were unable to locate patients, staff, patient medical records or equipment. These interruptions were both face-to-face and over the telephone.

Registrar: *Where's that guys notes gone Mr *****
 RN Coordinator: *You've lost it?*
 Registrar: *Yes I put it down there and had to attend an arrest in CCU*
 RN Coordinator: *Oh Ok*
 Registrar: *And I just dumped them where I was writing, just out there...*

(to RN Coordinator)
 Registrar: *You haven't seen the Med reg, ED Med reg?*

Intern: *Can you tell me where the fax machine is.*
 Registrar: *The fax machine is um..if you pop in, actually its probably just easier if I show you.*

Clerk: *Do you know what happened to the patient that was here before?*
 Resident: *I have no idea because I have just come on duty*

The clinicians answered the telephone in an ad hoc fashion, and as there was no one person dedicated to this role, this often led to clinicians undertaking clerical tasks such as transferring phone calls. On several occasions staff were interrupted by the telephone, with the caller contacting the wrong department or person whilst attempting to locate another.

Telephone rings...
 RN Coordinator: *Oh hello, yes no we're not, who is this, what's your last name.... Right I'll out you through to holding bay...*

Telephone rings...
 RN Coordinator: *Holding Bay...yep...this is emergency... no that's another floor above us... you will have to ring outpatients, ok, bye.*

Registrar: *Is this Mr ****?*
 RN: *Yep*
 Registrar: *His son is on the phone.*

Further, telephone interruptions occurred following the paging of a clinician external to the emergency department. On several occasions the medical and nursing staff were observed to take calls from second parties who had received a page from an unknown source, requiring those answering the phone to locate the source of the page, often unsuccessfully.

Telephone rings...
 RN coordinator: *Emergency department can I help you, oh I don't know..*
 (calls out) *Anyone looking for *****? No one admitting to it, thanks bye.*

Telephone rings...
 RN Coordinator: *Emergency department can I help you,... just hang on a sec*
 (To ED) *Did anyone just page the Radiology reg?*

Role based tasks

This theme related to interruptions that were directed to an appropriate clinician in order that a task could be undertaken or completed. Certain tasks within the clinical setting are

the unique responsibility of specifically qualified or experienced clinicians. For example, an emergency doctor interrupted with a request from the nursing staff to write a medication order or a registrar receiving a request to take an admitting phone call from a general practitioner.

RN: *Are you going to be here a long time?*
Resident: *Where at this particular bed? No why?*
RN: *I've got a lady in holding in bed 1 whose going to the ward.*
Resident: *Oh holding bay, yeah.*
RN: *And she hasn't got all her medications written up.*
Resident: *Ok.*

RN: *Excuse me *****
Registrar: *Yep*
RN: *Are you the only registrar on? There's an admitting call.*
Registrar: *They'll just have to wait.*
RN: *Ok.*

Additionally, team members were interrupted to follow specific protocols in regard to patient treatment. For example, hospital policy requires that two suitably qualified clinical practitioners check blood before administering it to a patient. So one RN interrupting another in order that blood could be checked was both necessary and important for the safe delivery of patient care.

RN: *Do you want the blood checked?*
RN 2: *Yeah, thanks*

Supervision

This category included interruptions that related to staff interrupting to provide or request support in clinical practice or decision-making and as such involved elements of education. The registrars in particular were interrupted in regards to issues related to the direct clinical supervision of junior medical staff and medical students carrying out direct patient care.

Medical student: *Do you want a line in?*
Registrar: *Yeah put a line in, um take all the bloods, give him a litre of Hartman's over an hour while we're waiting for everything.*
Medical student: *Ok, hmm he's a pretty bad historian cause he's in a lot of pain...*

In addition, interruptions included requests to share knowledge with other members of the emergency department team (both doctors and nurses) regarding current or recent patient cases and to discuss patient management plans.

RN: *(looking at x-rays) How does the inspiration and expiration affect..*
Registrar: *Because on expiration your lung collapses more than on inspiration, so therefore you can see the difference*
RN: *Alright, so I'll order inspiration and expiration in future times I think*

RN: *Can I just ask for your opinion?*
Registrar: *Yep*
RN: *I've got this young girl with query torticollis in her neck, she just woke up with the pain...*

Finally this theme included interruptions from colleagues seeking peer supervision in order to reflect upon their clinical practice or wishing to debrief following unexpected or unpleasant experiences.

RMO: *An old man who has drunk himself to death.*

Intern: *Was that outside?*

RMO: *Yes.*

Intern: *Don't you hate doing that?*

RMO: *Yes.*

Intern: *Awful.*

Summary

The themes that emerged from this analysis demonstrate interruptions that are both a necessary part of team functioning and those where specific information needs could be perhaps met in another more appropriate or timely way. For example interruptions received from medical students requesting clinical supervision for a medical intervention would be necessary for the provision of safely managed patient care. Conversely, those interruptions reflecting information needs that could be met by using asynchronous channels such as a phone directory, the emergency department information system or written protocol specifying organisational policy, could be minimized.

The analysis highlights the interruptive nature of the telephone, which appears to be answered in an ad hoc manner by the nurses and medical staff. Calls were often not of a clinical nature or role relevant. These calls also highlighted the difficulties within the department of locating staff members following a telephone page.

The nature of the interruptions also reflected the clinicians' need for immediate feedback on changes within the department with staff giving or receiving updates on a frequent basis.

SECTION 3

Focus Groups

In order to gain a deeper understanding of communication issues within the ED, focus groups with ED clinicians were undertaken.

Method

The focus groups were carried out using guidelines documented by Kruger [38]. The focus groups were conducted with 20 ED staff. The participants were divided into three groups: registered nurses, senior medical staff, and junior medical staff. Each group consisted of between five and nine participants and lasted up to one hour. All of the focus groups were conducted on hospital premises and facilitated by one of two moderators, both registered nurses and members of the research team. A senior medical staff member assisted in the facilitation of the junior doctors' focus group. Staff participation was voluntary and recruitment achieved through the researchers speaking at staff meetings, providing written information and liaising with senior ED staff. Informed written consent was obtained prior to the focus group discussion and full anonymity was maintained. Demographic descriptors collected related to clinical role, sex of respondents and experience within the emergency department

A semi structured interview guide was used with additional probes added in order to elicit more detailed information if not initially volunteered. Any other relevant issues that arose during the discussion were followed up and points clarified or summarised if necessary. The focus groups were audio recorded and additional notes taken by the assistant moderator. The field notes captured key points of the discussion and observations such as the group dynamics.

The lead questions used in the focus groups were:

1. Can you describe any communication issues that impact upon your work in the emergency department?
2. How do you think communication processes within the emergency department can be improved?

Analysis

The focus group moderator transcribed the focus group audiotapes. The transcripts were then coded using thematic content analysis [36]. The aim of the analysis was to produce a detailed and systematic record of the themes addressed in the focus groups. Responses for each question were coded. Other themes that arose were also coded together with non-verbal communication and group dynamics. The two researchers collaboratively carried out the analysis.

Limitations

The focus group sample was small and purposive thus limiting the generalisability of the study findings to other populations. In addition, some senior managerial and clinical positions such as the medical director, nurse unit manager and clinical nurse consultant were not included in the focus group discussions. The nursing background of the researchers could also be viewed as a potential bias in the study.

Results

Three focus groups were carried out during the months of July and August 2002. The guideline questions served as initial categories to provide a common structure across the three focus groups with additional themes reported upon for each clinician group as they emerged. The themes do not stand-alone with their interrelatedness reflecting the complexities of the ED. The themes and supporting verbatim extracts reflect the participant's direct experiences, attitudes and beliefs. Each group is reported upon individually in order to highlight either similarities or differences of themes between them.

Registered Nurse Focus Group

Group one comprised of nine RNs (three male and six female) with experience in the ED ranging from 9 months to 22 years (mean 6 years and 3 months). This group provided a lively discussion, with the nurses commenting that they appreciated the opportunity to express their many thoughts and ideas. Whilst at times humorous there were obviously many frustrations surrounding communication within the ED. The main themes generated from the textual analysis of the RN focus group are shown below in Table 8.

Communication issues	Suggestions for Improving Communication Processes
<i>Written & verbal communication</i>	<i>Training, education and orientation</i>
<i>Locating information sources</i>	<i>Improving teamwork</i>
<i>Interruptions</i>	<i>Improve existing systems</i>
<i>Processes and existing systems</i>	
<i>Staffing levels and skill mix</i>	

Table 8: Main themes - Registered Nurse focus group

Communication issues

Written & verbal communication

The RN's indicated that, at times, poor verbal and written communication placed an additional and frustrating burden on their already heavy workloads. Concerns raised included suboptimal 'top-down' information flows from nursing management. This frustrated the nursing staff as they felt that the grape-vine effect and 'rumour mongering' led to incomplete information being received or resulted in the failure to hear about policy or nursing procedure change within the department.

RN: *Even from nursing management down to us there's new things like policy changes and anything like that. Sometimes you find out things have just changed with out properly dispersing it, and if you don't do this procedure that has changed and you get into trouble, which sucks.*

RN: *Where's the change in the policy where the change is written, you don't get a verbal change, you don't even get a written change its sort of like I've told this one person that's enough.*

RN: *It's sort of rumours isn't it? One person may be told and then...*

RN: *It's rumour mongering as opposed to actually saying here's a policy read this you know and opinion is never asked in formulation of that policy either.*

A source of discussion amongst the participants was the perceived poor communication skills of doctors, specifically more junior doctors and those doctors external to the ED. The issues were varied including medical teams not exchanging information between themselves or with nurses and their patients.

RN: *I think with doctors it is a huge problem with communication, they've got very poor communication skills, well just things going on with patients (such as) drug orders that have been written up, unless you read through the patient notes, few doctors come and tell you what's happening and with the patients they've got very poor communication skills with the patients.*

RN: *And they're (the Drs) not communicating and they haven't spoken to each other and you're the proverbial meat in the sandwich trying to work out do they mean this or do they mean...*

Incomplete or conflicting patient records and treatment plans' often containing illegible written information was an additional concern for the nurses.

RN: *Even the medical records are not that thorough you go and see them for the plan of attack and occasionally it wont even have... if they want them (the patients) nil by mouth, just basic things or the patients name not on the notes (and) they are illegible.*

RN: *And then you get conflicting notes too on the same patient when different registrars from different teams have seen the patient one team would have asked for something and another team would have asked for something completely different*

The group also perceived that some doctors made the assumption that nurses would search out information about their patients treatment plan, even though the nurse did not know a change had been made.

RN: *They automatically assume that you are going to read the notes... and then they come back and ask you 'why hasn't this been done' and you say 'why didn't you tell me', 'well it was in the notes' - but you still could have told me*

There was concern amongst the group participants that 'delayed' information could impact on patient outcomes and ultimately on patient safety. In addition, these examples have highlighted some of the circumstances in which the nurses' preferred to receive information related to patient care via a face-to-face rather than a written channel.

