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**A video analysis of clinical handovers  
between ambulance services and  
emergency departments**

Ethan Shapiro

PhD

2020



**A video analysis of clinical handovers  
between ambulance services and  
emergency departments**

Ethan Shapiro

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requirements of the University of Northumbria  
at Newcastle for the degree of

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# Abstract

This thesis examines how clinical handovers between ambulance and emergency services were conducted. Clinical handovers are an exchange of patient information and responsibility from one healthcare team to another. They have been a key area of concern due to potential patient safety issues arising through non-technical human factor skills of communication and teamworking. However, there remains a lack of research that has examined clinical in the context of multidisciplinary settings.

To redress this gap in knowledge this thesis adopted a video analysis methodology of pre-existing handover videos. Data was derived from television programs and provided naturally occurring instances of handovers being conducted. The video analysis approach was underpinned by conversation analysis, which allowed an examination of interactional features used by team members to structure handover activity.

The three analytical chapters that make up this thesis how the handover activity was carried out: 1) the clinical handover structure, 2) epistemic knowledge claims, and 3) embodied actions. Overall the findings illustrated the different conversational tools used by interdisciplinary team members which shaped how information was communicated. It showed how speakers would use resources to develop engagement during discussions that aided the handover process. This showed that the handover went beyond a structured institutionally derived activity, but one shaped by the interactants

This thesis has added to the knowledge of how the interactional order of clinical handovers predominate irrespective of the continuous attempts to standardize the activity. These findings showed how handovers are carried out through an analytical lens of “work as done”

rather than “work as imagined” providing understandings that can inform practice and shape future research directions.

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I am especially thankful for my husband, Jamie. You have been my partner through this whole journey, and I owe so much of this to you. I could not have gone through this without you by my side. I love you always.

# Declaration

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work. I also confirm that this work fully acknowledges opinions, ideas and contributions from the work of others. Any ethical clearance for the research presented in this thesis has been approved. Approval has been sought and granted by the Faculty of Health and Life Sciences University Ethics Committee on 4th December 2018.

**I declare that the Word Count of this Thesis is 67,014 words**

Name:

Signature:

Date:

# Introduction

There has been considerable interest in understanding clinical handovers from ambulance services (Fisher et al., 2015; Sujan et al., 2015). The NHS has highlighted handovers as a high-risk area due to various human and organizational issues. It has been shown that this area is important to understand as it could lead to improvements patient safety and a more effective workforce (Iedema et al., 2012). Some of the challenges to handovers stemmed from problems in interprofessional teamworking and communication between ambulance services and emergency hospital staff (Lingard et al., 2004; Catchpole et al., 2007). This led to the present thesis to look to answer the following research question:

*What are the dominant interactional features that shape the handover processes conducted by ambulance personnel and A&E staff?*

Chapter 1 begins with introducing the topic of clinical handovers from ambulance services by first exploring some of the recent key research topics. This chapter introduces some of the potential issues ambulance and emergency services face by first discussing the unique challenges the UK NHS experience. These challenges show some prominent organizational issues in the handover delivery such as delays in the emergency department and the strain this causes to ambulance services (Clarey et al., 2014). Following this the topic of human factors will be introduced. Human factors in healthcare has become a way to explain and deal with issues such as communication and team working (Catchpole, 2013). This first chapter includes a literature review which explored the relevant existing literature on clinical handovers from ambulance services. Through this review distinct themes will be discussed including communication, interprofessional teamworking, and handover standardizations.

This allows for an exploration into the need for examining this area further through highlighting some contradictions and gaps in the previous research.

The next chapter, Chapter 2, reports on the methodological approach and design of the study. This second chapter first explores the extant literature on the use of video-based research to explore naturally occurring data in healthcare settings. The use of video analysis allows for an examination of minute elements of interactions (Christianson, 2018). This chapter introduces conversation analysis (CA) as an additional method to look at interactional features speakers use to complete social actions (Sidnell, 2010). Some of the ethical challenges and considerations that need to be made with this type of data (Heath, Hindmarsh, & Luff, 2010). The type of data in this thesis will be discussed including the analysis procedure such as the transcription process.

Chapter 3 is the first analytical chapter that looks to explore the interactional features of the handover. This chapter is a broad examination of how handovers from ambulance services were structured. This is done through the application of conversation analytical properties to understand elements of institutional talk (Mayor, Bangerter, & Aribot, 2012). The structure of the handover is examined from ambulance arriving to the emergency department to how interdisciplinary team members disengage and conclude the activity. This gives an understanding to some key points in how these activities take shape. The analysis will explore how the use of certain words and actions can alter the organization of the handover discussions.

Chapter 4 takes a more granular approach to the handover data by looking at how knowledge is exchanged between interdisciplinary team members known as epistemics in CA (Heritage,

2012). This chapter has two main analytical points: epistemic discourse markers and knowledge presented from second-hand accounts. Epistemic discourse markers were words such as “okay”, “right”, and “yeah”, which when placed in points in an interaction show receipt and acceptance of information (Beach, 1995; Gardner, 2007). This is an important finding in this research as it indicates knowledge had been passed between the team members. This allows for the handover activity to progress and also illustrates key points of engagement between interdisciplinary team members. The ambulance member conducting the handover to the emergency department is not always the first one on site to treat the patient. This means that the information being relayed is obtained from people who were witness to it, which poses some unique challenges in the interactions. Speakers need to clarify the source of their knowledge and recipients often challenge any information being shared that was not clear.

Chapter 5 is the third analytical chapter that looks at an aspect of interactions referred to as embodiment (Goodwin, 2000). This focus looks to understand the use of nonverbal actions during the handover discussions. There were three key analytical discussion points derived from the data: embodied actions using inanimate objects, the patient as a reference source, and healthcare team members using themselves as an object for reference. Healthcare team members coordinate their actions and discussions around certain objects related to a patient being presented such as a helmet they were wearing when they sustained their injuries. Inanimate objects create a focus for the discussions and handover activities as they have something to direct their attention towards (Hindmarsh & Heath, 2003). Healthcare members use different types of gestures and pointing to patients' injuries. Interdisciplinary team members use their own bodies to indicate points of injuries to a patient. This led to

interesting findings of potential evidence of collaboration between team members as they were seen to direct their attention to areas being addressed.

The thesis is concluded in Chapter 6. This discussion chapter considers the key findings of the thesis and how it addresses the research question and aims. This chapter considered the practical and research implications of what was found. This chapter also includes a critical reflection of potential limitations of this study. Future areas of research consider and some of the work being carried out to take this study further will be highlighted. This thesis extends and enriches the understanding of clinical handovers from ambulance services by exploring the unique interactional elements that shape the activities.

# Chapter 1: The Clinical Handover

## 1.0 Introduction

This chapter reviews what is known about clinical handovers between ambulance services and emergency care (Section 1.1). It will begin by detailing why there exists a gap in the knowledge of this area to highlight the rationale for this thesis. Through the introduction of the topic the importance human factors will be used to explain the need to explore the elements of communication and teamworking (Section 1.3). This introduction chapter will then explain the topic of clinical handovers through the use of a literature review will cover the extant research on the topic (Section 1.4). This chapter will conclude with the aims of this thesis (Section 1.8).

## 1.1 Background

The clinical handover involves the transfer of patient information and responsibility from one group of health care workers to another. Handovers take place in various settings such as a shift change where a patient would be moved to different departments within the same hospital or to another hospital that specializes in certain treatments (Bost et al., 2012). The focus of this thesis was an exploration of clinical handovers between ambulance services and emergency care. The clinical handover can be seen as one of the most important work activities and high-risk areas in patient care (Bost et al., 2012; Wood, Crouch, Rowland, & Pope, 2015). The risks associated with ambulance service based handover stemmed from issues in hospital departments such as overcrowding, but also interdisciplinary team working and communication has been a source of difficulty when carrying out this activity. The extant research has largely focused on the handovers of patients involving doctors and nurses

during shift changes (Owen, Hemmings, & Brown, 2009; Wood et al., 2015). This has left a knowledge gap in our understanding of clinical handovers of patients being admitted to the emergency department from ambulance services.

The clinical handover must consist of some key components: background information of the patient's situation, reason for why the patient was assisted by ambulance services, treatment that had been provided, and any recommendations for next steps in the patient's treatment (Sujan et al., 2014). Prior to the ambulance crew arriving to the hospital there would have been an alert given to the relevant emergency department to provide some information about the incoming patient and to allow for preparation for the transfer of care (Fisher et al., 2015). Clinical handovers between ambulance services and emergency care staff can be higher in complexity and risk to patient safety as they involve the sharing of patient information in a multidisciplinary setting (Sujan et al., 2013; Iedema et al., 2012). The handover includes a transferring of all relevant information and responsibility for a patient from one team to another team, which has been a particular source of concern for the National Health Service (NHS) due to the increase issue of handover failure contributing to patient safety (Sujan et al., 2014). A comprehensive literature review highlighted the significant issues to patient safety during handovers (Wood et al., 2015). The previous research highlighted the need to better understand the clinical handover from ambulance services in order to improve the safety to patients (Apker et al., 2010).

### 1.1.1 The UK National Health Service context

A recent National Institute of Health Research (NIHR) report has noted a significant gap in our knowledge and our understanding what happens during clinical handovers between ambulance services and emergency departments (Fisher et al., 2015). The NIHR report found

that handovers involving ambulance services to A&E was a high-risk area of concern and further research should be conducted in this area to increase our knowledge. The NIHR report examined the changes to ambulance services and paramedics during recent years as a result of an increase of the complexity of cases and amount of emergency calls going out (Fisher et al., 2015). The report showed that while these changes have been taking place it has become paramount for ambulance services to be evolving to adapt to the changes in order to continue to improve assistance provided to patients. There has been an increase to the risk to the safety of patients with different areas being of concern and clinical handovers were one of those key areas that needs further development and research (Fisher et al., 2015).

The NIHR report followed another NHS report, 'Zero tolerance- making ambulance handover delays a thing of the past', (NHS, 2012). That report highlighted the need to improve clinical handovers between paramedics and emergency care staff in order to decrease handover delays and increase patient safety. The Zero tolerance NHS report (2012) equated handover delays to "never events", which the NHS classified as events of the most serious nature that should never occur due to being wholly preventable.

The NHS has defined a 'never event' as an event that puts the safety of patients at that and that should have never taken if the proper standards and procedures were followed. There are certain criteria that must be met for a situation to be classified as a 'never event', which include events that could have led to the death or severe harm of a patient (NHS, 2012). 'The term 'never event' is powerful in providing a focus and setting out the aspirations of NHS commissioners and providers to make handover delay a thing of the past' (NHS, 2012, pg. 9). By equating the seriousness of handovers to this level concern was done with the purpose of increasing awareness of the dangers of inadequate handovers (NHS, 2012).

### 1.1.2 Interprofessional education

Interprofessional Education (IPE) was implemented into the teaching of all types of healthcare staff as part of their regular curriculum to address interprofessional teamworking behaviors across the different disciplines with the aim to improve collaboration and patient safety (Reeves, Perrier, Goldman, Freeth, & Zwarenstein, 2013). This was achieved by exposing students to interactively work with those from a different area of healthcare to understand how they work and have been taught to treat patients. 1987 saw the inception of the Centre for the Advancement of Interprofessional Education (CAIPE) in the UK, which was developed to increase awareness of the benefits of more than one professional group working collaboratively to improve standards of care provided (Barr, 2013). Recent years has seen the increased implementation of interprofessional learning in healthcare (Reeves, Perrier, Goldman, Freeth, & Zwarenstein, 2013). This was derived from the knowledge of the importance of interprofessional teamworking in varying aspects of patient care and safety. By exposing healthcare students to the importance of IPE it was believed to change the work culture to become more collaborative with those from a different discipline.

Steven et al. (2017) examined the various outcomes resulting from the introduction of interprofessional education teaching for prequalifying healthcare professionals in the UK. ‘With patient care progressively being provided by healthcare teams, often working in complex and challenging environments, there is an increasing interest in IPE as a means to ensuring healthcare professionals are not only aware of their own specific role(s), but more importantly they can work to each other’s professional strengths and skills’ (Steven et al., 2017, pg. 721). Incorporating IPE into the curriculum has been suggested that it would allow healthcare professionals to think holistically when it comes to patient care (MacDonald et al., 2010; Serksnys, Nanchal, & Fletcher, 2017). Thinking holistically in this sense would

make healthcare providers consider the roles and responsibilities of other professionals around them, which would foster a supportive environment that was more conducive to the treatment of patients (MacDonald et al., 2010).

Numerous benefits of interprofessional education have resulted due to the opportunities to experience real world practices by healthcare professionals learning. Barriers to the success of IPE implementation result from the readiness for students to take part in the educational training and the attitudes they hold towards working with others from different disciplines (Williams et al., 2013; Keshtkaran et al., 2014; Steven et al., 2017). During their prequalifying training, paramedic students have been found to not be as 'enthusiastic' to be learning to work with other healthcare professionals (Williams et al., 2013). This complemented other findings that have suggested that of willingness to take part collaborative training from both nursing and medical students, but it may be a result from a lack of awareness or understanding of the importance of IPE training (Keshtkaran et al., 2014). It has been argued that an increase in awareness of the different skillsets and responsibilities of different healthcare providers would improve the awareness of the necessity of including IPE into the curriculum (Keshtkaran et al., 2014). Hallikainen et al. (2007) showed the dependency that physicians and paramedics had for each other in conducting successful emergency care, but also highlighted the difficulties in introducing IPE curriculum stems from recruiting more highly specialized clinical teachers and costs associated with running the courses.

Research that has examined undergraduate paramedic education has shown that there are gaps in their training when it comes to working with professionals from other disciplines (Hallikainen et al., 2007). Studies have shown that by exposing healthcare students, such as

paramedics, to opportunities of working collaboratively with students from other disciplines they would better understand the roles of other professionals. This would see an improvement in areas of communication and clinical decision making during crucial times such as handovers (Furseth, Taylor, & Kim, 2016). Furseth et al. (2016) looked at simulation handovers to examine influence of interprofessional education between nursing and paramedic studies. Their study showed that through the simulation and collaboration work between the students there were improvements to their levels of confidence. It was found that having these opportunities to work with healthcare students from different disciplines it encouraged 'a proper understanding of other healthcare professional's roles and responsibilities, mutual respect, and effective verbal communications...critical for high-quality patient care' (Furseth et al., 2016, pg. 78).

It has been further acknowledged that during handovers involving paramedics and emergency care staff interprofessional education training saw improvements to communication during these exchanges (Johnston, MacQuarrie, & Rae, 2014; Furseth et al., 2016). Simulation training of clinical handovers has been shown to be invaluable in preparing paramedics and other prequalifying healthcare professionals for real-life patient care (Johnston et al., 2014). An examination of a clinical handover simulation training between nurses and paramedic students was anticipated to build rapport between individuals of both disciplines by creating realistic scenarios where they had to work together and multitask. This encouraged students to understand the roles and responsibilities expected of individuals from different healthcare disciplines (Johnston et al., 2014).