Differences between ED and non-ED staff communication were highlighted, with the nurses expressing the belief that the emergency doctors developed better communication skills whilst working within the department. Indeed the nurses felt it was their responsibility to socialise other staff, particularly the junior doctors, in communication practices unique to the emergency department. However the nurses expressed frustration

regarding the length of the junior doctors rotation within the ED, as they felt by the time communication practices had improved it was time for the doctors to leave. When these doctors returned in the capacity of another speciality the nurses perceived that they reverted to poor communication practices.

RN: If you don't tell me it doesn't get done. And I think in emergency doctors do communicate a bit though because they learn... If they want something done and they always want it now they have to tell (the nurses).

RN: Generally doctors who work in the department most of them will answer the phones, they get told off if they don't

RN: You fix them while they are here...

RN: So I think emergency doctors do tell a lot of stuff, it's the visitors (Drs on rotation or specialists) mainly because they leave.

RN: By the time they are used to doing that they leave. When they leave emergency they revert to..

RN: A lot of the problem is they are only here for 3 months. It takes all that time to get it working.

Poor communication skills and practices amongst the junior doctors were attributed by the nurses to poor university training in communication and poor practical preparation in relation to understanding the dynamics of the ED. Interestingly, the nurses commented that the universities that provided a more practically based training produced doctors with better communication skills.

RN: That's another thing it depends on the university they've done their training

RN: We find a big difference between universities we can tell straight away the doctors from Newcastle . . .they spend more time on the wards... they are just more practical, more common sense

RN: And have a better understanding of our role, and better skills, they learn how to communicate

Poor communication was also compounded by what the nurses perceived to be poor initial orientation programmes for the junior doctors. It was felt that poor communication processes in part resulted from doctors having little or no understanding of the nurses' roles and ED systems.

RN: Doctors should have a better orientation for sure it's no wonder they've got no idea what they are doing with the orientation they get... it's 20 minutes.

RN: Like this guy the other day had no orientation so how can you expect to know the running of the place when no ones even bothered to tell you?

RN: The doctors get an orientation folder and on that programme the nurses aren't even on it what their role is, the RN coordinator they are not even mentioned which I think is very poor.

Whilst a lot of discussion by the RN's focused on what they perceived to be poor verbal and written communication practices by some doctors, they felt communication and information flows from nurses to doctors was good. The nurses thought it was important for them to keep the doctors up to date about patient's status and actively sought to do so.

RN: I think communication within nursing is very good. I think in medicine the problem is they are just not taught those skills in university

RN: But in reverse I think communication from nursing to doctors I think is really good, if something is wrong you tell them straight away you know if I ever move a patient I tell them straight away so like communication is going the other way it just stops sometimes coming back.

Locating information sources

Physical and spatial barriers were identified by the nurses as impacting on communication processes and affecting the efficiency of their work in the ED. Whilst close proximity to other emergency staff supported information flows, the nurses found it difficult locating, contacting and therefore communicating with staff external to the department. Again the issue of delayed communication led to concern about patient safety.

RN: And that's another problem, we've got so many (specialty) team admitted patients, so that the team that should be looking after them are out of the department so you have to call them or page them, you can't get things done straight away.

RN: With ER doctors it's easy to physically grab someone to find out what's happening to this patient

RN: When someone is really sick and you want them to come and see someone that is a real problem. You know I want someone to come and see this patient right now! The volume goes up and up and it's like what's the rush.

These issues were further compounded when the nurses were unable to locate or recognise non-emergency staff when they were in the department. The nurses indicated that they feel much of their time is spent chasing non-emergency and poorly identified hospital staff. Not only did the nurses raise the problem of locating staff but also in locating patient records to source information.

RN: Its only cause you see the back of them walking out and you're like I wonder who that one is you know that's the only clue you get. They don't introduce themselves.

RN: it's a matter of finding the notes, that's the biggest challenge. They are in the dining room oh! The dining room of course they are and you're like if you can find the notes you're doing well

RN: When its really busy a lot of the doctors take our main nursing notes and take them away and they just get lost...a lot of the time we have to start new sheets which means all of the stuff that has happened to patient in the morning has been lost

RN: You're chasing things whether its phone calls or whether its doctors whether its notes. Its very frustrating by the end of the day you feel you've done nothing but chasing you haven't achieved one thing and you are meant to be looking after these people.

Interruptions

Interruptions were a source of tension amongst the nurses. Whilst acknowledging that the changing nature of the emergency department led to interruptive communication practices, interruptions were described as leading to problems with task scheduling.

RN: I find you tend to get interrupted just by having to prioritise patients. Like if a patient all of a sudden gets sick and straight away your tasks that you always had at the back of your mind that you were going to do all of a sudden have to go on a back burner cause you have to prioritise your care a lot more to handle different situations.

A main and problematic source of interruptions for the nurses were telephone calls. The RN coordinator was singled out as having to spend most of their day answering calls and taking queries. The high frequency of calls received, particularly from patient relatives was further compounded by the perceived reluctance of some staff members (doctors and

clerks) to answer the phone. This was an obvious frustration to all of the nurses as it was felt to be a major cause of time wasting. In addition repeated phone calls from the same source and for the same purpose such as requests to collect a patient from another department was a source of tension.

RN: If you are the coordinator you spend most of the day answering phones.

RN: But even the family calls, when you have 6 patients and each patient has 3 calls, which is not uncommon. That's 18 phone calls you know and you are backwards and forwards and ultimately you're not telling them anything, cause you can't so there's a lot of wasted time.

RN: Doctors don't answer phones, they could be sitting right in front of it and I've said the damn phones not going to bite you know you can pick it up.

RN: And say you've got someone in scan whose ready to come back and you're busy and there's no porter to bring them back they'll ring you again and say well is somebody coming to pick up and you'll say well I'm too busy to come and pick the patient up but I'm also too busy to keep answering the phone, they only have to ring once because we'll write it straight up but they'll ring a couple of times 'well why haven't you picked the patient up'?

The nurses also felt that the emergency ward clerks contributed to the 'telephone traffic' by ringing the central workstation of the department to request information that they could find in an alternative way.

RN: With the ward clerks you might be answering the phone constantly and they are ringing saying 'can two relatives come in?' Now they are only around the corner and if they took the time to walk in and ask someone. Most of the time you are answering the phone when they could just walk in. You find the majority will ring and the phone will just ring and ring and ring and its like if you had just walked in.

Patients interrupting nurses for information, that the nurses perceived should have been provided by the doctors, also frustrated the nurses. The nurses reflected that a reason for this may be the fact that patients felt intimidated by medical staff and had a more comfortable relationship with the nursing staff. Additionally it was suggested that patients might not understand doctors' explanations, preferring more simple explanations from the nursing staff. The nurses also thought that the patients perceived the doctors to be 'too busy' to be interrupted.

RN: You find so many patients say well when can I go home and they don't actually know they are going to be admitted. And I say to the registrars would you like to go and inform your patient that you're actually admitting them. And they apologise and I say well don't apologise to me apologise to the patient

RN: There's a reluctance to ask doctors questions in relation to their management. What's going to happen to me, am I going to live or die go to church on Sunday, but they'll ask the nursing staff, what does that mean?

RN: I think they ask us though cause they'll get the answers they understand.

RN: Or you'll get two doctors at the end of the bed and you're a patient and you've got all these people standing there, I think you get very intimidated, I think patients are just frightened to ask, and as soon as the doctors leave its like nurse can you come over here to just explain.

The nurses also felt they were perceived by others to be problem solvers or “fixers” thus resulting in interruptions from medical staff and other health care workers. They described being interrupted to find equipment and x-rays that had often been used by other members of the ED team. The time spent searching and chasing impinged on their time providing patient care. However there was a general resignation amongst the nurses that the situation was one that was entrenched within hospitals and would not change.

RN: *Well nursing becomes a bit of a fix the problem if the x-ray department can't find the container they'll tell you if the doctor cant find this they'll tell you, its like hang on if I look for everything for you and you and you whose going to look after these patients.*

RN: *Equipment that doctors use they'll come up to you and say where's the patella hammer and well we don't use the patella hammer doctors use them so its where your colleagues leave them*

RN: *X-rays, where's the x-rays for so and so, you feel like you are mothering them, wherever you left them last is probably where they are.*

RN: *But nursing always been about doing everybody else's job.*

RN: *You're picking up the pieces its always been like that you know.*

RN: *We just accept it you know if you don't do it nobody else will.*

The existence of medical hegemony was apparent in the nurses' description of doctors dichotomising tasks by role. This led to the nurses being interrupted frequently by doctors requesting certain tasks to be carried out. The nurses' felt that some of the doctors were too quick to delegate tasks that they themselves could perform. This frustrated them as they described situations when they carried out roles usually performed by the doctors without complaint. It was apparent from the group that they shared the belief, and general resignation, that the presence of medical hierarchies remained a barrier to effective communication.

RN: *They (junior doctors) are here for 3 months and the patients says 'can you sit me up' it should be 'I've been here for three months maybe I should learn to sit this patient up' instead of I'll run and find a nurse to tell her even though she's doing x y and z... its little stuff, why not ask can you show me how to sit the patient up instead of the patient needs' to sit up, they're the doctor they don't do that sort of thing.*

RN: *Its not their role it's the nurses, I'll leave you lying flat and I'll go find a nurse, but they get there, emergency doctors get the hang of it.*

RN: *Its really sad isn't it if we start to say no like we're not going to put cannulas in, is it going to change, you get doctors saying " that's why I'm a doctor and you're a nurse". One day they will realise nurses actually run the show.*

RN: *You'll be really busy and they'll come up to you and say " can that patient get a glass of water?" taps over there off you go I'm just a bit busy trying to put a catheter in.*

Processes and existing systems

The nurses identified the failure of existing systems to facilitate effective communication as a factor impacting on their work within the emergency department. Whilst limited capabilities of existing technologies, such as the ED computerised information system, EDIS, were reported, the main problem was perceived to be under-utilisation of the existing systems by the medical doctors. For example the nurses stated that doctors requesting information that was readily available on EDIS often interrupted them in order to get the information.

RN: *The technology's there but it's limited but you can still find out where people are (on EDIS) but you know they (Drs) are technophobes, they just don't want to be bothered. It's easier to ask the nurse whose standing there 'where's so and so', ... (the nurses) then look and then tell them (the Drs), you know its taking job delegation really to the extreme.*
 RN: *They should use the computer more so they wouldn't have to ask you for the bed or where the patient is.*

Another information source, the white board, requested by the doctors to show patient/staff allocation was again described as being poorly updated by the doctors within the department resulting in the nurses having to spend time locating the appropriate doctor.

RN: *Well they (the doctors) should write it (patient allocation) on the white board, which they are supposedly meant to do...And they fought for years for that*
 RN: *Yeah they wanted that for how long so you know which doctor was for which patient. They finally got it and they don't use it, if they did you'd know who to chase.*

The existing system of paging staff was also thought to be inefficient and a cause of frustration. Nurses felt that time was wasted as a result of staff being paged and the source of the page then not being able to be located or identified, or staff not answering the phone having initiated the page.