## 1.2 Handover delays

The duration of a successful clinical handover follows a particularly restricted timing order of events, e.g. 15 minutes to conduct the actual handover followed by a 15 minute preparation for turnaround resulting in 30 minutes in total from the arrival of the ambulance crew to the hospital (See Figure 1). Comparisons of actual handover duration against targets have shown, significant discrepancies (Clarey et al., 2014). In 2011 the National Audit Office (NAO) conducted research which found that 20% of handovers failed to meet the standard of no more the 15 minutes (NAO, 2011) Similarly, Clarey et al. (2014) found that the average wait times for handovers to be completed was 19 minutes. The NHS published handover delays for Winter 2018-2019 which showed there were 135,949 handover delays consisting of more than 30 minutes in total before the team were able to return to work (NHS Data, 2019). This has shown that as time has progressed there has been little to no improvement to length of time it has taken to complete a handover involving paramedics.

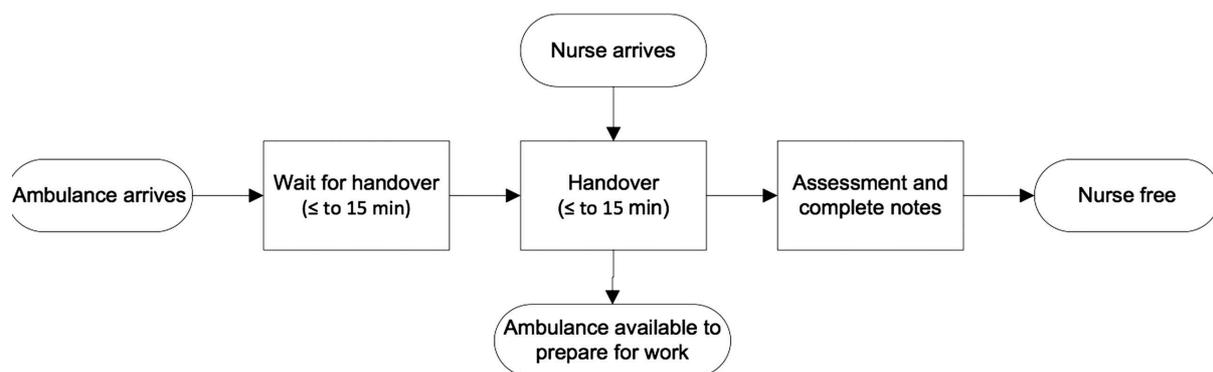


Figure 1. Ambulance handover schematic (Clarey et al.. 2014).

Delays in handovers has been found to have important consequences as it has been shown to be associated with an increased risk of potential errors to patients' safety as well as the likelihood of complications that would have an impact on the length of their hospital stay

(Horwitz et al., 2006). Errors to patient safety include potentially causing medical harm due to the vulnerable risks certain patients arrive with and the time it takes for them to receive the required treatments. Handover delays was a focus of complaints made by patients and their family members, particularly being an area of concern as delays were found to put additional discomfort on patients and increase the anxiety felt by both patients and their family members (Brady, 2017).

Longer delays in paramedics conducting handovers also increases the risk of forgetting vital patient information (Sujan, Spurgeon, & Cooke, 2015). By adding the additional stressor of paramedics being delayed once arriving to the emergency department, where the environment is typically one of chaos and distractions the opportunities for missing important patient information is higher (Apker et al., 2007; Sujan, Spurgeon, & Cooke, 2015). In emergency departments the noise of the environment can negatively affect one's ability to process information about patients during the clinical handover increasing the likelihood of error (Evans et al., 2010). Evans et al. (2010) showed that trauma team members need to develop improved listening skills so information during a handover can be better retained. A review of Scottish paramedics on the quality of clinical handovers found that paramedics felt issues to a successful handover were hindered by due to a lack attentiveness by the emergency care team (Thakore & Morrison, 2001).

Different factors have been established as reasons for what might cause delays in clinical handovers (Cone, Middleton, & Pour, 2012). Overcrowding in emergency departments was one factor found to increase the delay in paramedics conducting their clinical handovers, which has an effect on their turnaround time in preparing to assist with their next call (Kingswell, Shaban, & Crilly, 2015). Conducting clinical handovers with ambulance services

presents an increased risk of error as they typically occur in settings of high-tension and overcrowding (Apker et al., 2007). Overcrowding in Accidents and Emergencies across NHS Trusts in the UK has been a consistent problem causing problems for ambulance services when conducting handovers and leading to patient safety issues (Sujan et al., 2014). Data has shown that in the UK and other Western countries has seen an increase in calls placed to emergency services, which has caused a surge in the amount of admitted patients to emergency departments (Morley et al., 2018). It has been suggested that an increase in the use of emergency services has been the result of improvements to the accessibility of the services provided as well as being due to the aging population and calls made to individuals who did not require urgent medical attention (Hitchcock et al., 2010; Kingswell, Shaban, & Crilly, 2015). These factors have led to emergency department resources being exceeded and quickly achieving maximum capacity of patients (Hoot & Aronsky, 2008). These factors have led to consequences of reduced quality of care that patients received due to a lack of resources such as staff available to assist with those admitted (Hoot & Aronsky, 2008; Kingswell, Shaban, & Crilly, 2015).

An Australian study examined the lived experiences of ambulance staff during the process of ambulance ‘ramping’, an Australian term used to refer to overcrowding in emergency departments preventing the handover process to take place and causing delays in the transferring of patients (Kingswell, Shaban, & Crilly, 2015). The issue of ‘ramping’ has been found to be associated with negative affects on patient outcome and the health of the ambulance staff (Kingswell, Shaban, & Crilly, 2015). Studies have linked issues of ‘ramping’ to increase feelings of stress and occurrences of violence (Hitchcock et al., 2010). In particular, paramedics were reported to experience feelings of discouragement by not being able to be as sufficient as required when handling issues of ramping (Kingswell, Shaban, &

Crilly, 2015). During ambulance delays, or ramping, paramedics would be expected to maintain care of patients as they waited to enter the emergency department as delays were found to be longer than one hour in different cases (Kingswell, Shaban, & Crilly, 2015).

### 1.3 Non-technical human factors skills

A contemporary way of considering issues of communication and teamworking in healthcare has been referred to as human factors (Catchpole et al., 2010). Human factors has been defined as a way of understanding how people interact with each other and their environment in order to enhance clinical performance (Catchpole, 2013). Within the scientific discipline of human factors there exist a category referred to as non-technical skills, which include competencies that could be developed and trained (Glavan & Maran, 2003). Non-technical skills include such areas such as decision making, stress, team working, communication, etc. By understanding the human element in the design of work activities it has been shown to provide opportunities to explain issues in communication and team working by increasing awareness of problems occurring in an organization and addressing them through the development of training interventions.

Prior to human factors becoming an important part of healthcare training and used to improve patient safety it was originally used to examine other large-scale industries such as aviation (Roche, 2016). Human factors was used as a way to explain the human error in high risk organizations where there was a growing trend of adverse incidents (Glavan & Maran, 2003). This led to the development of Crew Resource Management (CRM), which was a training tool used to improve non-technical skills. CRM was initially only in the aviation industry to

increase awareness of team performance to improve safety and reduce the likelihood of human error (Roche, 2016).

Human factors has become an integral part in exploring issues in patient safety because it allowed for exploration of improving quality of care and patient safety (Carayon et al., 2014). The NHS has looked for ways to incorporate the use of human factors in order to reduce medical error and to raise awareness of non-technical skills through the delivery of human factors training. One of the ways this training was done was through the inclusion of CRM to healthcare (Gore et al., 2010). The CRM approach was used in all aspects of healthcare training, but it was mainly used in emergency and operating department settings due to the level of errors from ineffective team working and risk to patient safety (Haller et al., 2008). CRM in healthcare provided a safe way for staff members to engage with the training as it was used most often in simulation-based settings. This approach has been considered beneficial as it allowed staff to reflect on their practice and experiences in order to consider how to improve their work activities (Glavan & Maran, 2003).

Catchpole et al. (2007) integrated an analogy between motor racing and clinical handovers to understand issues in communication and team working. It was found that motor racing followed a prescribed model where an entire team comes together with clearly defined tasks and roles when changing a tire in a matter of seconds referred to as a Formula 1 pit-stop. The Formula 1 Pit-stop model derived key areas that could be used to improve the efficiency in a handover by showing the need for clarity between team members through the use of defined allocated roles to open communication between everyone involved. The handover model showed how each person had a clear position to be in receipt of handover information and to carry out work directly related with their job roles. This understanding of human factors has

allowed healthcare workers to improve their work activities by allowing open channels for communication. In human factors the topic closed-loop communication has been explored to improve communication between interdisciplinary team members (Härgestam et al., 2013). Closed-loop communication suggested that team members would be able to verbalize and repeat information in order to reduce potential errors from miscommunication.

### 1.3.1 Work as Imagined vs. Work as Done

More recent ways of exploring human error has been to look at the varieties of work and acknowledging that what has been perceived to be the way people think work is carried out was not the way the work was actually done (Hollnagel, 2016). The concept of work as imagined was to create a simplified way to think about how work routines and activities were carried out. The way work has been imagined to be completed was based on how work was previously completed and incorporates both the organization's assumptions about the work and the worker themselves (Clay-Williams, Hounsgaard, & Hollnagel, 2015). In healthcare settings, work as imagined is the perceived level of care and treatment provided to patients by assuming the same level of care had been provided to all (ibid). This assumption of how work has been conducted is based on the idea that all healthcare staff have adhered to national guidelines and standard of care to ensure patient safety. This could be a limited perspective on the actual activities involved in work routines as it does not take into the variability in the job roles nor a developing or changing work environment (Hollnagel, 2017). In order to deal with the limitations of only considering work as imagined is the need to realign the assumptions of work activities with the actuality of the work or work as done (Braithwaite, Wears, & Hollnagel, 2016). One of the ways there persists to be a disconnect between what was imagined and what was actually done in work routines was due to lack of opportunities

to reflect on practice and also to obtain feedback from organizations on the success of tasks complete.

Work as done has been characterized by the actual activity that people do when completing tasks and work routines (Catchpole & Jeffcott, 2016). Understanding what was involved in accomplishing an action has made work as done a paramount concept that organizations need to explore, but according to the extant research it has been a focus (Hollnagel, 2016). Work as done can be examined using different methods such as observations, simulation, or reflections from those with first-hand account experience in a particular work activity (de Carvalho et al., 2018). The alignment of what was imagined to be the process for completing a task and what people actually do in an activity have allowed for the development of training materials to improve safety and efficiency in a work environment (de Carvalho et al., 2018). De Carvalho et al. (2018) researched realigning the work imagined and done by firefighters through the use of ethnographic methodologies to highlight key organizational issues that needed to be changed in order to improve how people reacted in complex situations. The ethnographic methods used to examine this issue took the form of analyzing direct observations of work activities. This approach allowed the researchers to the gaps in understanding of what actually took place during these work routines to inform future training practices (De Carvalho et al., 2018).

### 1.3.2 Conversation Analysis to realign WAD

A method called Conversation Analysis (CA) has been used in this PhD to explore this alignment between work as imagined and work as done (See Chapter 2 for more details on the method). CA is a method that looks to understand interactional features during activities and discussions by looking at how conversations are structured through the use of direct

observations (Heritage & Clayman, 2010). CA as a method has been used previously to understand routine work activities in order to highlight how these activities were believed to be structured and explore the actual processes involved in carrying out daily work tasks (WAI vs WAD). "...there is often a "gap" between work as imagined (how clinical workflow ideally occurs) and work as done (how clinical workflow occurs in real-time). Therefore, it is critical when implementing new health information technology to work within the constraints of hospital-specific workflow to understand the reality of work, rather than relying solely on how it is reported" (Schubel et al., 2019, pg. 767). CA relies on naturalistic data and embraces a focus on making observations as the action happens, which reflects a work as done rather than work as imagined.

For example, CA has been used as a way to understand the fidelity of implement police interview simulated training in comparison to actual interactions (Stokoe, 2013).

Traditionally evaluations of simulation training adopted a work as imagined approach, through self-reported evaluations from delegates, in contrast through examining actual training in action, and taking a work as done approach, Stokoe was able to show how the simulated training activities were limited in some fidelity aspects, which led to a questioning of their assumed reliability. while highlighting the key benefits of observing work activities as they actually take place (2013). A further benefit of this approach was that the applied CA evidence provided a basis to develop human factors training programs focused on more effective communication skills (Stokoe, 2014). Use of CA has enabled researchers to better understand work practices and activities by scrutinising key interactional features and to create training programs based on evidence on what actually occurs during real world practice, compared to training based on what was believed to take place (Stokoe, 2014)

In medical contexts, CA has been used to understand interactional practices of healthcare professionals during consultations with patients (Maynard & Heritage, 2005; Pilnick et al., 2018). Role-playing training methods used previously to enhance clinical encounters between healthcare staff and patients was considered have been shown to be limited as they did not provide a completely accurate representations of how actual work routines are shaped (Heritage & Maynard, 2006). CA was identified as an effective method for understanding real-life examples of communication during clinical encounters (Pilnick et al., 2018). Pilnick et al. used CA to examine how naturally occurring interactions between healthcare professionals in order to improve communication training used during simulations. These training programs were underpinned by evidence of what actually was involved in the structuring of the clinical encounters rather than what was considered to be.

#### 1.4 Literature Search Strategy

A literature review was conducted searching for research on clinical handovers in paramedic services to emergency care staff. This followed guidance laid out by the Best Evidence Medical Education (BEME) (Hammick, Dornan, & Steinert, 2010). The guidelines provided a focus for the literature review. The search was undertaken to identify key existing research that has looked at this niche topic and helped to identify gaps in the knowledge that this thesis could fill. The search involved using 5 different online library databases: Medline, EMBASE, ERIC, PsychInfo, and Web of Science. Search terms were used to explore all the available research on paramedics and clinical handover through these different databases. The search terms used for paramedics were a combination of: *paramedic, emergency medical service, ambulance service, pre-hospital, emergency medical technician*. These terms were combined with the different search terms for the clinical handover including: *handover, patient*

*handoff, patient transfer, patient handover, clinical handover.* The search was restricted to journals that were written in English and published within the last 12 years (2007-2019). The initial results yielded 1519 results. These were screened based on their titles and reduced to 407 articles that were then screened an additional time based on the relevance of their abstracts. The final amount of articles from the search resulted in 53 articles with 13 articles added by the researcher's own separate search. The grey literature that was included stemmed from searches using Google Scholar and articles about clinical handovers that were not from ambulance services, but assisted in understanding the context of the work activity. The grey literature additionally included articles that were about the clinical work environment to support discussions of derived key themes.

Overall the method used for the literature review obtained due to the detail applied to the articles included (Hammick, Dornan, & Steinert, 2010). The extant research on clinical handovers involving paramedics and emergency care staff has been scant (Wood et al., 2015). The purpose for conducting a literature search on this topic has been understand the different themes around clinical handovers involving ambulance services. The results showed there was a gap in the knowledge of clinical handovers involving ambulance services in UK based research over the last 12 years. What research was available has highlighted the need for a better understanding of this area as clinical handovers play a vital role in ensuring patient safety (Apker et al., 2007; Sujana, Spurgeon, & Cooke, 2015; Fisher et al., 2015). From the literature review 4 themes were developed: communication, interprofessional teamworking, and the standardization of handovers.

## 1.5 Communication

Communication during clinical handovers have been an important focus in the human factors literature to better understand different issues and barriers to the transferring of patient information (Catchpole et al., 2007; 2010). Communication issues in a surgical department were ethnographically analyzed to show that failures in discussions such as inaccuracies or missing information were a consistent and prominent issues in the clinical environment (Lingard et al., 2004). In particular with clinical handovers, the extant research has shown that issues in communication has resulted in higher risks to patient safety and delays to conducting the handover (Apker et al., 2007). Issues in communication range from forgetting information to not speaking clearly and may initially appear to lead to a minute issue, but can have irreparable consequences (Apker et al., 2007; Siemsen et al., 2012; Jensen et al., 2013).

Communication style and how information had presented to receiving hospital staff was a process that needed consideration that had not been explored (Sujan et al., 2015). Sujan et al. (2015) noted that handovers involving paramedics to the emergency department tended to be one-sided conversations that follow a structure of sorts to allow the sharing of patient information. Information shared of a patient during the handover typically would include: demographics, clinical and social history, treatments provided prior to arriving at the hospital, observations of any symptoms (Sujan et al., 2015). Ensuring the safety of patients involved being able to clearly state the information gathered so the healthcare provider at the next stage would have all the knowledge available to properly treat the patient (Symons et al., 2012; Redley, Botti, Wood, & Bucknall, 2017).

A Danish study examined the different organizational factors that have led to issues of communication (Rabøl et al., 2011). Using human factors theories to examine the

communication environment it was found that errors in verbal communication were a significant contributor to incidents to patient safety, in particular in situations where patients are transferred to different hospitals and when there no clear procedures that healthcare staff had to adhere to (Rabøl et al., 2011). Two leading factors were the loss of information and misunderstandings during the handovers, which could have been attributed to healthcare staff having different levels of knowledge and experience (Rabøl et al., 2011). Stiel et al. (2003) used the term 'information gaps' to explain these gaps in knowledge that emergency department staff needed at handovers, but was not provided by team members. These information gaps were the source for why patients would have to remain longer for treatment and potentially impair proper clinical care to be provided (Stiel et al., 2003).

### 1.5.1 Information Gaps

There have been multiple interview based studies that have shown that gaps in information shared during clinical handovers has been a significant issue where the paramedics left out crucial patient information to the handover team (Wood et al., 2015; Kingswell, Shaban, & Crilly, 2015). While different standardized approaches to conducting a handover had been introduced to healthcare staff, both ambulance and hospital staff, there continued to be an increased risk to patient safety due to information not being shared properly (Yong, Dent, & Weiland, 2008). Yong et al. (2008) conducted surveys with emergency medical staff to understand their awareness of missing or inaccurate information being shared during handovers which showed that 67% of participants identified that key patient information was not documented or properly shared properly during handovers. This complemented a study conducted in the US that used video analysis to examine the information exchanged during clinical handovers and found that only nearly 73% of information shared to the receiving team in emergency departments were acknowledged (Carter, Davis, Evans, & Cone 2008). A

discrepancy between these studies could have stemmed from the different methodological approaches that were used as the Carter et al. (2008) study used an ethnographic approach to assess real-time issues in communication.

### 1.5.2 Verbal or Written Communication?

The form/format of communicating the handover – whether verbal or written has been found to influence perceived quality of the handover. Yong et al. (2008) found participants were satisfied with the quality of handovers as they typically provided both a verbal and written handover, which improved the accuracy of patient information. This has contradicted other studies that has examined written handover reports and have shown that information that was obtained was either lacking key points about the patients or were changed (Murray et al., 2012). An audit of handover notes involving paramedics transferring patients to emergency department resuscitation rooms showed that at least 26 cases involved information not being shared correctly with details pertaining to drug and allergy issues of patients being the key features not shared (Murray et al., 2012). These handover notes followed a verbal handover that took place previously, but they were to provide clarity to any information that was miscommunicated in the initial handover. Al Mahmud, Eichenbrenner, and Mubin (2009) examined the verbal patient handover between paramedics and nurses to improve communication. While both healthcare professional groups indicated a need to improve lines of communication, it additionally showed that written handover information was usually thrown away immediately by receiving hospital staff without any thought in examining the information provided (Al Mahmud et al., 2009).

The available research highlighted there to be mixed support for the use of written information provided by ambulance staff (Wood et al., 2015). By providing both written and

verbal communication there was an increased possibility of not missing vital patient information during the transfer to emergency departments (Knutsen & Fredriksen, 2013). A Norwegian evaluation of written information provided by ambulance crews to supplement the verbal handover showed the details that were in the initial handover were often brief and omitted points as it was expected that more information would be made clearer by the written report (Knutsen & Fredriksen, 2013). Results showed that doctors did not find the written documentation to be useful and preferred to have all information to be provided during the verbal handover exchange (Knutsen & Fredriksen, 2013). This was further supported by Jenkin et al. (2007) who examined the process of information during handovers involving ambulance staff to the emergency department and found conflicting views of the use of written and verbal information during the exchange. It was suggested that there was considerable pressure on ambulance staff during handovers and if essential sensitive patient information has not been properly recorded vital details could be lost (Jenkin et al., 2007). This comes with the additional risk to patients by having key pieces of information being illegibly written and healthcare staff not being able to administer the proper clinical care as a result (Jenkin et al., 2007; Wood et al., 2015).

Bost et al. (2011) suggested that a lack of proper structure and not utilizing available resources, such as whiteboards, for clinical handovers from paramedics increased the opportunities for losing vital patient information. The receiving emergency care staff would rely on their cognitive strengths, like memory, to retain patient information during the exchange instead of obtaining written documentation (Bost et al., 2011). The use of resources such as whiteboards had been introduced to supplement any potential information that had been lost during the verbal handover and found to be effective as a ‘communal memory tool’

(Chaboyer et al., 2009). A tool used to explain the sharing of salient patient information that may have been missed otherwise (Chaboyer et al., 2009).

### 1.5.3 Pressures in the Emergency Department

Handovers in emergency departments have been shown to typically occur in busy and high-pressured situations where it can be difficult to relay vital patient information (Apker et al., 2007; Carter et al., 2009; Evans et al., 2010). Environmental factors have been identified to contribute to issues in communications and the likeliness of receiving misinformation about a patient. The noise and distractions that were present in emergency department settings (Owen, Hemmings, & Brown, 2009). Healthcare staff who received the handover from ambulance services attributed the chaos of the emergency department to why it was difficult to hear what was being said and to pay attention to the discussions (Owen, Hemmings, & Brown, 2009; Evans et al., 2010; Woods et al., 2015).

Apker et al. (2007) showed how stressful the emergency department can be during handovers and that receiving emergency care staff such as clinicians usually have to multitask at the same time making it difficult to focus during the exchange. These high-pressured environments leave little to no room for receiving staff to ask questions for clarity or at times process the information that is given (Apker et al., 2007; Symons et al., 2012). The lack of attention given to ambulance members by clinicians during the handover has led to issues of frustration for the paramedics as they often have to repeat the information that they have given (Jensen et al., 2013; Kingswell, Shaban, & Crilly, 2015). Wood et al. (2014) found that one source of frustration stemmed from the receiving handover staff to start carrying out other work while they are sharing information.

A variety of organizational factors have been associated with having a direct impact on the emergency department and the success of handovers (Sujan et al., 2015). Managing the flow of patients and preventing delays to emergency services would improve the coordination of handover receiving staff as a lack of staff availability has been shown in multiple studies to lead to a lack of clarity of who is responsible for obtaining the handover (Budd et al., 2007; Bost et al., 2010; Manser & Foster, 2011). This was further supported by an examination of workloads of both paramedic and emergency care staff where the demands of meeting expectations were high, in particular the standards set forth by the NHS (Sujan et al., 2015). These expectations was the requirement to meet the 30 minute timeframe to conduct the handover and be prepared to turnaround to assist other patients in the community.

During handovers involving paramedics it was found that there was a 'second secret handover' (Sujan et al. (2015). Due to the NHS recently trying to improve the efficiency of handovers and reduce ambulance delays there as that has suggested the main threat to patients receiving proper clinical care. Sujan et al. (2015) found in their study that in order to achieve the targets set forth by the NHS one Trust has changed the format of handovers by requiring paramedics to conduct one initial handover with the nurse coordinator. 'There are good reasons for such a process as it is clear and structured, reduces the time paramedics potentially have to spend waiting for a busy nurse to take handover, and eliminates multiple redundant hand- overs' (Sujan et al., 2015, pg. 14). There was conflict as well as a result of these secret handovers as some healthcare professionals based on the Trust insisted that it went against protocol and was an unnecessary repetition. Conversely other healthcare professionals insisted that it was only way to make the demands established by the NHS to make the 15-minute handover turnaround and the Trust would get blamed if they were not meeting the targets set for them (Sujan et al., 2015). The secret handover allowed

opportunities for ambulance members to present information related to the psychological needs (Scott, Flynn, Chan, & Sujana, 2017). Ambulance crews have felt that the first handover conducted was insufficient in covering some of these key areas and had to make a trade-off in deciding in what salient information that needed to be conveyed.

There has been conflicting evidence as to the perception of interruptions occurring frequently during handovers as one study has shown that a significant amount (90% of handovers) occurred with almost no interruptions taking place (Yong et al., 2008). This has contradicted other extant research that has shown there are numerous interruptions and distractions that can take place during the handover, which has had implications on being able to retain vital patient information (Owen, Hemmings, & Brown, 2009; Wood et al., 2015; Kingswell, Shaban, & Crilly, 2015). Jensen et al.'s (2013) study showed that during handovers healthcare staff find it hard to 'actively listen' to the exchange as they are usually focused on completing multiple tasks at the same time, which can include examining the patient before having full knowledge of key details.

The issue of the receiving emergency care staff not being able to actively listen to the handover is further compounded by the evidence that has shown there are times when the appropriate receiving staff were not available to be present, which has led to paramedic staff being required to repeat the handover multiple times (Jenkin et al., 2007; Jensen et al., 2013). Jenkin et al. (2007) evaluated frequency of repetition during clinical handovers from ambulance members to the emergency department and found that 92% of handovers required staff to repeat patient history information multiple times. Having to repeat handover information or having to conduct a handover multiple times has been shown to increase the risk of vital information being lost as shown by Owen, Hemmings, and Brown, (2009) who

qualitatively examined the experiences of paramedics and emergency department receiving staff.

*'Despite an awareness by receiving staff that they often did not listen attentively during handover, there was agreement that handover formed an important part of the overall decision making process. Medical staff in particular expressed concern that if receiving staff did not listen that the details, nuances and vital clues that were contained within handover could be lost. They suggested that despite the sometimes chaotic atmosphere during handover that paramedics had a responsibility to ensure their message is heard by being assertive, speaking loudly and ensuring that there was a clear leader in the process'* (Owen, Hemmings, & Brown, 2009, pg. 9). The study further suggested that by having multiple handovers the information can get altered or go missing and turn into a 'Chinese whisper' (Owen, Hemmings, & Brown, 2009). This has been suggested that it would lead to a lack of clarity of how to most effectively offer treatment to patients.

## 1.6 Interprofessional teamworking

As clinical handovers from paramedics involves an interprofessional approach the success is in part dependent on their working relationships as they have to interact with different emergency care staff that are usually either nurses or doctors (Woods et al., 2015). Having positive working relationships increases the possibility of having a work environment that is conducive to resulting in a successful handover (Olson & Bialocerkowski, 2014). Evidence has shown hierarchies within the healthcare field has had implications on handover discussions. Doctors have been shown to not consider information presented to them by ambulance services to be as important as a handover from another doctor (Woods et al.,

2015). Other research has further highlighted the tension between interdisciplinary team members when conducting a handover as a result of clashing professional relationships (Bruce & Suserud, 2005).

### 1.6.1 Professional boundaries

Workplace tensions between ambulance services and emergency department staff have been shown to be a hindrance to the success of clinical handovers putting patient safety at risk (Horwitz et al., 2009; Di Delupis et al., 2013). Research has shown that there has been a culture of mistrust between the multidisciplinary teams as both ambulance and hospital staff have been found to show unprofessional behaviour towards each other (Bruce & Suserud, 2005). It was suggested that when presented with more complex or ambiguous patients there can be a lack of interest on the healthcare providers (Bruce & Suserud, 2005). For example, when a patient appears to have used ambulance services when they have no apparent ailments or cannot articulate what exactly is the issue they are experiencing, paramedics have been shown to be less interested fully completing the handover so information goes missing (Bruce & Suserud, 2005). Similarly, Bost et al. (2009) found that emergency department staff seemed to exhibit levels of disinterest or taking on multiple tasks during handovers from paramedics when the patient being presented had complex symptoms.

A qualitative analysis of clinical handovers as experienced by paramedics and emergency care staff showed characteristics of what constitutes an ineffective handover (Evans et al., 2010). Paramedics expressed issues of 'dismissiveness' by the receiving emergency care team that impacted handovers and leading to repetition of vital patient information (Evans et al., 2010). According to Bruce and Suserud (2003), reasons for receiving hospital staff

behaving unprofessionally during handovers stemmed from how stretched they became with their workloads and limited resources typically due to over-crowdedness in the department.

Hilligoss and Cohen (2012) noted that handovers in the emergency department usually involved teams that have never worked before and as such they lack rapport leading to feelings of mistrust. Emergency nurses had been shown to have issues with handovers by paramedics as they felt that paramedics would go beyond what was expected in their role and attempt to place patients within the emergency department based without a proper medical diagnosis (Bruce & Suserud, 2005). This was further supported by Di Delupis et al. (2013) who found that nurses had developed a mistrust of the information provided by paramedics in their handover reports. It was reported that nurses did not feel that the information was accurate, particularly with the reporting of vital signs. During the handovers it was shown that nurses would ignore what was being said by paramedics were sharing and collect information such as vitals after the handover was completed (Di Delupis et al., 2013). This was complemented by the findings made by Knutsen and Fredriksen (2013) that showed physicians gave preference to handovers made by other physicians over those being conducted by paramedics. By basing importance on patient information that is exchanged during handovers on the source has been one of the issues that critical information was lost (Knutsen & Fredriksen, 2013). Nurses had been shown to receive similar treatment by physicians during handovers (Serksnys et al., 2017). Physicians were found to not value the patient information that was brought to them by nurses as they only value exchanges with other physicians.