RN: *All the time they page someone and they go off they don't tell anyone that they've paged, who they've paged or what its about, so if you do answer the phone and you don't know who it was and it is so and so saying did you page, me no but I'll try and find out who did and you call out did anyone page so and so, deadly silence and you say no ones answering if they want you they will page you again.*
 RN: *A lot of the time too the person who's being paged will phone and say 'Jason whatever' and you are? So people need to say when they are answering their page I'm such and such from some team and I've been paged*
 RN: *Yeah and you'll get the other one they'll sit there waiting for someone to answer their page but they won't pick up the phone when it rings knowing that it's for them so you still have to pick up the phone and then say who paged so and so oh I did you know and the phone was right sitting there and you're like well why didn't you answer it, the damn phone?*

A process that the nurses felt to be ineffective was handover particularly in regard to transferring patients out of the emergency department to other wards. Ironically the issue of 'too much communication arose', with the emergency nurses feeling that a lot of information giving was repetitive and often unnecessarily given to an inappropriate ward staff member.

RN: *There's a lot of time wasting.*
 RN: *Basically what happens when you are transferring someone up (to the wards) you ring and say someone's coming up, they want handover over the telephone, you say you'll give them handover when you get there, oh no, no, no they want to know what's happening with this patient so you tell them handover, get there (the ward) and you give handover to someone else. RN: And I go up to her and said did I give handover to you and it's oh no that's the nurse in charge she didn't need to know all that stuff so you have to start from the beginning again. Too much communication.*

Staffing levels and skill-mix

Finally the nurses suggested that the type of skill mix and number of staff on each shift impacted upon communication processes within the ED. Lack of experienced nursing staff and the presence of agency nurses was reported to result in communication overload for the more senior staff on duty, whilst the presence of an experienced RN coordinator and triage nurse led to smoother and more effective information flows.

RN: If you have a triage and coordinator combination that's quite experienced you find the actual shift runs much better

RN: Sometimes if you are working with an agency nurse (and it's) their first time in the hospital, even the second time, you find you have to tell them what to do... Sometimes when you've got 12 patients between the both of you there's not enough time and you get a headache from telling them what to do and... try to do (your own work)

Improving communication processes

Although given an equal amount of time to discuss possible interventions, the nurses spent proportionally less time discussing these, frequently reverting back to talk about their frustrations and difficulties surrounding communication issues within the ED. However, ideas expressed, whilst not always specific, included educational and technological interventions.

Training, education & orientation

Training and education appeared to be the most favoured intervention suggested by the nurses, reflecting perhaps their frustration with the communication skills of the more junior doctors. Possible interventions suggested were: changes to formal education - placing a greater emphasis on communication and basic clinical skills at an undergraduate level; and raising the awareness of clinicians to the communication difficulties experienced within the ED.

RN: I think if doctors were taught better communication skills in the university situation before they hit the hospitals you know it probably would be a lot better you know and have a higher respect for the nurse. And you know I think certainly things would improve and we certainly wouldn't complain about them as much.

The nurses suggested a revised orientation programme for new doctors arriving in the ED in order to improve communication practices amongst the junior medical staff. It was felt that this intervention would be most effective if a multidisciplinary component was included.

RN: Doctors should have a better orientation it's no wonder they've got no idea what they are doing with the orientation they get.

RN: It wouldn't be bad to have a nurse with the doctor orientation because it actually almost works out better cause then they get your side, I'd say 'this is what I do, so if we do this together...'

Improving teamwork

The nurses' closely linked training, education and orientation to improving teamwork within the ED. They felt that having an understanding of the clinical roles within the department would lead to improved information flows and reciprocation between disciplines. Communication would be further enhanced through having appropriate skill mixes supported by experienced staff providing an effective chain of command.

RN: Ultimately you're working for this patient and if you do get your act together it's going to be much more successful

Improve existing systems

Technological solutions were also suggested to improve some existing systems in the ED. It was felt that improvements to the capabilities of EDIS could be made in order to provide more patient information. In addition the ED ward book containing patient information such as bed allocation and admitting team, could be developed in an electronic form and made accessible to staff in different areas of the department. In all cases the success of these interventions were dependent upon clinicians being aware of the functions and capabilities of ED systems and integrating these functions into their work practice.

RN: The ward admission book should really be on computer and the doctor could just type the name in and it would tell them what bed they are in where they are what ward they've gone to, instead of asking the nurse they could just do that themselves.

Improved systems for locating staff, particularly in reference to paging were discussed, this included having clerks available to answer the telephone, or having the medical staff inform an appropriate person if they are awaiting a telephone call following sending a page. Additionally, it was suggested that those second parties responding to their page should state who they were and from which department they were calling. It was mentioned that the department was planning to install an intercom system to help in locating staff although there were concerns raised about whose responsibility it would be to manage the intercom system.

Senior Doctors Focus Group

Group two consisted of five senior emergency doctors (two female and three male) of which two were emergency department consultants and three were registrars. The senior doctors who participated in the focus group contributed thoughtfully to the discussion and tended to use a solution-focussed approach to the issues raised. At the end of the group they commented that they hoped to create a regular forum in which to discuss ED issues. The main themes generated from the textual analysis of the senior doctors focus groups are shown below in Table 9.

Communication issues	Suggestions for Improving Communication Processes
<i>Written & verbal communication</i>	<i>Improve existing systems</i>
<i>Existing systems - Locating</i>	<i>Match skill sets to tasks</i>
<i>Interruptions</i>	<i>Develop/reinforce communication policies</i>
<i>Staffing levels and skill mix</i>	<i>Improve staffing levels and skill-mix</i>
	<i>Review orientation process</i>

Table 9: Main themes – Senior Doctors focus group

Communication Issues

Written and verbal communication

In general, the senior doctors felt that the communication within the ED was very good.

Dr: *The people here are very good communicators in general, the nurse, the person who's in charge often will tell the registrar or the consultant on the floor what's the status.*
Dr: *Look once in a while there's a personality difference and, someone might tell us what to do or just bypass us in the chain of communication, that's the exception rather than the rule.*
Dr: *I believe what the difference here is that they're much, much better with consultants, when I started I did have a bit of a problem with this and it's a matter of accepting somebody gradually, it happens gradually and you build up a bit of recognition, once they completely know the registrar it's ok.*

However, ED team communication in relation to ward rounds and verbal handovers was seen as a problem.

Dr: *Otherwise you do a ward round and you are flicking through 20 pages of notes...and the verbal handovers are some sort of Chinese whispers, chronic renal failure becomes acute renal failure.*

In particular, the doctors identified that the lack of documentation following the ward rounds, as well as the lack of documentation related to basic patient details impeded the flow of information.

Dr: *The number of times we say something on the ward round needs to be this, and it just gets lost in the ether and its never heard of again.*
Dr: *So if we have seen a patient on the ward round and say this, this and this that should actually go and be written in the notes. I mean every other team you do a ward round with, something is written by the intern.*
Dr: *Or even on a green sheet you could just write, you know how it says diagnosis and VMO, even if you could just write pneumonia, Dr**** even that helps, whereas if its nothing you sort of have to go and get, it sounds like such a small thing but it gives you some indication.*

Another matter that arose in relation to team communication was that there was no regular forum for registrars and consultants to discuss emergency department issues.

Dr: We're using today to talk about all the things that worry us in the department with you guys and like we sometimes do that on a Wednesday, sometimes, but there is no regular forum.

Poor communication with teams from outside the ED was acknowledged by the senior doctors to be an ongoing problem. In particular, when some of the other speciality clinicians came to the ED to assess a patient, their assessment and treatment recommendations were rarely or inadequately documented in the patient medical record. It was mentioned that certain groups were the 'main culprits', and they perceived that this was due to cultural factors that are not easily changed.

*Dr: I think we have a lot of communication problems with the other teams though.
Dr: And I think they have a major problem writing anything in the notes, if they would just write in the notes what they want it would happen but then you've got to ring. You know they come down and see a patient and they go away, they don't write anything in the notes and you have to ring them again and say "is this patient coming in what's the plan?" You might know nothing and its because they can't be bothered putting a pen to paper.
Dr: Even last night we had the surgeons down to see 3 patients and they didn't write a single word in any of the notes.*

Another source of frustration regarding communication with clinical teams from outside the ED stemmed from there being no clear policy and procedure regarding after hours arranged admissions. The absence of clear policy resulted in the doctors communicating at cross-purposes, which caused confusion, wasted time and delayed the delivery of patient care.

*Dr: We had a patient 3 or 4 nights ago, it was an arranged admission by the consultant, the consultant had liaised with the GP, the patient was supposed to go straight into the ward, now is that on?
Dr: We talked to the registrar, but the resident sort of said no, I want you to do all the tests, and all the work up.
Dr: That needs to be sorted out between, what you've just discussed and say policy.
Dr: There were clear policies but they changed because then we got much more busy, much busier and then that even changed... the reason a lot of patients come in through, to us is cause they can't get in through the normal channels, and they have to by pass the admission, they can't get beds on the ward, so they come in to us and they call that a backdoor admission and they happen all the time and that unfortunately impacts on our time, on our time and our staff*

Existing systems

The senior doctors identified difficulties with existing ED systems particularly in regard to locating and contacting staff members and locating where an emergency was occurring within the department.

Dr: If there is an in-house arrest...there is a beep-beep...you go looking where that beep-beep is coming from, you don't even know where it's coming from

Having access to up to date information that enabled the doctors to locate patients was also identified as an issue.

Dr: *If we can actually use EDIS whereby patients' movement is actively tracked.*
Dr: *So that when **** (consultant) comes down to madly try to find his 50 patients we know where they are instead of you know screwing around trying to find them.*

Interruptions

Interruptions in relation to role-related tasks were discussed. Particularly in light of how busy the emergency department is, the doctors felt their time and skills were wasted doing tasks that could perhaps be done by other staff members. Tasks such as answering phones, paging and organising tests were identified.

Dr: *We often feel like we are answering machines.*
Dr: *I think a lot of my time is spent on, you know, ringing up cardiology, echo-cardiogram, booking tests.*
Dr: *We are paid as staff specialists to go and ring up, it's a waste of resources*

When discussing the current role of the ED clerk it was acknowledged that although answering phones was part of the clerk's role, the clerk had so many other tasks to do that they could not provide the sort of support the doctors required.

Dr: *Well that's what the clerk is supposed to do now but they don't. The problem is that person is very busy, they have to do admissions, they have to get old notes, they have to get labels, they have too many things, I want just one person to be telephonist.*

Another role-related task that came under discussion was 'admitting calls'. Admitting calls are telephone calls to the ED from general practitioners (GPs) seeking specialist clinical advice from emergency physicians. Part of the advice often included whether or not the GP's patient should come to the ED for treatment. Senior emergency doctors (registrars or consultants) take these phone calls. Frequent admitting calls resulted in the senior doctors being constantly interrupted and called away from patients to take phone calls. Currently, the phones are at a fixed location.

Dr: *I think the thing I find most disruptive is taking admitting calls all the time, because I mean my primary role here is to see patients and supervising juniors helping them out, but between those two things and getting constantly called away.*
Dr: *On an average shift I can take ten, fifteen admitting calls.*
Dr: *Actually the admitting calls are not a problem, it's just being dragged away from wherever you are.*

Although being 'dragged' away from patients to take admitting calls was seen as disruptive, role-related interruptions in general were seen in a positive light. Interruptions

from nurses or junior doctors were recognised as playing an important part in keeping the registrars up to date with what was happening in the ED.

Dr: When you are the registrar on for the shift, you have a role, and part of that role is knowing what's around you, the more you're interrupted the better it is, if people aren't coming to tell you what's going on, either nursing or especially the junior medical staff and the people who are coming in, if you are not kind of fully up to speed on that you're not doing your job properly.

Staffing levels and skill mix

It was interesting that at the beginning of the focus group discussion, one of the doctors commented that communication was one of the least important issues in the ED. Another participant pointed out that issues such as under-staffing, rapid turn over of the staff and patients, and lack of bed access created far more stress and anxiety than communication problems.

*Dr: Of all the things that are bleeding this place to death, (communication) is the least important issue.
Dr: I'm just saying it's not really a communication problem that comes back to being a staffing problem.*

However, it became apparent throughout the discussion that issues such as under-staffing were inextricably linked with communication difficulties. The doctors indicated that the type of skill mix and number of staff on each shift impacted upon communication flows and the safe delivery of patient care in the ED. For example, if there was only one senior doctor on the floor, this one senior doctor, in addition to many other duties, was constantly being interrupted and called away from patients to take admitting phone calls.

Dr: You've got two patients in resus, you know, going downhill pretty fast and you have no staff specialist around...and you've had to take 4 calls in the last 25, 30 minutes.

Communication difficulties also arose when new interns were sent to the ED with few clinical or English language skills. This was perceived to be due to a less than optimal screening process and orientation of some junior medical staff. When very basic clinical and language skills were lacking, intensive supervision and communication was required, taking up a large amount of the registrars' time in an already time-pressured environment.

*Dr: One of our big problems is communication.. and we get quite a lot of people with no clinical skills and no language skills.
Dr: Yeah so what happens is they see two patients and the registrar has got to be called at least ten times to the patient to talk to them in English, so that becomes a problem, it's even a English language problem rather than clinical skills.
Dr: The other thing is the orientation programme that you have for the ED, you know I think part of it could be done in a general orientation programme rather than sending doctors probably from the AMC who are going to start here and then what happens is senior staff have to supervise so much to the extent that you cant really see the patients, and you've got two or three people who don't even know the basics about emergency.*

The senior doctors acknowledged that it was part of their role to supervise and educate the junior medical staff; however again, if there was only one senior doctor on the floor, a very high level of communication was required to support some of the junior doctors.

Other factors contributing to the difficulties in achieving a balanced mix of skills on each shift were that the ED did not do the rosters for the junior medical staff members; and that the roster for the junior staff was done twelve weeks in advance. This resulted in the ED being unable to tailor the rostering to the meet the needs of both individuals and the department as a whole.

Dr: I mean the problem is they actually do the rota for the whole term, it takes you a week to suss things out, people out.

Dr: Then you can't change it, exactly, and that's the problem we've had, you know how we've had this lack of registrar cover what we wanted to do is put more senior residents, take the interns off nights and put another resident on, so at night we have only residents, and that's what we've asked to do but we can't do it because as you say the roster is out, it's out for 12 or 13 weeks in advance, and that's it and that's why it's not flexible

Improving Communication Processes

Improve existing systems

Technological solutions were suggested to improve communication issues related to locating staff and patients. Implementing an overhead communication system for paging staff within the ED was suggested as a way to more easily locate staff and improve communication within the department.

Dr: I think communication is important and I really think that with a department this size there should be overhead communications.

To aid in locating patients and keep track of their movement within the department, it was suggested that modification could be made to the EDIS so that patients could be more easily located. It was also suggested that having a separate terminal dedicated to showing patient location and bed status could further facilitate this.

Dr: If we can actually use EDIS whereby a patient's movement is actively tracked and in fact then present a table.

Dr: So that say if the nursing staff can actually have an area where they can say that patient has been moved to bed 7 and all they have to do is highlight the patient's name and put bed 7 there, and they will automatically create a table which say in the ER now bed 1-12 is Mr Smith and so on...I think that will have patient confidentiality.

Using whiteboards for holding patient and bed information were not seen as a viable solution due to issues of patient confidentiality and the difficulties associated with updating the whiteboard.

Dr: Because of patient confidentiality we can't actually, it's not a good idea to have a whiteboard in the ED base area.

Dr: Staff are very resistant to having a whiteboard because somebody has to actually constantly make sure it's up to date, because a problem I had elsewhere, a problem with the whiteboard is that nobody has ownership of that whiteboard, in other words they say it's not my job.

Match skill-sets to tasks

The doctors felt their time and skills were wasted doing tasks that could perhaps be done by other staff members. In particular, they felt frustrated with answering phones and waiting around for colleagues to answer their page. In response to this, a suggestion was made to employ a clerk dedicated to answering phones, paging people and booking tests.

Dr: I think there should be someone who is dedicated to answering phones and paging people.

Dr: If I have someone who I can say, I give them a label and I say do a,b,c,d for me and they just do that and when that person is paged I'm called to the phone, and you know if I am not immediately available they can just overhead me and I know there is a phone call for me. So I think that we need especially from 8am to midnight if there is somebody who can just, their responsibility is paging and ringing and ordering tests.

Another role-related task that came under discussion was 'admitting calls'. It was acknowledged that the issues surrounding senior doctors taking admitting calls were difficult to solve. A suggestion was made that maybe a senior nursing staff member, such as the RN coordinator, could screen or take some of the admitting calls. However this was an issue of some debate amongst the senior doctors with some feeling it was important to receive information from such calls first hand. If a senior medical officer was unavailable then an appropriate person such as a senior nurse or a resident could be delegated to take the call.

Dr: I don't know if, I mean if we're saying the admitting calls are purely mostly sort of from a logistics point of view you could make the argument that possibly the nurse coordinating should be actually taking those.

Dr: 50% probably as high as 70% they'd be able to deal with themselves if we've got beds, straight forward, anything more complicated they can come and find you, on an average shift I can take ten, fifteen admitting calls.

Dr: I think in general that the registrar and consultants should take the call, the reason being that you want to know what's coming, what other concerns there may be.

Dr: But you (senior medical officer) don't need to be the one primarily taking the information,

Dr: I think in the event where you have a sick patient then you can delegate that role to a person who you think is appropriate.

The group also discussed improving access to the phone calls, with reference made to systems within other hospitals. At present the phones in the ED are located at fixed

points. The ED is in the process of organising a portable phone, with a dedicated line for GPs to contact the ED, which will be carried by the registrar. Although having a portable phone would reduce the need for other staff (who answer the admitting call) searching for the senior doctor and the senior doctor then having to leave what they are doing, there was debate as to whether carrying a portable phone would be less disruptive.

Dr: *In other hospitals it's the registrars that carry a portable phone.*
Dr: *There's going to be a dedicated line that only GP's will have the number to..., but you will actually carry it on you, and unfortunately it will be the registrars who is going to carry that.*
Dr: *It's even more disruptive. The reason is if you're in the middle of doing a lumbar puncture and that dreadful phone rings and is hung on you, you have no way of escape...and you have to have somebody to go and grab that phone and answer it, whereas if it's on the staff base somebody else can take that message*

Develop and reinforce communication policy

In addressing ED team communication issues, suggested solutions involved creating new or clarifying and reinforcing existing communication policy. To improve the handover of patient information it was suggested that at the completion of seeing a patient the intern or resident should write a brief summary in the medical record.

Dr: *At the end of a shift I think it would be really useful, or just the end of seeing a patient, if you just reinforce that you have to write a two line summary of what's outstanding, what's got to be done, that would just make life so much easier*

Similarly, following the ward round a summary of what has been discussed regarding the patient's progress and treatment should be written in the medical record.

Dr: *Or may be it should be that the intern or resident that is handing the patient over should just go and scribble a few lines in the notes post ward round so if we've seen the patient on the ward round and say right this, this, this, and they should, that actually should go and be written in the notes.*
Dr: *I think the idea of the people going off post ward round just going and writing a ward round note, would be very useful*

Another suggestion to improve communication during the ward round was to ensure that the patient medical record was next to the patient's bed, although this idea was agreed to in principle, the practicalities of achieving it seemed to pose a barrier to its adoption.

Dr: *I'd like to see the notes next to the patient when we do the ward round*
Dr: *Well exactly but we do that and you know how long it takes you*
Dr: *But you know what we are so busy that's never going to happen now because patients move, we get three per cubicle, and honestly we're losing the green charts let alone the notes, but I agree in principle*

Reinforcing the importance of documenting basic details related to the patient was also identified as a way of improving information flows.

Dr: *Or if even on a green sheet you could just write, you know how it says diagnosis and VMO, even if you could just write pneumonia, Dr ****, even that helps.*

Creating regular forums to discuss the impact of and strategies to deal with ED problems could play a role in improving overall communication as well as reducing staff stress and anxiety. The focus group concluded with an agreement that it would be useful to create such a forum.

Dr: I think we should make it a 20-minute session where we talk about things every week; I would like to see that

Difficulties in communication with teams from outside the ED were identified to be due to specialty teams omitting to document relevant information in the patient medical record as well as the lack of consultant attendance at ED ward rounds. To improve the process a suggestion was made that it should be mandatory for hospital consultants to do the morning ED ward round.

*Dr: I'd like to see that the department of health have an issue that all rounds start in the ED.
Dr: In fact, certain hospitals I know of...actually make all the VMOs sign an agreement to do rounds in the morning*

Improve staffing levels and skill-mix

To address issues related to staffing, suggested solutions involved improving rostering for senior and junior staff. Having two registrars on the late shift came up as a way of improving upon some of the communication issues. For example, in the debate in relation to admitting calls, it was suggested that having two registrars on the late shift could make this task more manageable.

*Dr: There's no answer but obviously to have two registrars on the late shift.
Dr: I know that comes back to there should be two registrars on the late.*

To address part of the issue related to the poor mix of skills on some shifts, action was already being taken to remove interns from the night duty roster. It was not possible to do this during the current rotation due to the rosters being done in advance, however, if approval was gained from the relevant parties, from the next term interns would not be rostered on night duty.

Dr: What I asked for next term is no interns to do nights at all, and I think we can do that unless the residents complain, but usually I find the residents like it, prefer it that way, so I said that I thought that would be well received.

Review orientation process

Inadequate orientation and screening of junior medical staff was also identified as an issue. One suggestion to help ensure that the interns being sent to the ED possessed particular competencies, was to have the hospital medical administration screen interns at the initial orientation stage so that extra attention could be provided for those that needed

it. Another suggestion to support new junior medical staff members was to make them super-nummary for a couple of shifts, this was again agreed to in principle but would be made difficult by the overall problem of being short-staffed.