## 1.6.2 The organizational culture

Wankhade, Radcliffe, and Heath (2015) investigated the organizational culture that exists within emergency departments and ambulance services to understand the impact of how culture influences the behaviours of healthcare providers. Organizational culture was defined as psychosocial concept of shared beliefs and attitudes that influence behaviour and interactions of a group (Botti et al., 2009). Organizational culture has been shown to be linked with patient safety, as by having a constructive work culture an environment exists that promotes conducive to mutual trust and communication (Botti et al., 2009).

Issues of hierarchy and power relationships have shown to result from the organizational culture and subsequently impacting interprofessional relationships and team working (Firth-Cozens, 2004). Nurses have expressed negative experiences they have had with conducting handovers with physicians as they have felt 'a lack of respect', which nurses attribute to the hierarchy in the hospital (Redley et al., 2017). These perceived hierarchical structures had implications on the information relayed to physicians by nurses. Meisel et al. (2015) conducted focus groups with emergency care staff and paramedics to discuss handovers, it was found that paramedics felt they held a low status within the hierarchy of the hospital. Receiving emergency care hospital staff were believed to lack an awareness of what the professional role was of paramedics and as a result would not value the information they were sharing. 'This low-status position complicated the out-of hospital providers' overarching objective of working as advocates for their patients' (Meisel et al., 2015, pg. 314).

### 1.6.3 Shared understanding

Shared understanding has been defined in a clinical context as individuals creating a common language and agreement between each other (Owen et al., 2009). Having a successful clinical handover has been suggested to be dependent on a shared cognition or sense-making between healthcare providers (Manser et al., 2010). When working as part of a team in order for goals to be met and for effectiveness in working as part of that team there was a level of expectation among the members that during the handover there would be no conflict in the understanding in the mutual understanding of the patient information that was being exchanged, but this has shown to not often being the case (Hilligoss, 2014). Hilligoss (2014) conducted a study examining clinical handovers in the emergency department which found there to be different factors that influence the interaction between the two different healthcare teams. In one aspect, doctors were found to show an acknowledgement of working as part of a team and recognized the different knowledge that was brought from those of other specialties. Another factor was for emergency department doctors to see that to properly make sense of complex patient cases it was required to see the interdependency of actions that had taken place as part of the handover such as the efforts provided to that patient by the ambulance team members (Hilligoss, 2014).

Hilligoss and Cohen (2013) showed that handovers were part of a 'negotiation' process where different teams would be working together to come to overall agreement and understanding of the patient. Part of this process would see that would both members of the teams negotiating the responsibility of the treatment of the patient as they found handovers could be seen as debates with both teams wanting to come to a mutual understanding (Hilligoss & Cohen, 2013). Different complications have been shown to create barriers during this 'negotiation' stage of handovers a such as tensions between professional groups

leading to a more mistrusting work environment (Horwitz et al., 2009; Hilligoss & Cohen, 2013). Alternatively, Nugus and Braithwaite (2009) showed that there was the potential to reduce errors by multidisciplinary teams understanding the different perspectives of team members.

A constraint that has been identified as impacting patient safety during handovers stems a general lack of awareness of the different skillsets and competencies of being part of an interdisciplinary team (Siemsen et al., 2012). In particular, paramedics were reported to feel as though they were outsiders and not part of a team since they were not based in a hospital (Siemsen et al., 2012). Paramedics have been found to consider themselves part of an autonomous profession, which has shown to be in conflict the significant amount of collaborative work they do on a daily basis (Williams et al., 2013). It has been said that due to the nature of paramedic work environment they can experience challenges in working with in-hospital staff leading to potential issues of in collaboration during handovers (Williams et al., 2013). A result of this has been shown to lead to difficulties for paramedics to collaborate with other healthcare teams. Through team collaboration and engagement in handover discussion there would be evidence to show understanding between interdisciplinary team members.

## 1.7 The standardization of handovers

Recent years has seen the introduction of different strategies to standardize the handover through the use of different mnemonic devices (e.g. SBAR, IMIST-AMBO, ICE/ASHICE, etc.) (Wood et al., 2015). The intention of introducing these mnemonics has been the result of the handover research that has consistently recommended that for there to be improvements a

standardization of sharing information was essential (Meisel et al., 2015). The use of mnemonics and acronyms would act as a checklist to ensure the sharing of vital patient information and to increase efficiency in communication (Iedema et al., 2012). By implementing different practices to standardize handovers, it was intended that there would be a reduction in the amount vital patient information being lost as well as improve the amount of time for a handover to be completed (Manser et al., 2010). The introduction of standardization of clinical handovers would allow for a better understanding of the responsibility for the care of the patient as responsibility was passed to a receiving team. While studies have shown that there needs to be improvements made to the handover process there has been little training or consistency in the use of standardized handovers.

### 1.7.1 The structured approach

In different parts of the Western World various mnemonics and acronyms have been introduced to create a structure for handovers to improve patient safety and communication between different teams (Shah, Alinier, & Pillay, 2016). In the US, The Joint Commission for Transforming Healthcare, issued a report (2014) on the requisite for standardizing handovers to ameliorate communication during this fundamental step in patient care. The UK saw, in 2006, the Joint Commission create a requirement for health organizations to introduced a standardized approach to handovers to improve communication (Sujan et al., 2014). Australia, similarly, in 2012 saw the National Safety and Quality Health Service Standards create a requirement for healthcare organizations see to the development and implementation of a standardized approach to handovers (Shah, Alinier, & Pillay, 2016). These tools were meant to act as a framework by which those presenting the handovers would present the most salient information to the receiving team and as a result create an environment of shared understanding (Porteous et al., 2009). While there have been different acronyms and

mnemonic devices used to create a standardized approach to handovers, UK guidelines recommend the use of ATMIST during the exchange of information (Sujan et al., 2013).

Table 1 explains the acronym of ATMIST.

Table 1 ATMIST

A	Age of the patient
T	Time of arrival to the patient
M	Mechanism of injury such as associated factors of the injuries sustained
I	Injuries seen or suspected to be present
S	Signs including heartrate or respiratory and any symptoms experienced by the patient
T	Treatment provided to the patient prior to arrival

ATMIST is considered a common form of mnemonic handover structure used during emergency care by ambulance services in the UK (Sujan et al., 2013). There has been suggested disagreement over the use of this particular mnemonic device to support handover structures, in addition to a lack of research to underpin its prevalent usage (ibid). The particular structure of ATMIST has been to encourage the most salient of information being shared during the handover exchange as well as to allow for the ambulance team members to reflect on the treatment that has been provided (Slope, 2017). The use of ATMIST in the UK has been recommended by the Joint Royal Colleges Ambulance Liaison Committee (JRCALC) as it has been shown to support a clear procedural checklist during handovers

(Sujan et al., 2015). It is expected that the data to be obtained and used for this current thesis will be handovers that use this particular structure.

The SBAR was developed originally for the US navy prior to being adapted for the use in healthcare settings and it was meant to assist in the structure for communicating patient information (Shah, Alinier, & Pillay, 2016). SBAR (Table 2) was meant to create a way for interdisciplinary teams being able to communicate in a clear and structured format. Each component of the SBAR would have expected information pertinent to facilitating appropriate care of the patient (Wacogne & Diwakar, 2010; Shah et al., 2016). For situation, the sender (paramedic) would state who they are, who the patient is, and state the condition of the patient such symptoms or areas of pain. Background would include background information of the patient such as if they had previously been admitted to the hospital, previous known ailments they suffer from, and would also include known allergies or prescriptions. Assessment would see the paramedic explaining their findings and plausible diagnosis. Assessment would additionally have the paramedic list all treatments and medications they have administered while the patient was in their care. Recommendations would have the paramedic state what they feel would be the best course of action for treating the patient based on their experience of caring for the patient and would also make sure that the information that was shared was properly understood by the receiving emergency care staff.

Table 2 SBAR

S	Situation or purpose for the patient needing medical assistance
B	Background information of the patient such as past medical history

A	Assessment of information such as heartrate or other vital signs.
R	Recommendation for the next steps of the treatment plan

Shortly after the introduction of the SBAR was there an alteration to include Identification (Wacogne & Diwakar, 2010; Shah et al., 2016). Identification would allow for easier acknowledgement of the individual conducting the handover in order to create clarity of focus for the receiving team (Shah et al., 2016,). SBAR has been more common, but has not been successful in eliminating issues in communication as ambulance team members were less likely to clarify points of trauma and treatments that had been provided (Loseby, Hudson, & Lyon, 2013).

Iedema et al. (2012) saw the development and implementation of a new acronym-based checking system to improve communication during clinical handovers; specifically handovers between paramedics and emergency care staff in Australia. The development of IMIST-AMBO (Table 3) was in response to the research that showed other mnemonic devices and acronyms lacked content specific information that was important to the handovers (Iedema et al., 2012). There were additional steps that both the paramedic staff and the hospital emergency care staff were meant to adhere to when conducting a handover using this structure (Shah et al., 2016). Paramedic staff were advised to review their handover notes, to remain with their patient while completing the handover, and to ensure that an agreement has been made with the receiving team (ibid). The receiving hospital staff would need to adhere to similar principles, but additionally would need to ensure appropriate staff

and environment are available for the handover to take place and to check that the handover has been completed in an appropriate amount of time (ibid).

Table 3 IMIST-AMBO

I	Identification (patient)
M	Mechanism of injury/medical complaint
I	Injuries/information related to the complaint
S	Signs and Symptoms including GCS and vital signs
T	Treatment given, and trends noted
A	Allergies
M	Medications (patient's regular medications)
B	Background history (patient's past history)
O	Other information (scene, social, valuables, advanced directives, family informed)

The IMIST-AMBO was combination of the principles of SBAR and a tool for assessing trauma patients in the military called MIST (Jensen et al., 2013). The IMIST-AMBO continued to support a framework by which paramedics and receiving care staff can communicate efficiently but will reduce frequency of repetition of information by creating a

better ordered system of handovers (Jensen et al., 2013). The IMIST-AMBO was developed with the understanding of the cognitive limit of human memory and to better support the focus and attention of emergency medical teams during handovers (Shah et al., 2016).

Another mnemonic that was used by paramedic staff was ASHICE (Table 4) while the research on this type of procedure is sparse with only two studies mentioning its use a surprisingly high amount of UK paramedic workers (86.7%) are familiar with this device (Wood et al., 2015). Although developed to be a radio reporting tool not a handover tool most paramedics have been shown to have an awareness of how to use it and felt the structure improved communication with the receiving hospital trauma team (Budd et al., 2007).

Table 4 ASHICE

A	Age
S	Sex
H	History of the patient such as known ailments
I	Injury/illness
C	Condition such as vital signs
E	Estimated time of arrival (to A&E)

### 1.7.2 The effect of standardization

There have been conflicting reports on what standardized approach has seen more of an improvement to the conducting of clinical handovers and with the research being limited understanding of this area continues to be eluded (Wood et al., 2015). While arguments have been strong in suggesting that by using mnemonic devices during handovers would result in

reducing ambiguity of information in the exchange and improving the quality of communication between the different disciplinary teams, there has been confusion over what would be the best method to follow (Shah et al., 2016). Additionally there has been research that has shown that a standardized approach to handovers did not make communication more efficient, nor did it seem to benefit retention of information that was shared (Talbot & Bleetman, 2007).

The (I)SBAR has been a widely used method for structuring handovers and has received recommendation by the World Health Organization (WHO) as a method to be implemented to improve communication between medical staff, there have been different criticisms of how supportive it is for handovers (Shah et al., 2016). There have been different suggestions to the benefits of using SBAR, as hospitals that have implemented its use have seen improvements to the quality of care and safety provided to patients (Wong, Yee, & Turner, 2008). Mikos (2007) reported a reduction in times for handover completion from 6 minutes to 2 at a US-based hospital as a result of adopting the SBAR framework. 'After implementing SBAR, adverse events, as measured by the Global Trigger Tool, a standardized clinical audit method, improved from 29.97 per 1000 patient days to 17.64 per 1000 patient days.' (Wacogne & Diwakar, 2010, pg.174). A qualitative analysis between physicians and nurses on the use of SBAR showed that while both teams had a different way of training, their experiences with the framework brought about increase team collaboration and interprofessional relationships (Beckett & Kipnis, 2009). The SBAR was seen as an intervention that supported handovers as staff were better able to write more detailed, accurate, and concise patient reports (Beckett & Kipnis, 2009).

Conversely there has been much critique over the use of SBAR (Shah et al., 2016). It has been suggested that due to the diverse training of paramedics and with the limited time they spend with their patients the use of SBAR could lead to issues with the order of patient information being exchanged and the omission of vital content needed by the receiving hospital staff (ibid). Arora et al. (2005) noted that the SBAR resulted in leaving out content that may initially seem insignificant, but may be vital in the treatment of a patient. An examination of the telephone communications between physicians and nurses showed that the utilization of SBAR did not improve interprofessional communication (Joffe et al., 2013). Participants were shown to attempt to filter the patient information to the point where necessary data was lost (Joffe et al., 2013). A potential explanation for this pitfall in the framework was from a study of paramedics who used SBAR and found that they missed key signals that would have helped guide them and helped to maintain their focus when explaining information about a trauma patient (Loseby et al., 2013).

The IMIST-AMBO was designed more specifically for the purposes of being a framework for handovers between paramedics and emergency care staff (Shah et al., 2016). Where the IMIST-AMBO has been implemented has seen improvements in the communication and retention of patient information that is being shared between the different disciplines (Iedema et al., 2012). The development and review of this framework saw consistent improvements in communication and comprehension, which led to a decrease in the duration of the time taken for the handovers and fewer needs for repetition of information exchanged (Iedema et al., 2012). The use of IMIST-AMBO was to help filter out unnecessary information so that the paramedics only shared content specific information (Iedema et al., 2012). This was further supported by Dean (2012), which was a video analysis of clinical handovers using IMIST-AMBO and it was found that the information given by paramedics to receiving staff

increased while the duration of handovers decreased from 96 seconds to 83. Both Iedema et al. (2012) and Dean (2012) found that eye contact played an important role in time taken for handovers. Eye contact was a way for individuals to obtain and secure attention during the handover discussions, which was considered to improve the level of engagement between team members.