Dr: The other thing is the orientation program that you have for the ED, you know I think part of it could be done in a general orientation program.

Dr: But there is one thing that we want to say here was like in the wards you can take somebody around, and they have the time for lunch etc, excepting on Wednesday when we come out of the emergency, we really don't sit down as you know, so what happens is we're not talking here entirely of clinical skills, we are talking how the hospital can pick up people coming from AMC and going straight into emergency, or they are AMC doctors and they are up in the wards, they can be given 2 or 3 sessions of orientation rather than our staff specialists doing it cause our staff specialists essentially don't have much time.

Junior Doctors Focus Group

Five resident medical officers made up this final group (one male and four female) with experience working within an emergency department ranging from one week to two years (mean 27 weeks). The junior doctors in this focus group were initially reluctant to discuss communication issues but became more animated as the discussion progressed. The focus group appeared to provide the junior doctors with a forum to discuss their own communication needs and learn from the discussion. This was perhaps due to the presence of the senior staff member who assisted in the facilitation of the group, and was therefore able to respond to the groups' questions. The main themes generated from the textual analysis of the junior doctors focus groups are shown below in Table 10.

Communication Issues	Suggestions for Improving Communication Processes
<i>Locating information sources</i>	<i>Improve existing systems</i>
<i>Existing processes and systems</i>	<i>Review orientation programme</i>
<i>Environmental barriers</i>	
<i>Policy and procedures</i>	

Table 10: Main themes - Junior doctor focus group

Communication issues

Locating information sources

In this focus group a recurring and overriding theme that impacted upon effective communication concerned locating information sources, be these staff members or written sources such as patient medical records. Locating staff members, particularly those external to the emergency department, was problematic and often seen as costly in terms of wasting the clinicians' time. Locating staff external to the emergency department was frustrating for several reasons, these included: paged staff members not responding to their pages; and the residents being unable to contact the appropriate team member on call due to inaccurate information received from rosters or the switchboard.

Dr 3: Paging registrars sometimes can be a big problem and a big issue, waste of time and energy and can drive you crazy well either they don't answer your pager and ... when you ask them to see someone it's as if they doing you a favour...I'm working in this hospital and they do the same, we get paid both of us from this hospital and it's my job to call them and it's their job to answer but sometimes some of them can be really rude or some of them are really nice and helpful even if they are not on call.

Dr 1: I mean most of the time they are contactable you can trace them down to say the theatre or to a lab or to their home in fact (laughs) erm but actually more frequently than I thought the switchboard doesn't have an idea as to who is carrying the page or whose responsible a lot of the times.

Dr 1: It's usually through switch that's there's a miscommunication

Locating and contacting appropriate staff members within the emergency department was described as being difficult in some areas of the department, particularly in the central area. This was contrasted by the use of a whiteboard in the subacute area that was seen as a good channel for communicating information such as clinician allocation to the patients. However issues such as patient confidentiality prevented a whiteboard being used in more open areas of the ED.

Dr 1: We've got a board on the [subacute] side which I think is very good, it's just a pity we haven't had the same method of communication on the other side. It's a confidentiality issue I think, it helps a lot because the nursing staff are trying to find out whose looking after who and we're trying to find out whose looking after who as well and what to do and you spend half the time trying to look for someone on the other side, whereas when there's a board you've got your name there, you've got the salient issues already in short hand most of the time (laughs) and you've got half of the communication done, if you want to check something that's easy enough finding the person because its already documented that they are already under somebody's care.

The junior doctors highlighted the difficulty in locating patients and then keeping track of their movement within the department. Again a white board was used in the subacute area, for which it was acknowledged that the information on the whiteboard was not always up to date due to the frequent movement of patients.

Dr 1: I think in [the subacute area] it's difficult with people moving around, they are not where they are written down to be

In the central area, patient location could be found in the ward book (and sometimes a photocopy of the relevant pages of the ward book may be displayed at the central workstation). This was not seen as ideal particularly when patients were frequently moved and doubled up in bed areas.

Dr 1: Well there is no white board on the other side (central area) there's a book which they are located in when they first come in and put in a certain spot and then they subsequently get moved a lot depending on who needs what monitoring... but that's still not the most fool proof system. I think it basically says if they've left the department or not that's about as much as it'll say and er which consultant they are under.

It was generally agreed within the group that in practice locating patients was done on an informal basis, with staff often relying on colleagues overhearing about a change in patient status.

Dr 1: How it works in practice is an informal thing. Someone happens to be sitting at the desk and says have you seen this patient? 'oh yeah I heard they were over' that's the way it works amongst nursing and the medical staff they just overhear something.

The issues of extra beds, keeping track of patients and generally the “exceptional circumstances” within the emergency department highlighted the need for and the importance of effective communication within the department.

SNR Dr 2: Extra beds – it's 1a and 1b and so on but then you see what happens when that sort of problem occurs that's when communication is even more important and when things fall apart its often communication that's the first reason that they fall apart.

Finally within this theme, locating written patient information in a timely manner was of concern to some of the group. It particularly concerned the doctors when they found some patients to be poor historians in regard to their medical histories. The doctors missing out on receiving verbal handover when for instance a patient arrives at the department by ambulance further compounded this.

Dr 1: I suppose another thing I've noticed is when the ambulances comes in and you've say a patient on a trolley and there's always a triage sister meeting them and taking their history etc etc and they've got their relatives nearby who can also give more history and somewhere between there and when we get to see them, by the time we see them we've lost half the handover, half the history we've lost the relative and a lot of the verbal communication and the paper and the triage sheet, I think that's unfortunate and a lot of the time I'm chasing back who triaged who and what happened.. they (the reports) often don't get there until well later... I do find them eventually but that's after I've done half my work up guessing this and guessing that (laughing) Some presentations are a bit vague and you are not sure why they are here they are not very good historians at all I think... I think a lot of that information that ends up on the ambulance sheet, maybe the problem is I can't find the ambulance sheet.

Existing processes & systems

The existing system of paging fellow staff members was felt to be inadequate not only for the previously mentioned difficulty in locating the relevant clinician but subsequently

when the page is answered. The doctors, frustrated at the time spent waiting for a page to be returned, described the existing practice of paging a staff member and then walking away from the telephone to attend to other duties. As a result the doctors depended upon other staff within the department to answer the incoming telephone call related to their paging activities.

Dr 4: *Because they are taking ages to answer the page and we can't spend time waiting by the phone*
Dr 6: *Once again when you're busy and running around you just shout 'if someone rings I'm over there'*
Dr 5: *Tell that person who's next to the phone that you...*
SNR Dr 2: *And you hope that person stays next to the phone*

Often though the phone calls were missed resulting in the junior doctors having to re-page, a pattern described by them as happening "all the time". Further compounding the issue of missed pages was the high amount of telephone traffic going through the same phones used for paging. Additionally the high volume of telephone traffic was described as being handled on an ad hoc basis.

Dr 1: *I mean another problem is you've got a large volume of calls coming out and going through the same phone that you page with and I think a lot of time you are missing calls because someone call back but someone's using the phone etc.*
SNR Dr 2: *The cleaners, the relatives anybody (laughing) there are signs everywhere say if you are near a phone ringing pick it up.*

When a doctor answered the phone they often regretted it, explaining that it was time consuming either trying to find a relevant person to take the call or searching for information requested by the caller, activities described as clerical in nature.

Dr 1: *That's another issue I often pick up the phone and I regret it (Laughter)*
Dr 1: *Because the next step is it's about Mrs Jones who was in 2 days ago and I don't know any Mrs Jones and I don't know if she is actually here and it may be the wrong department*
Dr 6: *Cause it's so time consuming running around*
SNR Dr2: *It would be fascinating to see how much of the residents time is spent looking after the patients and how much of their time, I'm not sure if it has been done, is spent doing clerical work*

Whilst telephone calls were seen as being disruptive, it was acknowledged by the doctors that it was also an important channel for providing medical support to the general public who frequently telephoned the department, particularly at night, for advice. There were few alternatives for nighttime medical advice and they were in agreement that it was a provision that should be allowed to continue.

Dr 1: *It's just like a general information hotline*
SNR Dr 2: *I don't think that's a major problem us being available it's very important that some people can access some medical facility even if its over the phone cause sometimes its very helpful, they may say my husbands collapsed what should I do ... and you can say I'll call an ambulance for you and that's very helpful, I don't think that should change I don't think we can stop people ringing.*
Dr 1: *...but I suppose you are still getting the calls at night for general medical opinions which is fair enough I think there aren't many phone lines or numbers that you can call to get advice at the middle of the night*

Environmental barriers

Due to lack of space within the ED and increasing numbers of attending patients, the junior doctors remarked that they often had to examine patients in the corridors. They saw this as a barrier to effective patient-doctor communication in that there was an apparent reluctance by both parties to discuss sensitive or confidential information in such an open environment.

Dr 3: *Sometimes we are examining patients on the corridors*
SNR Dr 2: *Sometimes! Always and on chairs*
Dr 3: *It's hard to ask for signs or symptoms (when in the corridor) when they are (the patient) feeling shy.*
Dr 3: *So you are missing lots of signs.*
Dr 4: *Yeah it's not the ideal place to examine a patient.*

The group also raised the issue of staff external to the department arriving to see patients and being unable to find patients due to unfamiliarity with to the layout of the department. Whilst some attempt had been made by the department to make relevant information available by placing written information on a notice board, it remained a limited intervention.

Dr 1: *I've noticed that they've now got a photo copy of the (ward) book not as a white board but just as a I think it's for the ward teams coming down to the ED to see their patient ...to give them a brief idea as to which corner of the emergency department but that's still not the most fool proof system.*
SNR Dr 2: *They come down looking lost and overwhelmed they can't believe the mess*

Policy and procedures

The focus group provided a forum for discussion amongst the junior doctors regarding existing policies and procedures. For example some of the doctors highlighted their own knowledge gaps in regard to communicating information to others such as the general public, patient relatives and fellow colleagues.

Dr 1: *I think we don't have enough information as to how much the medical officer can give out information, I don't think anywhere I've been told that I can only tell certain things to say the wife or ...*
SNR Dr 2: *You can't tell anything how do you know it's not their wife, it's their girlfriend.*
Dr 1: *But I mean if you are not supposed to give out medical advice but the calls are being put through what are you supposed to do, I mean if forever you say I can't say, I don't know who you are, I can't tell you if you are worried at all, why is the call coming through in the first place?*

There was also low awareness of existing paper sources of information such as medication protocols. Interestingly, if the junior doctors were unable to find existing written information in regard to, for example a drug therapy, then they were actively encouraged to go to the nurses for assistance.

Dr 4: *I just want to ask one more question...do we have any written protocols here in the department?*
SNR Dr 2: *We have volumes of written protocols I'll show them to you.... for drug protocols do you mean?*
SNR Dr 2: *Yes we do, yes but if ever you want to give anything, say you want to grab an infusion of something you say to the nursing staff put up an infusion of say something like ... the nursing staff know exactly where the protocol is, they will give it via that protocol*

The group felt that senior staff assumed that new staff were aware of ED policy, procedures and etiquettes in regard to communication, rather than making them explicit during the orientation period or commencement of term.