There has been critique of the use of the IMIST-AMBO framework. For example, compared to SBAR the IMIST-AMBO does not include recommendations (Shah et al., 2016).

Recommendations would allow for paramedics the opportunity to give their input on what treatments should be progressed with next. Recommendations has been replaced with (O), which is any other information and has been suggested to be a potential hindrance as paramedics would need to be able to provide their input about treatments (Shah et al., 2016).

Universities that have attempted to introduce IMIST-AMBO as part of the curriculum for undergraduate paramedics saw an increase in the length of time for completing handovers in simulation studies as well as the difficulties in implementing this type of framework into their training (Stevens et al., 2016). The lack of training and implementation of standardized approaches to handovers have consistently been barriers to their success (Wood et al., 2015).

While other studies have suggested that the use of mnemonics and standardized approaches have yielded little to no difference to the retention of information being shared (Talbot & Bleetman, 2007).

## 1.8 Chapter Summary

This introduction chapter has provided an outline and review on the existing research on clinical handovers provided by ambulance services. This approach began through an explanation of what was known about the particular context that these handovers take place

in. This was achieved through highlighting key issues that have been a hindrance to the success of the work activity and causing delays to treating patient (Section 1.2). This first chapter introduced the concept of human factors, which has become an integral concept in understanding issues of teamworking and communication (Section 1.3). Work as Done was shown to be a contemporary way of exploring human factors issues in the work environment through its focus on what actually involved in completing work tasks (Section 1.3.1). The literature review showed how key areas of communication and teamworking were issues during handover activities that risked patient safety. The extant research has highlighted the need to better understand the area of clinical handovers by ambulance services in order to improve patient safety and quality of care provided (Fisher et al., 2015; Sujana et al., 2015). This gap in the knowledge has stemmed from the lack of UK based research on this topic (Wood et al., 2015).

To address the issues outlined in this review and to update the knowledge on this topic the current study had the following research question:

*What are the dominant interactional features that shape the handover processes conducted by ambulance personnel and A&E staff?*

This thesis had the following aims to assist in answering this overall question:

1. To explore the interactional features used in the handover conversation.
2. To investigate what was imagined to be part of the handover activity with the actual patterns of work activities.

To explore this research question and aims of this thesis the methodological approach will be discussed in the following chapter.

# Chapter 2: Methodology

## 2.0 Introduction

Based on the findings from the literature review in the previous chapter, this thesis looked to address the research question: *What are the dominant interactional features that shape the handover processes conducted by ambulance personnel and A&E staff?* This chapter will outline the methodological approach used to explore this question and the aims of this thesis. First there will be a broad overview of the use video analysis as an approach to analyzing interactions (Section 2.1). Then there will be an outline of conversation analysis beginning with its historical development as an ethnomethodological approach and then focusing on specific analytical approaches it can be used for (Section 2.2). Following this section the particular data used for this thesis will be discussed which include: how it was obtained, analyzed, and ethical considerations made (Section 2.3).

## 2.1 The use of video-based research

The development of video-based research has allowed for greater insight and opportunity to explore various organizational phenomena as it has enabled new ways of analyzing data (Heath, Hindmarsh, & Luff, 2010). The use of videos has allowed researchers to understand a larger variety of actions that occur during a conversation by examining the non-verbal elements in a particular interaction (Goodwin, 1981). The non-verbal actions that take place in a given interaction could show how individuals respond not only with other individuals, but also with their own environment (Whalen & Raymond, 2000). As research has started to look into these additional aspects of a conversation it has been possible to better understand

the sequential order and interactional features used during social activities. For example, by exploring non-verbal actions used during healthcare interactions between patients and doctors has helped to understand how discussions and tasks were accomplished (Heath, 1986; Drew, Chatwin, & Collins, 2001; Heath, Hindmarsh, & Luff, 2010).

One of the benefits of video recordings was that it provided a permanent record of a specific event which researchers can draw on repeatedly as they develop a more in-depth analysis of a phenomena (Christianson, 2018). By having the ability to rewatch recordings has allowed researcher to capture fine grained aspects of how participants conduct themselves and orient to each other during an interaction (LeBaron & Jones, 2002). Video-based research has been particularly important in exploring how participants interact with their physical environment such as the space around them or relevant objects that were brought into a discussion (Christianson, 2018). Video-based studies in healthcare have shown the possibilities of understanding skills beyond communication, as researchers were enabled to understand the complex aspects within healthcare (Parry, 2012). ‘Because a large proportion of health care is delivered through face-to-face interaction and because it involves bodily topics and activities, the value of research that can systematically handle both vocal and non-vocal (bodily) elements of interactions is obvious’ (Parry, 2012, pgs. 374-375).

Much of the research exploring the healthcare that has used a video-based approach has focussed on interactions between a healthcare staff member such as a nurse or doctor and a patient (Parry, Pino, Faull, & Feathers, 2016). This has created a precedence for how this type of method could be used in this setting to explore these organizationally structured interactions. Video-based research, in specifically healthcare settings, helps to understand the ‘institutional talk’ that was a unique characteristic of this particular work context. Institutional talk separates

itself from everyday ordinary talk as it follows a pattern of speech that is more specific and restrictive (Drew & Heritage, 1992). There exist three key focuses in institutional talk: goals of participants were more restricted as they must be institution-specifically focussed, interactional contributions between speakers are constrained, the activities being conducted by speakers must commonly follow an institutional style framework (Drew & Heritage, 1992)

Videos used in research has been shown to stem from a variety of formats from going into a location and using a stationary or mobile camera to capture insitu interactions in different organizational settings such as medical consultations (Heath, 1986; Heath, Hindmarsh, & Luff, 2010). Iedema et al. (2012) conducted a video reflexive study to exploring the use of a standardized protocol in handover deliver from emergency services in an Australian based hospital. The study looked to capture video footage of ambulance and emergency hospital services conducting handovers, which was then shown back to the participants to measure effectiveness of the standardized method on structuring handover discussions. Iedema et al.'s (2012) study while did find some interesting results was limited in its approach to understanding handover delivery because it did not qualitatively explore the use of words in the structuring of handover discussions. Iedema et al. (2012) did highlight through the use of video analysis the potential implications of gaze to capture attention of interdisciplinary staff members during the handover activity.

The act of capturing primary data comes with different ethical and practical complications (Parry, Pino, Faull, & Feathers, 2016; Christianson, 2018). In healthcare settings research has shown there exists distinctive challenges and barriers to obtaining access when collecting video data. Parry, Pino, Faull, and Feathers (2016) identified that some of the issues with this method resulted from complications in obtaining consent from patients due to the sensitive

nature that would potentially be recorded. It was also shown that staff members were hesitant in participating in video recordings due to potential misuse of the data as a way to evaluate their performance (Christianson, 2018). Suggestions have been made to improve the accessibility and feasibility of video-based research, in particular healthcare settings, by including a Public and Patient Involvement study (PPI) (Holmes et al., 2019). A PPI study would engage with the relevant individuals who would potentially be part of a research project and allow for them to be included in the development of the protocol, which would increase likelihood of acceptability of a project (Holmes et al., 2019).

Alternative video data has shown to come from different media sources such as TV shows and materials available through YouTube (Ekström & Fitzgerald, 2014; Laurier, 2016; Jackson, Land, & Holmes, 2017). The use of data from TV shows such as news programs has resulted in finding different interactional features and tools used by speakers during discussions (Ekström & Fitzgerald, 2014). Jackson, Land, and Holmes (2017) analyzed the decision-making process using video data obtained from a reality TV show called *One Born Every Minute*. Their study highlighted key routine practices employed by healthcare providers and explored interactional elements of how patients were included in the decision-making process. Jackson, Land, and Holmes (2017) illustrated how data obtained from TV sources could be used to evaluate healthcare interactions. YouTube has become another increasingly popular format to obtain video data (Christian, 2009). Laurier (2016) argued for the use of YouTube as a source for material due to the availability and potential richness of data in exploring non-verbal behaviour and conversational structures across different settings. These overall findings have shown how these secondary sources for video data could be used to analyze key interactional elements and the different processes involved as part of work activities.

### 2.1.1 Naturally occurring data

One fundamental aspect of video-based research is to have collected data that was naturally occurring, that is data that has had as minimal influence by the researchers as possible or data that would be occurring even if no one was present to witness it (Parr, 2012). 'It is natural in the specific sense that it is not 'got up' by the researcher using an interview schedule, a questionnaire, an experimental protocol or some such social research technology. The appropriate test for whether the talk is naturally occurring is whether the talk would have taken place in much the same way if the researcher had been taken ill that morning. Experiments, focus groups and interviews would have had to be cancelled; recordings of therapy sessions or family mealtimes would have carried on regardless' (Potter, 1996, pg. 191). This style of data would allow for the capture and understanding of coordinated interactions rather than behaviour that was manipulated through interventions (Heath, Hindmarsh, & Luff, 2010). Naturally occurring data was argued to give the observer a wide diversity of interactional resources that would allow for a more substantial range of a particular event (Potter & Hepburn, 2007).

A way to better understand the different interactional elements that help to shape the way handovers from ambulance services were conducted was through the use of the analytical approach conversation analysis. The following section will introduce this approach by starting with some historical context about its development.

## 2.2 The historical context of CA

Conversation Analysis (CA) is a methodology that follows set analytical principles and procedures with the aim of understanding talk as an integral part of social interactions (Sidnell, 2010). Harvey Sacks, one of the founders of this methodology, together with Emanuel Schegloff and Gail Jefferson, in the 1960s looked to find a way to analyze and make sense of ordinary every day conversation as a way to show that these social interactions could be studied in an orderly way (Sidnell, 2010; Heritage & Clayman, 2010). Each of the founding researchers brought in a different perspective to the development of CA (Heritage, 2005).

Harvey Sacks drew inspiration for the development of CA from different sociological theorists of the time: Erving Goffman and Harold Garfinkel (Sidnell, 2010). Goffman, was interested in the way people communicated and interacted with one another in their normal day to day lives (Sidnell, 2010). Goffman's core interests lay in the naturally occurring 'rituals' of face-to-face interactions that shape the way people conduct themselves in social situations (Hutchby & Wooffitt, 2008). Goffman coined the term, 'interaction order', as a way to group together these social interactions (Goffman, 1983). 'This 'interaction order'...is itself a moral ordering: complex web of standards, expectations, rules and proscriptions to a given situation, avoid embarrassing themselves and other and so on' (Sidnell, 2010, pg. 7). This perspective of human interactions saw what was initially glossed over as normal day-to-day activity to be seen as a social institution by which scientists from different disciplines could use CA in different environments (ten Have, 2007). Goffman helped established a new way of thinking by encouraging researchers to see that interactions were part of a social process that influence how individual respond and react to each other (Heritage & Clayman, 2010).

Concurrently during this time saw another movement indirectly further developing CA as a methodology through the work of Harold Garfinkel (Heritage & Clayman, 2010). Garfinkel expanded on the work of Goffman, but in an essence took things further by suggesting that theories of social institution and interaction order were only scratching the surface in understanding social actions (Heritage, 1998). Garfinkel was interested in how individuals developed a sense of shared understanding and how this shapes the way individuals respond to each other, which led to the development of the field of *ethnomethodology* (Heritage & Clayman, 2010). Garfinkel used the term ethnomethodology as a way to describe how individuals analyze and understand the social world around them and decide on actions to take (Garfinkel, 1984). Ethnomethodology was a way for Garfinkel to study the nuances of everyday conversations by examining how individuals continuously engage in common sense reasoning (Stokoe, 2006). The connection between ethnomethodology and CA is considered at times contentious as scholars disagree over how independent they are of each other (Maynard & Clayman, 2003). It has been suggested that the methodology of CA to focus on the structural organization of interactions through analysis of talk-in-interaction while ethnomethodology is a broader approach focused on how people make sense of everyday activities through social order (Moore, 2013).

Garfinkel argued against sociological theorist of the day (i.e. Parsons and Schutz) who were suggesting that ‘social order is a result of socialization and the internalization of norms’ (Sidnell, 2010). It was originally suggested that through ‘internalized norms’ social actions are used for the sole purpose of achieving a specific end within a set particular framework (Heritage, 1987; Sidnell, 2010). Talcott Parsons, who was a prominent sociologist during the 40s and 50s, was focused on the theories that suggested that individuals are ‘motivated to conform with the demands of social structure by the impacts of value systems and institutional

norms' (Heritage, 1987, pg. 177). Garfinkel felt that by proposing that individuals are influenced by norms or social institutions it would need to be acknowledged that there is this idea of common sense reasoning and shared understanding that allows individuals to know what they are doing (Heritage, 1998). Garfinkel was interested in this idea of shared understanding to explain how individuals from different backgrounds were able to make sense together (ten Have, 1986). Background knowledge was a fundamental aspect of Garfinkel's argument as it showed that individuals can make sense of different situations based on their previous experiences (Heritage, 1998).

The ideas and theories established by Goffman and Garfinkel led to the development of the field of CA by providing a strong evidence base for studying social interactions from a variety of different disciplines (Sidnell, 2010). They provided the foundation for other researchers of the time to further expand on their ideas to explore the structure and tools used by individuals within a conversation. This was the basis of inspiration for Sacks to develop CA as explained in the following section.

### 2.2.1 Sacks and the development of CA

Harvey Sacks took inspiration from the sociological and ethnomethodological theories established by Goffman and Garfinkel to pioneer the development of CA (Maynard, 2013). Sacks' focus was on the distinct arranged characteristics of how talk is produced and built on the theories of ethnomethodology. Sacks became interested in the use of recordings to analyze talk-in-interaction and truly begin to shape CA as it is seen today (Hutchby & Wooffitt, 2003). Initially, Sacks began studying phone calls from a suicide helpline and trying to understand how individuals would work with callers on obtaining their names (Liddcoat, 2011; Wooffitt,

2011). Sacks observed different utterances and unique interactions between callers and receivers that helped to understand and build a structure within conversations (Liddcoat, 2011). Through analysis of call recordings Sacks was able to understand and study how individuals interact with each other and produce a social order (Lester & O'Reilly, 2016). In many of the examples Sacks obtained he noted that callers would be hesitant in stating who they were even when prompted by the receiver. By breaking down and examining the phone calls Sacks was able to investigate how words were used and pronounced making it possible to analyze the sequence of these interactions.

This saw the beginning of looking at conversations and the orderliness of talk. Sacks argued against common trains of thought of the day by suggesting that conversation follows a particular order and allows individuals to interact with each other successfully on a regular basis. By concentrating on conversation being an interaction that follows a particular sequential organization, CA is often referred to as 'talk-in-interaction' (Atkinson, Heritage, & Oatley 1984). The objective of CA was to understand the structure of conversations through examination of different interactional tools used by speakers in order to understand how people come together and work through social activities (Lerner, 2004).

## 2.3 Data Collection – summary of the 2 parts

### 2.3.1 Primary data collections – ethical considerations

On the commencement of the PhD, the initial proposal outlined a two-pronged approach methodology that included both primary and secondary data collection. The intention was that secondary data could be collected in the first phase of the research and would be followed up with a further phase of primary data collection. This approach was followed through the first

two years of the PhD. Alongside the analysis of the secondary data collection, the process of seeking access to primary data, of video recordings of handovers, from the UK NHS was undertaken. Unfortunately, this proved to be not possible within the timeframe of the PhD In this section the steps that were taken to gain organisational access and then attain NHS ethics permission are described.

### 2.3.1.1 Collecting primary data in the NHS

In order to collect handover recordings within the emergency care setting approval was required from both the appropriate ambulance Trust and the receiving Acute NHS Trust where the emergency care setting was situated. A large Ambulance Trust was approached and agreed to support the project. Representatives from the Trust engaged in a constructive dialogue on how to overcome some barriers and continued that commitment throughout the PhD. Initially a number of acute NHS Trusts were also approached. One NHS Trust initially agreed to support primary data collection, a site visit took place to discuss with staff the logistics of data collection and the internal approval processes required. However, during the internal approval process the Trust reconsidered their decision, citing that their organisation was facing a period of significant organisational change, therefore video recordings would not be feasible. Following this setback a second Acute NHS Trust agreed to support the project and a Senior Clinician from the Children's Acute Emergency Medicine Department engaged in supporting the project. University ethical approval was attained and this proceeded to submit to the NHS REC approval process (10/04/2018). During this next stage I became involved in meetings with the Trust Research and Development department, the Information Governance Lead and a number of other Trust representatives where the proposal put forward was reviewed and revised, which led to some lengthy delays. The

delays stemmed from queries over how to obtain consent from patients and adhere to patient confidentiality due to the footage being raw prior to being edited.

The process was further compounded as time-lapses coincided with process and paperwork updates, therefore previously submitted paperwork had to be revised, approval signatures were sought on a number of occasions, as who could approve institutional support also changed during this time, and templates needed to be reformatted. For example, the GDPR regulations came into effect in 2018 and having submitted paperwork just prior to this the delays resulted in a new set of paperwork having to be resubmitted following the internal review in order to now adhere to GDPR. During this process a Patient and Public Involvement (PPI) study was also carried out (See below). The NHS REC approval process involved attending a review board, which took place in (13/03/2019). At this meeting, which I attended with my PhD supervisor, project was reviewed, however it was subsequently was rejected on the basis of a number of concerns from the board. In reviewing these with the Trust sponsor and supervisor we outlined a response to address each of the points. However, at this stage in the PhD it was also acknowledged that within the time remaining it would not viable to resubmit to NHS REC and hope to collect sufficient data for analysis.

### 2.3.1.2 Patient and Public Involvement Study

As part of the above process, in order to prepare for future research and to support being able to collect primary data, a Patient and Public Involvement (PPI) study was conducted. PPI research has been used in healthcare research as a way of involving the public in the development of a study in order to create awareness (Holmes et al., 2019). PPI work is typically carried out by the advice of the NHS as a way of ensuring that a “lay” understanding of a study has been acknowledged and to also increase accessibility of research

being undertaken. The purpose of PPI studies has been to improve engagement between research organization and the public to support better research practice (Voss, 2016).

Accessibility and acceptability of video-based research in medical settings has been a topic of focus due to the sensitivity of the location and the vulnerability of those who might be involved (Parry, Pino, Faull, & Feathers, 2016).

Through engagement with a local trust and with the intent to support future research a PPI study was carried out with 20 patients in A&E. Additionally, 7 members of staff relevant positions such as consultants, paramedics, and nurses were included in the study. The PPI study explored the opinions of patients and staff would have with taking part in video-based research in Paediatrics A&E. This particular setting was chosen because through relationships with the Trust a Principal Investigator (PI) was identified who was a Paediatrics A&E Consultant. Parents and guardians were approached in a Paediatrics A&E Department and asked to read an information sheet about the type of research that would be carried out (See Appendix B) and were asked questions about their opinions if they were to take part in the study (See Appendix C). Parents and guardians had to represent the potential patient group as they would have to consent to their children taking part in this type of research. Similar procedures were used for the staff members included.

All participants who were approached, and took part, stated their acceptance with potential video-based research being conducted. One of the key topics that was important for both staff and patients was ensuring anonymity. Patients commonly responded that they would want to seek assurances that no identifiable information would be included in the study. Once it was explained that all personal and identifiable information would be removed from the recordings the patient group did not have further concerns about that. Some of the staff were

concerned about being recorded as they thought the information would be used to criticize their work practices. As the focus was not to assess standard of practice this did not remain an issue. Other staff members were accepting taking part and stated that it would be good to obtain the recorded videos to use as a reflexive practice.

The camera positioning was a discussion between both groups. The patient group were ameliorated to learn that the camera would be stationary and placed at a high angle so to only capture the interaction between the staff members. Staff members were more accepting of the research when they learned that there not be a moving camera filming around them during their discussions.

Obtaining consent was a focus of discussions supported by the staff group as they had advice on how best to capture consents from both groups of participants. This has also been key issue discussed during the NHS Rec process (see above.) The staff group suggested that retrospective informed consent could be an easy way to obtain consent, which would mean approaching staff members following the handover activity. Using a process whereby the researcher conducted talks about the project with staff groups, prior to data collection commencing, was viewed as an positive means of obtain staff support and consent. The staff group also assisted in some potential issues with obtaining patient consent. A critical determining factor was the sensitivity of the issues that led them into attending the hospital.

The PPI work was undertaken in support of the NHS ethics application but was also considered an important activity in the planning of the future research that would involve the use of video recordings of clinical handovers.

### 2.3.2 Types of data collected – secondary data

The data used for each analytical chapter was obtained through an online source called Learning on Screen developed through the British Universities and Colleges Film and Video Council also referred to as Box of Broadcasts (BoB) (BUFVC, 2018). BoB is an online resource that stores collections of full TV episodes available to students and staff across the UK as long as the university holds an Educational Recording Agency License. Episodes of TV shows become readily available following being aired. In accordance with the BUFVC and ERA terms and conditions, all material obtained through their services are allowed to be used for educational purposes.

As discussed earlier in this chapter (section 2.1.1), it was important to obtain naturally occurring data examples in order to explore the actual handover process and the possible nuances involved in the activity. It was decided that the focus on data collection will be on pre-existing handover interactions from reality TV programs as that would be the most naturally occurring data available. It had also been shown from previous research the validity of using CA to explore healthcare interactions from data derived from medical TV programs (Jackson, Land, & Holmes, 2017).

As with all data that is claimed to be naturally occurring, researchers need to err on the side of caution in determining the extent to which the data is naturalistic. Potter and Shaw (2018) have recommended the use of two tests on data to defend the claim of it being naturally occurring. The first test is called the ‘unwell social scientist test’ (pg. 187), which recommends that researchers consider if the data they obtained would have occurred irrespective of whether or not someone had been present to record the activity. The handover data obtained for this thesis

passes this first test as these clinical situations would have taken place irrespective of whether a film crew was present to record them, or the researcher sought to analyse the interactions. The second test is referred to as the 'recovery action test'(pg.187), which requires the researcher to consider the possibility of being able to go back to the events occurring based on the descriptions provided by the researcher. For example, by having video recorded data of clinical handovers it was possible to recover events and interactions in order to capture all minute details of those data. Heritage (1984) has also suggested that when research includes video data of an interaction this presents the opportunity to repeatedly watch a clip and develop an in-depth analysis that would allow you to pass this test. The considerations of these tests have given support to the claim the data used in this thesis was naturalistic.

Data acquired for this research were examples of clinical handovers being conducted from ambulance services to emergency hospital staff. Initial searches looked for any examples of handover delivery in this manner and through the tools available on BoB clips were created for each handover example. The data obtained were from shows including: 24 Hours in A&E, The Real A&E, and Emergency Helicopter Medics. 120 examples of handovers were obtained across the different programs ranging from about 30 seconds to over 1-minute interactions. The programs were all UK based and set in the NorthEast of England with the exception of 24 Hours in A&E, which was based in London. The data included a variety of clinical issues patients were being presented with by the ambulance services. This amount of data allowed for exploration of variability and consistency across the extracts in order to properly understand the patterns of activities.

### 2.3.3 Ethical considerations

In accordance with Northumbria University's and the BPS' ethical guidelines (BPS, 2018) it was required to ensure all proper care was taken with the data. While this research does explore human interactions and activities as it was derived from secondary publicly available sources there was no need for obtaining consent. This was because all participants in the examples would have already given consent to being recorded. The researcher did not come into contact with anyone included in the extracts and the data was naturally occurring as it took place out of a researcher context. Due to the nature of the data being from publicly available TV programs there was no need for additional sensitivity measures to be into place such as anonymization of names and places (Antaki, 2002). Each of the extracts included in this thesis were referenced to show the particular episodes and shows form which they were obtained (Appendix A). This ensured that the terms and conditions for using the data were upheld.

### 2.4 Transcription and analysis

Once the data had been collected the handover clips were then viewed repeatedly as part of an initial analysis phase of becoming familiar with the data. By viewing the clips it was easier to identify which handovers should be transcribed and analyzed. Ekström (2001) highlighted how important it must be for researchers to consider the use of secondary sources for data such as TV shows due to the editing process. This has meant when examining the data obtained for this study it was necessary to consider for any edits made to the interactions. This was why following the initial collection of data only fully completed examples of handovers were included in the analysis as these examples were filmed in real-time. Examples of handovers

were considered complete if there was some form of introduction and closing present in the discussion.

As with other qualitative research methods, one of the most important analytical steps involved the transcription (Liddicoat, 2011; Sidnell, 2010). One consideration that needed to be made when analyzing the transcripts was categorizing the participants during a handover. In certain examples it was possible to work out the job titles of ambulance staff members prior to the ambulance team arriving to the hospital such as paramedic or ambulance consultant. As it was not always possible to discern the job roles of the staff members the abbreviation of AMB was used to indicate members of the ambulance services team. For the hospital staff additional footage outside of the handover activity made easier to note if they were doctors or nurses which were then abbreviated to show this distinction. Each analytical chapter (Chapters 3, 4, and 5) presented a collection of handover examples with each transcript labelled with an extract number and a handover clip number that was in reference to the chronological order by which it was obtained.

Transcription is considered a unique feature within CA as the data that has been collected was naturally occurring making it necessary to develop specific annotations to analyse the nuances within speech referred to as Jeffersonian Transcription (Sidnell, 2010; Wooffitt & Holt, 2011). Jefferson developed this style of transcribing as a way of analysing all aspects of speech from inflections to laughter to nonverbal activity within a given interaction (Jefferson 2004; Hepburn & Bolden, 2013). This style of transcription gave way to examining what might be considered minor contributions in a conversation, but lexical interactional significance (Hepburn & Bolden, 2013). In order to encapsulate all the distinctions within an interaction unique symbols were chosen as a way to analyse these features (see table 5 for more details).

As CA is an inductive method or a method that takes in broad generalisations about a particular topic that has been brought together by specific observations, it was necessary as part of the analytical process to have a transcription method that would allow the scrutiny of all features of a dataset (ten Have, 2007). This increased the necessity in writing and analyzing transcripts that showed not only what was said, but the way in which things were said. For analyses of this thesis this meant it was important to consider the prosodies of speech by examining the uniqueness of intonation and why individuals would put an emphasis on certain words during the handovers. This was useful in understanding the structure of handovers as by examining the prosodies within speech during a handover that could be shown where priority of treatment was being directed towards. There were other instances this type of transcription analysis saw where individuals would slow down or increase speech, which was important in being able to observe how individuals share salient information about a patient.

Jeffersonian transcription has allowed for the analysis of simultaneous or overlapping talk when more than one individual is speaking at the same time, which can be important in explaining whether information has been properly exchanged and understood by the recipient in an interaction (Chatwin, 2004). Simultaneous speech has been found to be important in CA as it could be caused by interlocutors attempting to share information at the same time. During handovers this was important to consider as by examining those moments of overlapping speech allow for better understanding of the structural organisation of the conversations. Examples in the data have shown handovers where more than one person spoke at the same time were particular points of potential difficulties during the interaction as there was an increased likeliness of misunderstandings between the team members.

Table 5 Jeffersonian Transcription

<b>Symbol</b>	<b>Meaning</b>
[spe ech]	Brackets indicate overlapping speech
(.)	A micropause that is audible, but too short to measure
UPPERCASE	Indicates that it was spoken in loud volume
°whisper°	Degree symbol indicates it was spoken in a whisper or quiet volume
=	Indicates a broken or interrupted utterance and a continuation of that utterance
↑	A raised arrow indicates an increase in pitch
↓	Indicates a lowered pitch
>quickly<	Indicates utterance spoken quickly
<slowly>	Indicates utterance spoken slowly
(.4)	Numerical value between brackets indicates pause length calculated to a tenth of a second
-	A hyphen indicates a break in speech
<u>underlined</u>	Indicates the speaker is placing an emphasis on utterance
(hhh)	Indicates an audible exhalation
(.hhh)	Indicates an audible inhalation
((turns around))	Double parentheses indicates a non-verbal activity
::	Colons indicates a stretched-out utterance
(unclear)	Single parentheses indicate an unclear utterance

### 2.4.1 Turn-taking

Turn-taking is one of three key constructs within conversation analysis with the others being sequence organization and repair (Sidnell, 2010; Liddicoat, 2011). Turn-taking was a fundamental observation made by Harvey Sacks in order to understand how interlocutors know when to participate at an appropriate time in a conversation (Sacks, Schegloff, & Jefferson, 1974). By understanding the features of turn-taking within a conversation it was possible to observe how individuals would orient themselves with an interaction by understanding when one turn ends and another begins (Schegloff, 2000). In addition to understanding when to participate in a conversation, turn-taking provides interlocutors the opportunity to complete specific interactional tasks such as greeting and giving news (Lerner, 2004). The turn-taking systems that interlocutors use in conversations includes unique features including intersubjective understanding and mutual sense-making (Pomerantz & Mandelbaum, 2005).

Turns in a conversation are made up of a series of compositions referred to as Turn Construction Units (TCU) (Sacks, Schegloff, & Jefferson, 1974). TCUs form different grammatical functions with an interaction such as a question, phrase, or sentence. (Liddicoat, 2011). TCUs are sensitive to the context of a conversation and provide of recognizable completion by one speaker (ibid). There are four distinct points within a segment of talk when a speaker can identify as a completed TCU: grammatically completed, intonationally completed, pragmatically completed, and nonverbally completed (Liddicoat, 2011). A grammatically completed TCU would involve a point in an utterance where it would syntactically complete such as the end of a sentence. When there is a falling or rising tone in speech (i.e. a question) the utterance would be considered complete. Pragmatic completion can be vague but can occur when the conversational action is considered complete (Schegloff,

2000; Lerner, 2004). When a speaker obtains the recipients gaze or from a gesticulating type action it can be considered a completed nonverbal point in a conversation (Drew, 2012).