Dr 6: On the topic of new staff who haven't worked in the department before, there are certain ways of doing things that kind of you learn as you go along that's the way it should be done, but it's often not said at the beginning, for example if you hand over a patient to the night person and you know they are probably going to go home in the morning and need to ensure there a letter ready for their discharge you know basic things like that, sometimes people don't realise that that's the way it's done or often those are the things that get missed.

SNR Dr 2: There's a lot of things that are assumed that you do, that senior staff don't write down, we do assume that when you give hand over that you give the full history but they often don't happen so I agree I don't know whether its actually protocolised or just assumed in terms of etiquette.

Improving communication processes

Create new or improve existing systems

The junior doctors discussed several ideas to improve the system of locating patients and staff but felt there were barriers to this. Barriers included: confidentiality issues surrounding the use of white boards; and the limited capacity of paper forms. A computer equivalent of the whiteboard or ward book was discussed which would maintain patient confidentiality. There appeared to be an existing system already in place for audit purposes that could act as a conduit for this.

Dr 4: What about having it (the white board) on the computer screen?

Dr 2: A white board equivalent?.. We sort of do there is a screen for whose in the department

SNR Dr 2: We have Coding (for stats) we need to know who's in the department how many people are waiting how many are admitted but not where they are.

The group also suggested new communication processes to improve the flow of telephone traffic within the department and to support the process of paging clinician's external to the emergency department. Telecommunication systems such as a voice intercom or individual mobile phones were suggested so that clinicians could be located when someone called in response to their page. The junior doctors also suggested a paper solution that would support the paging process. In order to identify the clinician who had initiated a page, a message pad could be placed by each telephone in order to record who was paging who.

SNR Dr 2: What could you do to avoid shouting out?

Dr 6: Individual mobile phones (laughing) a dream

SNR Dr 2: What about a telecommunications system?

Dr 1: Er like a voice intercom, it would have to be loud yeah that may work

Dr 1: I mean we'd get more background noise on top of and all the people I mean it wouldn't drive me crazy it would just be a lot noisier that's all.

Dr 3: Can we leave a message by the phone?

Dr 1: Some wards have a little note pad by the phones to say who paged who and they call back and you cross them out.

Improving the capabilities of the EDIS generated much discussion with ideas based on patient locations being updated on a regular basis on the system. The main issues were: who would be responsible for updating the information and would this be logistically possible due to frequent patient moves. The clerk was identified as key to this role.

Dr 1: I'm just wondering with that EDIS system, there is a patient ID basically and triage code and presenting complaint etc and then they've got a little box where you can find where they are located whether that's in fact accessible to us so we can update more frequently.
SNR Dr 2: Yes on the computer your saying yes absolutely but that's also logistically really difficult because it would almost take someone full time to keep track of where they (the patients) are because they do move such a lot because they move more than usual cause we're tight for space so yes I can see what you are saying but I don't know whether that's easy.
Dr 1: I suppose that would be another clerical computer work to do.
SNR Dr 2: But what you said was really important the role of the clerical staff which you could pursue
Dr 1: That means we would have to get the communication across to them that this patient have moved gone home or you know has been moved 5 or 6 time during their two hour stay, it's a matter of then getting the communication through as well as getting the information through for everyone else to see.

In regard to the junior doctors taking what they perceived to be inappropriate phone calls or the phones being blocked by other callers when waiting for a page to be returned, it was suggested that there be dedicated phone lines for both paging and patient enquiries. Having the patient enquiry line next to the ward clerks so that they would be able to check the computer systems for the patient's presence in the department and to find out where they were located could further support this. Phone calls could then be directed appropriately to specific areas or staff. The junior doctors however were aware that these interventions would be a challenge in view of the large department and numerous existing telephones.

Dr 1: If we could allocate a phone for say ward enquiries a couple for paging, a couple of phones for patient enquiries to come through on like one in each corner or something?
Dr 6: If they are talking about allocating a phone that would be a good idea to have it next to the ward clerk so patient enquiries ... get put through cause they sit next to the computer and they follow whose...
Dr 1: And they know if the patients here or not.

The group suggested a paper list with up-to-date speciality teams and page numbers to be made available on a central notice board as an intervention to reduce time spent locating clinicians external to the ED. This would need to be updated daily to identify correctly those on-call and reduce the need to repeatedly contact the switchboard. The emphasis was on the need for obtaining the most up-to-date information and there was some debate amongst the participants about whose responsibility this should be, with final consensus being the ED clerks.

SNR Dr 2: *We have a form up on the notice board that has who the consultant is for that day, all that they need to do is add the page number for the registrars and then we wouldn't even have to speak to switch it would make our job so much easier.*

Review orientation programme

Finally when discussing possible interventions to support communication processes within the emergency department the issue of initial orientation within in the department for junior medical staff was raised. As a result of knowledge gaps identified by the junior doctors about communication protocols and policies within the department, as well as assumptions made by the senior staff regarding their existing knowledge, it was suggested that attention be turned to the existing written orientation pack. The general agreement amongst the junior doctors was that it should be updated to include for example, lists of expectations regarding communications processes within the department, inclusive of etiquettes and common courtesies.

Dr 6: *...sometimes people don't realise that that's the way its done or often those are the things that get missed I don't know if there is any set list of things that we can get in the beginning?*
 SNR Dr 2: *Well there already is an orientation pack are you saying it should be put in that in that sort of written format?* V6: *yes common courtesies.*

Summary

The focus group sessions highlighted several factors that affected communication within the emergency department that impacted upon the clinicians work. There were both similarities and differences in perceptions of these issues amongst the three groups (Table 11).

RN Coordinators	Senior doctors	Junior doctors
Written & verbal communication	Written & verbal communication	
Interruptions	Interruptions	
Staffing levels and skill mix	Staffing levels and skill mix	
Existing processes & systems	Existing systems - Location information	Existing processes & systems
Locating information sources		Locating information sources
		Policy and protocol
		Environmental barriers

Table 11: Summary of communication issues raised in each focus group.

A wide range of interventions were discussed, these encompassed organisational, educational and technological solutions. The approach by the groups in addressing the question of how to improve communication processes within the ED was varied with the doctors presenting specific solutions to problems raised and the nurses suggesting more generic approaches to improving communication. Although there were varying perspectives and approaches on how to improve communication processes, there was a commonality amongst the interventions suggested. Below is a brief summary of suggested interventions:

- Training, education and development
- Review orientation programme
- Match skill sets to tasks
- Improve teamwork
- Improve existing systems
 - EDIS - increase capabilities
 - Ward book – electronic form
 - Whiteboard – electronic form
 - Telephone & paging systems
 - availability of mobile phones
 - review role of clerk to manage incoming phone calls
 - phone lines dedicated to specific tasks
 - daily updates of on call page numbers
 - message books by phones for paging information
- Create new systems
 - overhead intercom system
- Develop & reinforce policy surrounding communication within the ED and hospital wide

SECTION 4

Discussion

This section will draw upon the results from the observations and focus groups and discuss (1) communication patterns and issues, in particular those relating to clinical roles and interruptions; and (2) interventions suggested for improving clinical communication. As the communication issues need to be understood within the organizational and cultural context in which they occurred, the underlying factors affecting communication flows will also be discussed.

Throughout this section six specific issues that were identified as impacting on communication flows will be explored, these are:

1. Telephone calls
2. Paging
3. Written & verbal communication
4. Locating staff
5. Access to patient information
6. Teamwork

Communication patterns & issues

Interruptions were a recurring theme identified by focus group participants and were also highlighted in the observational data. The interruptive nature of clinical communication has been described in previous studies [3-7].

The interruptive bias shown in the observational data is unsurprising given the preference of the clinicians for synchronous communication channels. Clearly, synchronous communication requires the attention of both parties simultaneously, therefore, when a synchronous communication channel is used, the receiving party will be interrupted from the task at hand. Clinicians within the ED require a high level of communication that is timely and accurate, as well as the ability to respond quickly and appropriately to whatever circumstances present. In an unpredictable and complex environment such as the ED, synchronous channels of communication are needed to both give and receive continually changing information, since synchronous channels allow the involved parties to obtain immediate feedback.

The more senior staff (RN coordinators and registrars) experienced higher rates of interruptions than the RNs with an APL and the junior doctors. These results might in part be explained by the greater involvement of senior staff in coordinating ED staff and activities [20]. Interestingly, even though the senior staff experienced higher rates of interruptions, the average time spent within each event classified as an interruption was longer for the junior doctors and the RNs with an APL. This possibly reflects the nature of interruptions and the second party involved in each interruption. For example, the RNs

with an APL experienced the greatest amount of interruptions from patients and patient relatives. To adequately meet the information needs of patients, clinicians may spend more time providing explanations and ensuring understanding, as the average patient will be unfamiliar with language and processes related to the clinical domain. Additionally the time spent as a member of the ED team may have an effect on the length of each interruptive communication event. For example, the junior doctors on three monthly rotations may require additional contextual information during an interaction with another staff member thus prolonging the time of each individual event. The shorter and more frequent nature of senior staff interruptions may conversely reflect more domain expertise and experience within the ED.

The qualitative analysis of the observational data examined the nature of interruptions. The themes that emerged from this analysis demonstrated that whilst some interruptions could perhaps be minimised through being communicated via asynchronous channels, other interruptions were a necessary part of effective team functioning. For example interruptions received from medical students requesting clinical supervision for a medical intervention were necessary for providing safely managed patient care. Conversely, certain information needs regarding ED policy and procedures that were being met through synchronous channels (that is by interrupting a colleague to obtain the information) could perhaps be more appropriately met using asynchronous channels such as referring to the written protocol specifying organisational policy.

Choice of communication channel will depend on the purpose and urgency of the message being communicated [39] [20]. In general, patient and ward management issues were communicated via synchronous channels, reflecting the need for immediate feedback regarding changes in patient status or changes within the department. In the focus groups, the senior doctors considered that interruptions related to changes in a patient's condition or changes in the status of the ED were positive and played an important part in keeping them up-to-date with what was happening in the ED. The observational data also indicated that staff gave and received frequent updates to other members of the ED team. Updating team members is recognized as an important part of the communication feedback loop [22] and is critical to proficient team functioning and for maintaining safe levels of patient care.

High reliance on face-to-face communication, particularly in regards to patient and ward management certainly reflects the complex nature of work within the ED but it may also indicate a lack of confidence in paper or computerised sources of information. This lack of confidence could be attributed to written or computerised information not being regularly updated (difficult in an ever- changing and dynamic environment), being unavailable or being costly in terms of time for the clinicians to locate. Evidence from the focus groups suggested that the time spent trying to access information was a barrier to using computerised sources of information.

Issues 1 & 2: Telephone Calls & Paging

Although acknowledged as an important channel of communication, telephone calls were seen as disruptive and a source of frustration by all staff involved in the study. Phone calls were answered in an ad hoc fashion, often by whichever staff member was nearby. This resulted in clinical staff answering and then having to deal with phone calls that were not necessarily of a clinical nature or relevant to their role.

The most senior staff observed in the study (RN coordinator and registrars) carried the burden of the telephone traffic, with the registrars spending the greatest amount of time communicating via the telephone. Again these two roles are responsible for coordinating staff and patients, which may go some way to explaining this, and due to their experience the senior staff members possess the knowledge to respond to clinical and ward management related issues. In addition, due to ED policy, admitting calls can only be taken by a registrar or consultant.

The focus group data emphasized that telephone calls were a source of frequent and unwanted interruptions. Interestingly the nurses felt that the doctors implicitly delegated the task of taking calls to them (by ignoring the phone ringing) whilst the doctors explicitly suggested that answering the phone was a waste of their skills and time and should be done by other staff members, such as a clerk. Some of the senior doctors suggested that perhaps a way of reducing their communication load related to admitting calls was to have senior nurses screen the calls. However, the senior nurses' phone call and overall communication load was also high, thus delegating admitting calls to the senior nurses will just 'shift the load' resulting in a further increase in the nurses' communication load. It is important to be aware of this flow-on effect of communication load, especially when assessing interventions to improve communication, as focusing on just one role in the team may cause imbalances elsewhere. There is no easy answer to this issue and discussion within the ED team would be required to come to a workable solution.

Inefficient paging practices were also identified as contributing to poor communication flows. For example, the junior doctors were unaware that their action of paging a staff member at a certain location and then leaving that location to attend to other duties before the page was returned resulted in disrupting the work practices of other team members. That is, when the page was responded to via the telephone, the person who answered the phone in the ED, not knowing who had sent the page, would go searching to try and find the relevant staff member, often times unsuccessfully. This communication behaviour impacted on the time of a number of staff members: a) the person paging; b) the person being paged; and c) the person who answered the phone and went searching. This demonstrates how the limited awareness of one's own communication practices impacts on other members of the team leading to unnecessary interruptive work practices.

Issue 3: Written & Verbal Communication

Poor written and verbal communication between and within teams was identified in the focus groups as an impediment to effective communication. More specifically, issues related to documentation, patient handover, English skills and the communication of changes related to ED policy and protocol.

Written communication, particularly in the patient medical record, plays an important role in documenting patient care from different disciplines as well as providing a legal record of events. Focus group participants indicated that incomplete records, conflicting information and illegible handwriting hinder the communication process, and may result in omissions or the unnecessary delay of patient care. In particular, the medical staff identified poor documentation practices following ward rounds.

The observational data showed that, although asynchronous channels made up a smaller proportion of channels used by clinicians, the patient medical record was the predominant asynchronous communication channel, particularly for the RNs with an APL and the junior doctors. The medical record is an important channel due to the role it plays in ‘formally’ passing on patient information to subsequent shifts. If important communication interactions are left undocumented, for example, if during handover a verbal agreement regarding the treatment of a patient is not documented, this may give rise to staff on the next shifts being unaware of the course of action, in turn resulting in patient treatment being omitted. Inadequate communication when handing over patient care has previously been linked with concerns regarding the safety and quality of care [3].

The issue of poor verbal communication due to lack of communication skills was raised in the focus groups and has been referred to in previous studies [20, 40] [41]. Particularly relating to junior clinicians, attention has been directed to curricular reform in medical training and education as it is suggested that poor communication skills are a symptom of the training received [41]. Deficiencies in English skills were also identified in the focus groups as impacting on the effectiveness of communication between team members and increasing the workload of some members of the team. For example, when basic language skills were lacking, intensive supervision and communication was required, taking up a large amount of the registrars’ time in an already time-pressured environment.

Issues related to the effective communication of policy and protocol changes in the ED were also raised in the focus groups. Large numbers of staff on rotating rosters pose a challenge when disseminating information, whilst there were mechanisms in place, such as a staff communication book, some nursing staff members felt that they were not adequately informed of policy changes.

Issues 4 & 5: Locating Staff & Access to Patient Information

Difficulty in locating staff members and accessing patient related information (for example information contained in EDIS, patient medical records or the ED ward book) resulted in interruptions and affected information flows. This was often the end result of the ineffective use of existing systems such as the paging system, the telephone, white board and EDIS. This particularly affected the RNs as they were often interrupted by other members of the team, being perceived as either knowing or being able to find out required information. Under utilization of EDIS by some clinical team members may be due to: the information system being user-unfriendly and limited in capability; ‘computer anxiety’; or lack of training [42]. Alternatively, and as suggested in the RN focus group, it may be perceived by some clinicians to be quicker to ask a colleague for information rather than using available asynchronous sources.

The effective communication of patient information was shown in the study to be hindered by ED clinicians being unable to identify or being unaware that staff from outside the department had arrived in the ED to provide a consult for a patient. As a result, outside teams would attend to a patient and then leave without communicating information related to patient treatment or assessment. Alternatively a message would be left with a ‘random’ intermediary who then had to find the appropriate staff member to communicate this information. These communication behaviours resulted in impeded information flows and often wasted ED staff members’ time as they had to spend time ‘chasing’ information from teams outside the ED. Difficulties in locating staff members to obtain information have been described in previous studies [3] [4].

Issue 6: Teamwork

Ineffective teamwork practices underscored many of the communication issues previously discussed. Limited awareness of how one’s own communication practices impacted upon other members of the team was highlighted in the focus groups and was identified as a factor that led to inefficient work practices. Limited awareness may result in clinicians pursuing communication interactions that maximize their personal efficiency at the expense of team and overall systematic efficiency [4] [3].

Evidence from the focus groups suggested that some ED staff seemed to be resigned to certain poor communication practices. This acceptance of less than ideal circumstances has been termed “normalization of deviance” [22] and may be due to traditional hierarchies and ingrained practices still prevailing in the hospital workplace [23] [43] [44]. Difficulties in addressing and shifting these ingrained attitudes and behaviours can be a barrier to accomplishing effective change.

In the senior doctor and nursing focus groups several issues were discussed that were similar in nature and this may reflect the time spent together working on the same team. On the other hand, the junior doctors, who move around the hospital on frequent, short rotations and are therefore only in the ED for a short time, raised issues that had less overlap with the other two groups. They appeared to have less understanding of both communication practices as well as other ward dynamics. In the focus group discussion,

the junior doctors themselves highlighted their lack of understanding of ward processes and felt frustrated with some senior staff assuming they knew accepted ED practice rather than providing them with explicit instruction.

Both specialty teams from outside the ED and junior doctors on short rotations may not have the same level of ownership and commitment to the ED as more permanent members of the ED team [20]. Consequently, they will also be less likely to have an understanding of how their communication practices impact upon the department [20, 45]. If specialty teams view themselves as separate from the ED rather than partners, there is increased “risk of miscommunication, frustration and error” [45].

As reconfirmed in the observational data, face-to-face communication is the channel most commonly used in the ED setting. By its nature it will result in interruptions, which may often be very appropriate. Having an awareness of the overall affect of synchronous communication on team functioning may help individuals to decide which team member to address and which channel of communication is most appropriate to use [4].

Effective team communication also relies on having adequate staffing numbers and skill mix to meet the complex demands of the ED [45]. In the focus groups, the senior doctors indicated that lack of senior medical staff on some shifts impacted upon communication flows and the safe delivery of patient care in the ED.

Interventions

Communication issues and suggestions for their improvement are summarised in Tables A-F. Additional factors that require consideration for some of the proposed interventions and potential advantages will also be outlined.

Issue 1	Proposed Intervention
Telephone calls	<p>Dedicated communication clerk responsible for</p> <ul style="list-style-type: none">- answering all incoming calls to the clinical area and directing to appropriate staff member when required- paging & outgoing calls <p>Strategic placement of phones</p> <ul style="list-style-type: none">- dedicated line(s) for patient enquiries- dedicated line(s) for sending and receiving pages <p>Portable phone for registrar</p> <p>Delegate admitting calls to appropriate staff when required</p>

Table A

Factors to consider

The clinicians suggested that employing a dedicated communications clerk would aid in streamlining telephone traffic in the ED. The role of communication clerk has been suggested previously and was piloted in the Emergency Department Workpractice Review Project [46]. The pilot results demonstrated that a communications clerk saved 34 hours of clinician time per week in paging and attending to phone calls. By freeing up clinician time for patient care and directing these tasks to a communications clerk, in monetary terms, it was calculated that it saved the pilot ED site around \$930 per week.

To assist in the role of communication clerk adequate training, equipment and a well-designed workspace needs to be considered [46]. For example, an overhead communications system was used in conjunction with this role to aid the clerk in contacting staff members and directing phone call traffic.

With the issue of limited resources in mind, it was suggested in the focus groups that even having a communications clerk available from Monday to Friday 16 hours a day would make a significant difference.

The strategic placement of phones with dedicated lines for patient enquiries and paging would require a number of issues to be addressed. These include the location and number of dedicated phones as well as, in the absence of a communications clerk, who would be responsible for answering both the patient enquiries and the return page calls.

The ED study site is in the process of supplying a portable phone to be carried by a registrar to answer admitting calls. This will be a dedicated line for general practitioners

(GP) to improve the GPs access to senior medical staff in the ED. Although having a portable phone would reduce the need for other staff (who answer the admitting call) searching for the senior doctor and the senior doctor then having to leave what they are doing, there was debate as to whether carrying a portable phone would be less disruptive. Another proposed intervention related to admitting calls, which generated some debate in the focus groups, would be to delegate admitting calls to other appropriate senior clinical staff, for example the RN coordinator, when the registrar was unavailable to take the call. Clear policy would need to be developed surrounding this issue with consultation amongst those concerned, as the communication burden for other senior staff members is also high.

Potential advantages

Phone call traffic would be directed to appropriate clinical staff members resulting in a reduction in ad hoc and inappropriate phone call traffic for clinical staff.

Matching role related skill-sets to tasks could result in a reduction of non-clinical tasks undertaken by clinical staff thereby increasing the time spent delivering patient care and increasing staff satisfaction.

Issue 2	Proposed Intervention
Paging	<p>Dedicated communications clerk (see Table A)</p> <p>Notepad by phone to indicate a) the name of the person paging and where they can be located; and b) the name of person being paged</p> <p>Up-to-date page number directory eg retrieved each shift - directly accessed and printed from database containing directory or list retrieved from switchboard.</p> <p>Formalise paging process and disseminate protocol to staff members</p> <ul style="list-style-type: none"> - make protocols explicit when orientating new staff members

Table B

Factors to consider

A cheap and non-technical solution that may improve inefficient paging practices would be to place a notepad by the telephones. This would provide a quick and simple way to indicate who had sent a page, at what time, and where this person could be found, as well as the name of the person being paged. It would obviously rely on the members of the team to fill in these details when sending a page. Formalising the paging process and communicating this protocol to current and new staff members may go some way to help ensure this.

Logistics surrounding the provision of an up-to-date page number directory include:

- where is the up-to-date information retrieved from (eg switch, medical admin)
- who is responsible for retrieving the up-to-date information
- how will information be accessed and disseminated

- how often will directory information be updated

In addition, an up-to-date page number directory will be dependent on systems outside the ED and therefore require the cooperation of other departments.