Following on from one of the pinnacles of ethnomethodology, is the concept of mutual sense-making where individuals coordinate coherency and understanding during an interaction (Pomerantz & Mandelbaum, 2005). During an interaction, interlocutors would be coordinating their turn-taking organization so that they can follow along with a conversation (Stivers, 2013). The structure of a conversation requires for all involved to be able to respond to utterances in a relevant and logical way. This coordination in an interaction required there to be a consistent way that turns are connected, which can also be referred to as Transitional Relevance Places (TRP) (Liddicoat, 2011). TRPs are specific points within a conversation where a speaker completes an action and the turn passes to another participant. These points were not always noticeable and do not interrupt a conversation so there can be a challenge in being identified with an interaction (Liddicoat, 2011). Within TRPs speakers would orient themselves to the an interaction by either selecting the next speaker or self-selecting themselves to begin a new turn (Sacks et al., 1974). In certain cases, speakers make it clear who they are expecting to speak next by asking questions directed to a specific individual or by using a nonverbal cue such as eye gaze or gesture (Goodwin, 1979; 2000). Within the handover data for this study there were different interactional tools that speakers would use in the designing of turns, such as the phrasing or presenting of patient information as a way to encourage engagement between the team members.

Analysing turn-taking in interaction posed some unique challenges when overlapping speech occurs within a conversation, or a point where more than one person speaks at the same time (Sacks et al., 1974). To deal with issues of overlapping speech it has been suggested that a

transition space can be considered part of the analysis. A transition space begins just prior to a TRP and finishes right at the end of a TRP and provides a way of indicating the duration of a beat of silence during speaker change (Sidnell, 2010). In the data there were instances of overlapping speech where multiple speakers involved in the handover began speaking at the same time. Transition spaces provided a way of making sense of these instances by being able to examine the turn-taking system and whether utterances were actually completed before another speaker began their turn. In healthcare interactions these instances of overlapping speech can be important in seeing if individuals are properly being understood and listening to the salient patient information being exchanged.

There were instances where overlapping speech can become problematic where speakers were not close to completing their turn when the overlap occurred (Liddicoat, 2011). To deal with the interruption Schegloff (2000) recommended two solutions: hitches and perturbations. Hitches occurred when a speaker cutting off their talk and not completing their thought, prolong words, or repeating a segment. Perturbations showed changes with a speaker's intonation such a rising in pitch or volume, as well speakers slowing down or speeding up their speech.

#### 2.4.2 Sequence organisation

Sequence organization builds on turn-taking and provided a way of segmenting the key aspects of interaction by grouping together the utterances and actions. Utterances referred to the use of turn-taking devices as previously discussed and actions being the goal or purpose of what is being discussed within an interaction such as a question or request (Schegloff, 2007; Sidnell & Stivers, 2012). Sequence organization was a way of examining the different structural changes

to an interaction. The key aspect within sequence organization is the particular positioning of an action that is taking place within an interaction. This was built on the idea that the result of one action influence the relevance of subsequent actions (Schegloff, 2007). The relationship between these different actions were referred to as adjacency pairs (Schegloff & Sacks, 1973).

#### 2.4.2.1 Adjacency pairs

Conventionally within interactions there would be a statement or question that would have a paired expected response and in CA grouping these actions or pairs provided a way of understanding the orderliness of the conversation (Schegloff & Sacks, 1973). Adjacency pairs were what sequences were built on and they were made of three: they need to consist of at least two turns, have two speakers, and be ordered into differentiated pairs (Sacks, 1992). A basic turn-taking sequence would involve one individual asking a question and the other individual responding with an answer, which was why a key feature of adjacency pairs would require two speakers and two distinct turns in an interaction (Sidnell, 2010).

Adjacency pairs could be split into distinct pair parts: first pair part (FPP), second pair part (SPP), and sequence closing third (SCT) (ten Have, 2011). FPPs are the initiating utterances that begin a specific sequence (Schegloff, 2007). In my analysis this would usually involve an initial greeting by paramedics to the recipient handover crew or a member of either team asking a question about the patient or their treatment. SPPs would be the response to the utterance or action of a prior turn and would often be an answer or acknowledgement to a question . There can be flexibility within the structure of the FPP and SPP as there can be intervening talk within an interaction, which are referred to as insert expansions and add additional contextual information to a conversation (Liddicoat, 2011). SCTs are a way that interlocutors close a sequence in an interaction and are designed to follow the SPP by showing a form of receipt or

final acknowledgement of the sequence, which usually consists of words such as: 'oh', or 'okay'.

One of the analytical features when looking at sequence and adjacency pair structures is the concept of preference organization (Schegloff, 2007). Preference in CA refers to individuals within an interaction having different options to choose from in order to decide on how they will be contributing to the discussion (Liddicoat, 2011). Preference did not refer to the personal desires of the speaker, but instead it was in reference to the particular patterns with an interaction that would be considered socially acceptable. Preference organization can be divided between either preferred or dispreferred responses. Preferred responses typically occur immediately and are considered good for social relationships as they are usually an agreement or acceptance of invitation or question (Liddicoat, 2011). Sacks (1987) further noted that preference design included a preference for agreement where the FPP has designed their utterance in a way that a trajected SPP should be in agreement. Another key organizational design that Sacks (1987) identified was about preference contiguity, this was where SPPs would occur immediately following an FPP and there was no extra interactional material taking place in between. Dispreferred responses can be socially problematic as they occur when an interlocutor takes longer than expected to give a response and tends to be a rejection of a request (Sidnell, 2010).

### 2.4.3 Repair

Repair is a broad concept within CA is a mechanism that has been designed to understand moments within an interaction where there has been an error and a correction taken place (Jefferson, 1987; Sidnell, 2010; Liddicoat, 2011). Many different types of errors can occur with a conversation that might make it difficult for interlocutors to be able to understand each other

and lead to larger problematic issues (Bolden, 2013). There exist a variety of issues that could lead to ‘trouble’ arising within a conversation and examples of these issues included individuals misunderstanding speech due to difficulties in hearing each other or speaker saying the wrong or pronunciation (Schegloff, Jefferson, & Sacks, 1977). By analyzing repair it was possible to identify areas of problematic or troublesome talk to see how speakers resolve issues in interactions (Bolden, 2013). Repair is considered distinct from making a correction in that it is not only about difficulties within an interaction, but it is meant to provide a way to ‘fix’ points where mutual sensemaking could be lost (Schegloff, Jefferson, & Sacks, 1977). Repair is an important to conversation analysts as it allowed for a way to explore how interlocutors deal with trouble or problem speak by seeing how they deal with clarifying any misunderstandings before proceeding with the next course of action. In handover data identifying points of repair could be important as the extant research has shown a lack of clarity in speech has been linked to issues of patient safety and care (Bolden, 2013).

Schegloff, Jefferson, & Sacks (1977) proposed a unique way of distinguishing the different types of repair within an interaction and these have been referred to as self and other initiated repair. The difference between self and other initiated repair comes down to which of the speakers in an interaction notices a problem in the talk and begins the process of fixing it (Kitzinger, 2013). In self-initiated repair the problem talk has been identified by the one who made the error and they also are the one to fix the problem. In other-initiated repair the recipient in the interaction has noticed the repair the recipient has noticed the problem talk and has indicated it to the initial speaker who then fixes the issue or misunderstanding.

There are some unique features in identifying repair within an interaction that can dictate the next turn orientation for speakers (Jefferson, 2015). Repairs can occur within the same-turn

and this is shown by the use of noncommittal sounds such as ‘uh’ or ‘uhm’ that create pauses or breaks within a turn. Schegloff et al. (2007) additionally noted that there can exist a particular preference for self-repair. This means that most often, the speaker repairs their own talk and this occurs regardless of whether the repair had been initiated by another speaker or in a separate turn. For repair that occurs in second position or is other-initiated it can be spread across multiple turns that form a distinct sequence of an FPP initiation that is followed by an SPP repair (Schegloff, 2000).

## 2.5 Other key areas of interest in CA

### 2.5.1 Epistemics and the exchange of knowledge

A recent key consideration of conversation analysis has been to understand how participants within an interaction access shared knowledge referred to as epistemics (Heritage & Raymond, 2005). Epistemics was a way of explaining that while participants were interacting they were accessing a shared knowledge base and this influenced the turn-taking design and sequence structure (Heritage, 2012). Heritage (2013) argued that there exist both an epistemic stance and epistemic status that provided a way to explain who has knowledge in an interaction and the influence that is having on the turn-taking design. Epistemic stance proposed that there was an individual within a conversation that had access to a set domain of information that allowed for them to have sufficient (or insufficient) knowledge (Heritage & Raymond, 2005; Heritage, 2013). A distinct feature of turn-taking designs for speakers was an orientation to what the recipient is supposed to know about the world and epistemic stance is way of explaining this feature (Heritage, 2012). Epistemic stance is broken down to the unique grammatical tools that are used by a speaker to convey their shared level of knowledge with a recipient (Heritage, 2012). These were important distinctions to consider when analyzing the handover data as

sources of information were being obtained and discussed between members of interdisciplinary teams, which meant they needed to consider potential discrepancies in knowledge. Epistemics was the analytical focus being discussed in Chapter 4.

## 2.5.2 Embodiment

While the research on conversation analysis has addressed many different possibilities for the structuring of turn-taking within an interaction one key feature that has become more relevant through the use of video recordings is the phenomenon of embodiment (Goodwin, 2000). Embodiment was a way of exploring how actions such as gestures and body movements add a unique contextual element to conversations (Goodwin, 2003). Analysis of the organization of embodied actions provide a multimodal approach to understanding of a particular social activity (Luff & Heath, 2012).

Gesticulating and pointing during an interaction provided a way to understand next turn actions within a conversation (Clift, 2014). The use of pointing has been shown as a way for speakers to draw attention to something or to clearly direct who the next speaker will be in the following turn (Mondana, 2011). When analyzing handover interactions, the occurrence of pointing was key to understanding speaker turn-taking as interlocutors would often point to show patient ailments or to draw attention to themselves to ensure that the focus was on them during the handover. As talk is a social action that is made up a series of systems and organizations that shape the way individuals communicate with each other (Goodwin, 2000). The additional use of gestures and other embodied actions while speaking added an additional layer of contextual depth to a conversation such as conveying an emotive response to what a speaker has said or to show a level of engagement between speakers (Mondana, 2007). Embodiment was the particular analytical focus used on to explore the handover data in Chapter 5.

## 2.6 Chapter Summary

This chapter began by introducing relevance of video-based research and its applicability in being able to help explore answers to the overall research question for this thesis. This was then followed by exploring the development path of CA with the aim of showing how methodological approach could be used to identifying structuring of discussions and shaping of handover activities. This section also discussed the methods used for obtaining and analyzing the data, which included information on the ethical considerations made for this research. The next chapter will be the first analytical chapter exploring the overall structure of handovers delivered by ambulance services.

## Chapter 3: The Clinical Handover Structure

### 3.0 Introduction

This first analytical chapter is an exploration of the different interactional features that occur during a clinical handover. As discussed in Chapter 1, the clinical handover consists of the transferring of patient information from one medical team to another (Symons et al., 2012).

This first analytical chapter will be a broad exploration of how ambulance members and receiving hospital staff frame their handovers and the unique interactional tools that they use to support the sequential development of the activity. Healthcare teams must adhere to institutional boundaries in order to focus their discussions on specific goals such during the exchange of patient information (Mayor, Bangerter, & Aribot, 2012).

The exploration of institutional talk has shown that speakers must structure their interactions around specific institutional boundaries (Drew & Heritage, 1992). The key focus of institutional talk is on goal and task orientations, which means the shape of handover discussions would be influenced by the need to follow a pattern that can be conducive to the purpose of the task and the restrictions of the institutional context (Heritage & Atkins, 1984; Clayman & Gill, 2013). The application of conversation analysis (CA) to institutional talk provides a way of exploring recurrent features and routines in work practices (Antaki, 2011). The research on CA in medical settings has focused mainly on interactions between patient and healthcare provider (Hudak, Clark and Raymond, 2009). While this indicates a limitation in the previous research, the findings from extant studies has shown in medical contexts individuals use interactional tools similar to ordinary conversations even under the restriction of institutional normatives (Clayman & Gill, 2013).

As identified in Chapter 1, there exist different factors that could impact the activity of the clinical handover from ambulance services. These factors included issues around communication and teamworking between interdisciplinary team members, distractions in the emergency department, and the introduction of different standardized mnemonic devices (Iedema et al., 2012; Wood et al., 2014). CA, as a method, allows for the examination of how healthcare staff coordinate their communication and team working in conducting the handover activity (Mori, Inamura, & Shima, 2017).

### 3.1 Analysis

Analysis of the data showed that prior to the handover commencing there was a pre-handover alert that drew attention and focus between the ambulance services and receiving emergency care staff (Section 3.2). Following there were 3 distinct phases of the handover initial information exchange, clarification of treatments, and concluding remarks. The first phase involved the commencement of exchanging patient information typically the patient's name and the events that led to them needing medical assistance (Section 3.3). The second phase allowed for opportunities for the questioning of events and treatment that had been provided by the ambulance team (Section 3.4). The third and final phase saw how speakers would coordinate the disengagement of the handover and any potential follow-up requests (Section 3.5). A deviant case was analyzed to explore a handover situation that was an outlier to the normal structure and to understand what would cause an alteration in the normal routine (Section 3.6). Table 6 illustrates the structure of the handover sequence and has been based on Jefferson's Troubles-telling Sequence (1988). Jefferson identified key structural components called troubles-telling, which was where speakers must attain to a point of trouble in their interaction while adhering to the regular purpose of their activity. In the

analysis of handovers, it was commonly shown that as the activity would progress speakers would orient to particular areas of troubles such the actions of treatment provided by the ambulance crew prior to arrival.

**Table 6 Handover Sequential Structure**

1. Pre-handover Alert
a. Greetings between staff
b. Obtaining attention prior to handover exchange
2. Phase 1 – Introducing the Patient
a. Exchange of initial patient information including history
b. Description of events that led to the patient needing emergency care
3. Phase 2 – Clarification of Treatment Provided
a. Hospital staff asking questions and seeking clarification on treatment provided by the ambulance team
4. Phase 3 – Concluding the handover
a. Bringing the handover activity and discussion to a close
b. Final clarifications on information provided in the earlier phases

### 3.2 The Pre-Handover Alert

Prior to the handover commencing, analysis of the data has shown there to be a pre-handover alert that was typically initiated by the ambulance service member addressing the receiving team. This was done by a member of the ambulance crew drawing attention to themselves and obtaining the focus of the emergency department receiving team, which is then followed by asking if the receiving team were prepared to begin the handover. This may indicate that there existed a pre-handover stage that occurred between the patient being admitted and the

beginning of the actual exchange of information part of the handover. Examples have highlighted how speakers needed to orient and prepare themselves for the handover prior to the exchange of any patient information. By accounting for necessary time for speakers to prepare themselves for handover discussion there could be implications on the further progression of the patient to hospital care.