Potential advantages

Decrease interruptions for all clinical roles

Decrease time spent trying to find up to-date page numbers, particularly for junior medical staff

Decrease time spent trying to locate staff member who sent page

Decrease wasted time of paged staff member

Decrease time having to re-page

Issue 3	Proposed Intervention
Written & verbal communication	Formalise documentation process eg documentation following ward round and end of shift, documentation of basic patient information. Disseminate policy & protocol to staff members.
	Teaching communication skills, English proficiency <ul style="list-style-type: none"> - under-graduate - ward/medical administration

Table C

Factors to consider

Poor written and verbal communication between and within teams was identified in the focus groups as an impediment to effective communication. For example, poor documentation following ward rounds and at the end of a shift was highlighted as an issue in the focus groups. There is a need for clear policy regarding documentation processes and making explicit the roles and responsibility within the team, for example an intern designated to act as scribe during ward rounds.

The issue of poor verbal communication due to lack of communication skills was raised in the focus groups. Teaching general communication skills has been identified as a way of enhancing collaborative practice [20] and improving clinician-patient communication [47]. In addition, lack of English language skills was also seen as a major impediment to communicating effectively. Ensuring new staff members are competent in the English language needs to be addressed. This was a particular issue in relation to the junior doctors who are only in the department for a short time. It was suggested in the focus groups that it may be more appropriate for screening and education related to language and communication skills to occur at the hospital medical administration level, as at present the conditions and staffing arrangements in the ED are not conducive to performing those tasks.

Potential advantages

Improving written communication

Decrease need for face-to-face contact for certain communication tasks thus decreasing interruptions

Decrease time spent chasing information that should have been documented

Improve accuracy of accounts of patient care being passed on from shift to shift

Improving verbal communication

Improving general communication skills and removing language barriers between staff will improve team communication and remove some burden from particular roles, for example the registrars who supervise junior medical staff.

Issue 4	Proposed Intervention
Locating staff	Overhead communication system Hospital staff identification Active Badges (location sensing devices)

Table D

Factors to consider

Difficulty in locating staff within the ED was an issue raised in the focus groups, one that created unnecessary interruptions and added to the clinicians communication load. As the ED is a large area, and the geographical distribution of staff quite considerable, the study ED is considering the implementation of an overhead communication system to improve communication flows and assist in locating staff members. A disadvantage of an overhead communications system is that it may contribute undesirable additional noise to an already busy and loud environment [22], this disadvantage, however, may be outweighed by the benefits of the system. As mentioned previously, the ED Work Practice Review Project [46] used an overhead communication system in conjunction with a dedicated communications clerk to aid in contacting staff members and directing phone call traffic.

Poor identification of and difficulties in locating staff from outside the ED resulted in obstructed communication flows, not allowing for timely communication interactions to occur between relevant staff members. Ensuring that all staff, both emergency and hospital wide wear clear identification and identify themselves to appropriate staff members on arrival to the ED may go some way to address this.

An Active Badge system would provide the means of locating clinicians within the hospital by determining the location of their active badge [48]. A review of the literature suggests that 'social unacceptability' remains the greatest barrier to effective implementation of this application [48] [49].

Potential advantages

An overhead communication system would help clinicians locate one another thus reducing the rate of inappropriate interruptions. Additionally, it would reduce the current

practice of ‘calling out’ and save time by improving clinician response to urgent situations.

Ensuring that all staff members are easily identifiable could contribute to improving inter-departmental communication and reduce the need for staff to ‘chase’ information resulting in a:

- Reduction of traffic through the paging and telephone systems, thereby reducing overall interruptions.
- Reduction of staff frustration
- Improvement in the timeliness of the delivery of patient care

Issue 5	Proposed Intervention
Access to patient information	Modify EDIS Electronic ward book Patient locaters Medical record locaters

Table E

Factors to consider

Difficulties in accessing patient information was shown in this study to result in interruptive work practices, as clinicians interrupted one another in order to locate patients, patient records or request up to date information. As a way of improving access to and integrating patient information it is acknowledged that an electronic health record (EHR) could potentially provide improvements. Whilst this is on the national agenda, the timeframe to implementation is uncertain due to factors such as cost, culture, design, implementation and confidentiality issues.

In the meantime there is potential, however, to better utilise existing ED information systems. An increased awareness of the capabilities of EDIS may assist in integrating its use into clinical practice [50]. In addition, modifications could be made to meet clinician needs, for example, dedicated terminals displaying up-to-date information such as patient location. An alternative asynchronous communication channel is a virtual whiteboard using a computer display that could be co-located within the department. Issues of patient confidentiality would need to be factored into any design. It is difficult to assess whether these interventions would be logistically feasible due to frequent patient movements and changes, and would be dependent on a dedicated person inputting and updating the data frequently. Patient locaters, supported by an automated tracking system [51] could be used to address the issue of frequent patient movements and help in locating those patients situated in undesignated areas (such as the corridor).

The clinicians suggested that the existing ED ward book could be developed into an electronic format with the staff able to access its information (organisational in nature such as discharge plans, admission and transfers) at designated computer terminals throughout the ED. Patient information needs to be timely and accurate and the clinicians need to be confident in the information they are receiving especially in regard to changes

in patient status. Any information entered in to the electronic ward book would again need to be appropriate for the asynchronous communications media [52] and dependent upon a designated staff member (at present the RN coordinator updates the ward book) updating the information in a prompt and timely way.

Potential advantages

Improved access to patient information through asynchronous channels resulting in:

- Reduction of unnecessary interruptions (particularly for the RN Coordinator)
- Reduction of wasted time searching for information

Issue 6	Proposed Intervention
Teamwork	<p>Education</p> <ul style="list-style-type: none"> - under-graduate - inservice <p>Improve orientation process for junior doctors</p> <ul style="list-style-type: none"> - ED communication protocol & etiquettes - multi-disciplinary component <p>Hospital-wide orientation</p> <p>Ensure adequate skill-mix & staff numbers</p>

Table F

Factors to consider

Effective teamwork was identified in the focus groups as an important factor in ensuring good communication practices. Training and education regarding effective teamwork has been proposed for undergraduate medical and nursing students and qualified clinicians [53] [54]. Doctors and nurses are the predominate groups in health care and spend most of their time working together [55]. Raising awareness of how one's communication practices impact upon other team members and improving understanding of other team members' roles could go some way to improving teamwork [23, 24]. It has been suggested that this could be addressed though providing shared clinical modules for medical and nursing students at an undergraduate level [56] [40] [20]. Patel and colleagues [20] urge caution in making wide scale curricular changes to encompass group processes and teamwork at the expense of 'technical competence' suggesting that while effective communication skills are important within a team redirecting limited resources should be evaluated carefully. On a practical note, undergraduate curricular changes will be dependent on systems outside the ED so change in this area, if deemed desirable, would be reliant on institutions such as universities and certain medical and nursing bodies taking on such initiatives.

A comprehensive orientation programme, with a multidisciplinary approach, for new staff, particularly the junior doctors would support effective teamwork, making explicit expectations about communication practices and roles of team members within the ED.

Orientation for new members of specialty teams and consultants may also go some way to improving hospital communication practices.

To improve communication with teams from outside the ED, Adams [45] suggests that providing insight into and developing a mutual understanding of ED operational norms and policies may instil a sense of partnership in the provision of patient care. A hospital wide orientation programme may be logistically difficult in an already busy and time constrained environment particularly in view of frequent rotational changes of junior doctors. However the cost in time against overall benefit of this intervention should be carefully evaluated.

Effective teamwork also relies on having adequate staffing levels and skill-mix. This is a difficult issue to address and is dependent on a number of factors including available staff members and resources.

Potential advantages

Effective teamwork achieved through interventions such as training, education and orientation should improve overall communication practices. With recognition and understanding of specific roles, tasks can be distributed appropriately; there will be less duplication of information requests and subsequently an improvement in information flows. Ensuring appropriate skill mix and staffing numbers should help in reducing the communication load experienced by senior staff members.

What next?

The proposed interventions were predominantly drawn from suggestions made by the ED clinicians and the authors' response to the data. Assessing the desirability and feasibility of each suggested intervention would be the next step to take. Some of the interventions are more feasible and easier to implement (for example a notepad by the phone to write down paging details) than others. Their viability would need to be assessed within specific organisational contexts, as each ED will have a subtly different balance of problems.

There are many challenges to address when implementing change in an organisation, for example acquiring adequate resources (such as money, time and staff) as well as having a champion to promote the changes [31]. In addition to a well-planned intervention design, it is also important to take into account organisational, professional and team factors [31]. Communicating with and involving staff in decision making to create a sense of ownership towards the proposed changes (no matter how big or small) is an essential part of helping to encourage the uptake of the intervention [57].

Conclusion

The ED is a complex environment in which clinical and support staff work under stressful conditions on a daily basis. This study was undertaken to gain a detailed understanding of communication practices in an ED with a view to identifying ways in which to support clinical communication.

The ED has been described as an interrupt-driven environment. On examination of the interruptions experienced by clinicians in this study, the results indicated that some interruptions, for example those that were administrative in nature, could perhaps be minimized through being communicated by a dedicated non-clinical staff member, whereas other interruptions related to patient and ward management were a necessary part of effective team functioning.

Overall this study has highlighted the varying communication patterns and issues experienced by clinicians occupying different clinical roles. An important finding of this study was that different staff members carried different communication burdens relating to their specific role, some of which could be reduced through targeted organizational, educational or technological changes.

Proposed interventions were drawn from the observation and focus group data and these related to improving overall communication flows, reducing unnecessary interruptions and frustrations (eg streamlining telephone and paging processes), making explicit policy and protocol related to communication processes (eg formalising and disseminating the documentation process following a ward round), and strengthening teamwork through education (eg improving orientation process, improving understanding of other team members' roles).

This study has identified potential interventions, within their organisational and cultural context, to improve communication in an ED setting. The next and often more difficult step is to implement the desirable interventions into the workplace. This requires adequate resources (such as money, time and staff) to champion, plan and implement the changes – allocation of which can be very challenging in an already heavily stretched environment.

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Appendix 1 Glossary of terms

A **communication event** is the basic element of the communication process description.

A communication event consists of:

- a set of **messages**
- between a **sending party**
- and one or more **receiving parties**
- for a **purpose**
- via a **communication channel**

Attributes of a communication event:

- **Role** of each individual involved in the event - eg RN coordinator
- **Channel of communication** (either synchronous or asynchronous) - eg telephone
 - *Synchronous communication*: When two parties exchange messages across a communication channel at the same time - eg face-to-face or telephone conversation
 - *Asynchronous communication*: When communication exchange does not require both parties to be active in the conversation at the same time - eg email
- **Interruption**: A communication event where the subject did not initiate the conversation, and in which a synchronous communication channel was used.
- **Type of interaction** describes broad categories of information exchange - eg give request, give information
- **Purpose of event** - eg patient handover