The pre-handover did not fall within the existing literature on the structure of a handover from ambulance services (Sujan et al, 2014; Sujan et al., 2015). The handover is considered to commence at the initial exchange of patient information based on the standardized approaches to conducting handovers (Iedema et al., 2012; Sujan et al., 2015). The initial stages of a handover were said to begin with a discussion of the situation or background patient information if following the common SBAR mnemonic approach (Sujan et al, 2014). This pre-handover stage showed how there was an additional part of the communication process that was needed to support the discussions between staff.

### 3.2.1 'Okay' as a pre-alert

Frequently handovers were observed that included what can be considered a pre-handover. The pre-handover typically involved a member from the ambulance service team calling attention to the receiving team in order to obtain their focus for commencing the handover. Through the use of intonation and higher pitches during the initial greeting of the pre-handover stage it became possible to identify how the healthcare staff orient themselves to the activity and how it can alter that subsequent structure of the handover. Intonation and prosody used by speakers such as rising and falling pitches has been shown to draw attention

and impact the sequential development of a conversation. One of the key features presented during the pre-handover and in the initial greeting stage is the use of the word 'okay'.

In extract 1 following the ambulance team giving their opening 'okay' there was a pause of 0.6 seconds, which could indicate that they were waiting for an actual verbal response by the receiving team that was not forthcoming. This lack of indication to show receipt of the initial greeting could demonstrate that the receiving team were not prepared to begin accepting the patient information by the ambulance team. In the example of extract 1 there was a potential lack of focus by the recipient on what was about to occur and that needed that extra time to orient their attention to the speaker. Schegloff (1986) suggested that with telephone call greetings, following an initial opener there exists an expected response by the other participant and a lack of response typically would prompt the initial greater to repeat.

Extract 1 Handover Clip 7 (1)

01 Amb: okay<sup>↑</sup> so:

02 (0.6)

In extract 2 there was no pause after the initial 'okay<sup>↑</sup>' (Line 1), which has an increase in intonation that suggested that there was a potentially expected response but there was a short pause before they continued on with beginning the handover. The format for this handover involved the ambulance team member to be reading from his notes, which had been noted previously to be a recommended way for conducting handovers as it ensures that all pertinent and required information about the patient was shared (Murray et al., 2012). The use of paper or written based information during a handover had been shown to create some different issues and barriers to the success of the patient transfer. When information had been exchanged through a written format the receiving team has been shown to not be as receptive

to that information, which has posed possible problem in patient safety (Al Mahmud et al., 2009; Murray et al., 2012).

#### Extract 2 Handover Clip 12

01 Amb: [okay↑ uhhm (.)]

02 [(( reading from written notes))]

The use of the word ‘okay’ in extracts 1 and 2 was meant to create an initial response from the other speakers in the interaction. During handovers there exists a particular type of urgency between participants, which was context dependent on the specific clinical cases each for each patient and further examined in the deviant case (See section 3.6). Previous studies (Apker et al., 2007; Siemsen et al., 2012; Jensen et al., 2013) have shown that there continued to be a need to improve clarity of communication between healthcare staff during these discussion, which was potentially the reason for why participants have been found to use the word ‘okay’ as a way to obtain and hold attention between speakers.

The example shown in extract 3 followed the usual practice of initiating the handover with a member of the ambulance team using the ‘okay’ to draw the attention of the receiving team, but the structure has changed with this being followed by the giving of instructions. There was no pause between words that indicates that there was potentially no expected response. The positioning of the initial ‘okay’ was employed by the first speaker as part of a ‘speech exchange system’ where the speaker is transitioning to a follow up physical action of moving the patient (Beach, 1995, pg. 127). The transitional relevance in this context was to orient both speaker and recipient to the coordinated effort of moving a patient while also preparing for the actual handover to commence (Sidnell, 2010).

### Extract 3 Handover Clip 93 (1)

01 Amb: okay<sup>↑</sup> so on my count prepare to slide and slide<sup>↑</sup>

When initiating a conversation there needs to be an opening greeting, which can take different forms and shapes depending on the context of the conversation and the intended purpose of the interaction (Schegloff & Sacks, 1973). One such way that speakers orient to each other and create structure in an interaction has been shown to be through the use of the word 'okay' (Beach, 1995). The word 'okay' was considered positionally active as it led to specific responsive action by participants depending on its usage and where it was situated within an interaction. 'Okay' can become a resource to speakers within an interaction as it can help with the progression of the particular social action that was being worked towards.

CA research has shown that the use of the word 'okay' can have multifunctional purposes within institutional interactions (Gaines, 2011). The word 'okay' can have transitionally relevant implications as it can be used by participants to show depending on its position within a conversation. The seminal work by Schiffrin (1987) showed that there were distinct discourse markers (i.e. 'yeah', 'okay', 'and') that occur within a conversation that develop and shape the sequential order of an interaction. The use of these markers, in particular the word 'okay', held properties that managed a dialogue and provided a way for individuals to coordinate their interactions (Bangerter & Clark, 2003). 'Okay' had been suggested that one of its functions is its ability to work as 'pre-turn marker', where speakers within an interactions transition between different focuses or commitments before coming together (Bangerter & Clark, 2003.). Within conversations the word 'okay' did not need to have any connections with what had been said prior or what will be said following its use, but can be a

key word in transitioning the focus of an interaction by being ‘attention getters’ (Schleef, 2008). ‘Attention getters are different from textual markers in that they do not just structure discourse, but mark the beginning of an entirely new discourse framework...’ (Schleef, 2008, pg. 70). As seen in the extracts provided the use of the word okay followed this idea of grabbing attention from the other healthcare staff prior to beginning the handover exchange.

### 3.2.2 Additional discourse markers to establish the pre-handover

In examining the interactional sequence structure of extract 4 the use of the first word ‘right’ was shown to initiate focus between the healthcare teams that the handover story is about to commence. This initial turn-taking device as discussed previously works as a discourse marker by which a speaker can create a focus and sense of urgency to pre-emptively inform the recipient that something of importance is about to occur (Gaines, 2011).

#### Extract 4 Handover Clip 103

01 Doc: right↑ tell us the story  
02 Amb: pat (.) she’s eighty nine↑ found by chance by a vistor  
03 by the foot >of the stairs<  
03 her only medical history that we are aware is high  
04 cholester[ol=

Extract 4 followed a pattern that was different from the earlier examples as the handover initiation has been brought forth by the doctor rather than the ambulance crew. By the doctor saying ‘tell us the story’ (line 1) they established a potential structure of how the handover will follow. This prompt created by the receiving team indicated that the following turn-taking

response would be as the ambulance immediately followed with the recollection of the events that led to the patient being assisted by the ambulance crew.

In extract 5 the use of the word 'right' followed the same pattern as using the word 'okay' as it was an initial attention obtaining word that was meant to draw focus to the speaker prior to the exchange of patient information. The response in line 2 of extract 3: 'Doc: yes↑ yes↑' has shown that this word has actually altered the subsequent sequential organization of the interaction. The increase in pitch suggests that the responding doctor has sensed the potential urgency and wanted to clarify their position to show that they were ready for the next steps of the handover.

#### Extract 5 Handover Clip 6

01 Amb: right (.) shall we get going

02 Doc: yes↑ yes↑

This similar format of ensuring readiness and increasing engagement prior to commencing the handover can be seen with extract 6. There existed a change in the formatting as there was both a first and second pair parts in the sequence organization.

#### Extract 6 Handover Clip 89 pt.1

01 Amb: ready for it↑

02 Doc: yeah yep

The ambulance member begins the exchange with 'ready for it ↑'. The increase in intonation suggests that this was meant to be a question as well as preparing the receiving staff for what was to come. The word 'it' in this specific context would be referring to the handover so this

additional word would be creating this level of focus and attention. This suggested that there was a similar pattern to extract 3 that the potential word usage increased the likeliness of receiving a response by the handover recipients. The use of the word “it” showed that staff members did not refer to the actual activity of a handover taking place, but the response by the doctor indicated that he understood what “it” was in reference to. While simply having the word ‘okay’ has been shown to introduce or to initiate a particular response or action (Beach, 1995). The word ‘ready’ seemed to be more action oriented in creating more of a transitional shift between participants in the handover. It created a sense of urgency and direction between teams that elicited a smoother transition of transferring of patient information.

### 3.2.3 Section summary

In this section it had been shown how there existed a pre-handover in the exchange between staff members. One such way this was done was with the word “okay”. Speakers stating “okay” acted as a precursor to the actual handover that was to take place. ‘Okay’ has many different interaction features that have been shown to shape a discussion (Schiffrin, 1987; Beach, 1995). This act of a pre-handover established focus between members and ensured readiness to begin with the patient discussion. It allowed staff members to shift focus to the patient information being exchanged which reduced risks of miscommunication.

### 3.3 Phase 1-Introducing the patient

Following an initial pre-handover alert that had been derived from either the receiving emergency hospital team or more commonly by the ambulance staff member the first phase of

the handover would commence. This phase would usually involve the sharing of the patient's name with the receiving team whereby there would be an acknowledgement of awareness or recognition of the condition the patient was in. This first phase followed a pattern that had typically been seen in institutional face-to-face conversations as an introductory phase to launch into the relevant information and establish the purpose of the interaction (Schegloff & Sacks, 1973; 1979). The initial opening stage of a conversation would involve a form of identification between interlocutors.

In this first phase, the structure involved initial patient information being shared as part of the handover procedure which would shape the subsequent course of action taken by either the ambulance team member or emergency care staff. There were particular interactional features that were explored during this part of the handover process such as how speakers would acknowledge receipt of information. These features have been shown to dictate the clarity of the information given. Unique interactional features occurred during the following examples which highlighted the importance in removing ambiguity in the way one speaks. The initial opening stage of a conversation would involve a form of identification between interlocutors (Kendon & Ferber, 1973). The way the handovers structured this stage showed that speakers organized their discussions in a way as though the patient was directly involved in their interaction when actually in most examples the patients were not conscious during this stage.

Extract 7 involved a patient who was brought to A&E following a head on collision with a car while riding his motorcycle. In extract 7 there was a different dynamic that occurred between the ambulance staff conducting the handover and the receiving emergency care team. The ambulance worker used written notes to occasionally refer to and help guide him along in his discussion about the patient.

### Extract 7 Handover Clip 8

01 Amb: This is Pete.  
02 (0.4)  
03 riding a motorcycle (.) he ran into the back of a  
04 car  
05 (0.6)  
06 he actually went over the car, [longways] from back=  
07 Doc: [oh]  
08 Amb: =to front

This example did not include a pre-handover such as the word ‘okay’ in previously discussed handovers but began immediately with the introduction of the patient’s name. This could have potentially hindered attention that was given by the receiving team as they might not have been prepared to receive the information that was to be presented.

Following the introduction of the patient’s name by the ambulance member there was a pause of 0.4 seconds (line 2). This pause could indicate that there was potentially an expected response as the ambulance member’s turn was complete. There was no response by the receiving team members to indicate their acknowledgement of what had been said, the ambulance worker would not have known whether he was able to proceed with the information. It has been noted previously that pauses or gaps between speech could lead to potentially problematic interactions (Sacks et al., 1974; Jefferson, 1986). Silences in interactions can create a transition space where interlocutors oriented themselves and decided who will be taking the next turn (Jefferson, 1986). While line 1 of extract 7 was simply creating an

introduction to the patient and the recipient might not have considered it necessary to relay a response.

The subsequent lines 3-6 of extract 7 had the ambulance team member providing a succinct account of what happened to the patient that led to him requiring medical assistance. In this example there was a need to pause and as a result place an emphasis after detailing what the patient was driving followed by sharing that the impact involved the patient hitting the “back of a car” (lines 3 and 4). This level of detail would appear pertinent in this scenario as it provided the receiving staff with the information of where potential injuries were and assisted in how they should proceed with treatment when he was fully transferred to their care. Following the first detail of the accident, there was a longer pause in speech at line 4 of 0.6 seconds. This longer silence between speakers indicated that the ambulance team potentially allowed the receiving team to take a moment to process the information that was given. This longer break allowed for the ambulance member to initiate self-repair as he corrects himself in line 5 by saying ‘he actually went over the car’.

In his initial statement of what happened to the patient he used the silence to correct his recollection of events as the way the patient experienced the collision would be pertinent in how the receiving team would conduct their continued treatment. Repair can be considered a crucial element within conversations and specifically with clinical handovers as it allows individuals to identify trouble sources within conversations that can alter the subsequent orderliness of the structure (Liddicoat, 2011; Sidnell, 2010). In this example, the trouble source was identified during the transition space of the 0.6 seconds as the individual would have used this time to consider how to proceed within the interaction (Schegloff et al., 1977). In

particular, with a head wound there would be a more considerable need for clarification of events to know of issues such as haemorrhaging or other form of internal bleed.

At line 6 the doctor responded with “oh” which demonstrated that the doctor was acknowledging the information being shared (Gardner, 2007; Heritage, 1998). “Oh” was found a commonly used interactional tool in conversations for speakers to acknowledge the receipt of information and a way for someone to show a change in one’s awareness or orientation (Heritage, 1998).

Extract 8 involved a patient who was at bar when he suffered a cerebrovascular accident (CVA) or also referred to as a stroke. The patient was found to have collapsed and had a seizure where an initial ground crew ambulance team came to assist. Due to the patient’s deteriorating state an air ambulance was called in to continue his treatment and bring him to the nearest A&E. The air ambulance team were the ones who conducted the handover in the extract. Analysis of extract 8 saw a change in the structure of the handover as there were two ambulance team members present to conduct the exchange.

#### Extract 8 Handover Clip 75 (1)

01 Amb1: alright<sup>↑</sup> on lift ready steady lift (.) (hhh)  
02 Amb2: this is paul (.) relevant past medical history of  
03 right (.) sided CVAs he’s had in the last 18 months  
04 today in a pub where he was witnessed to collapse  
05 no seizure activity unresponsive initially (.) by  
06 the time the crew got there  
07 he was very agitated

The handover of extract 8 began with a precursor from ambulance member 1 who initiated action between the delivering and receiving healthcare staff with by instruction the interlocutors to take part in a team effort in line 1. 'Alright' when placed during the opening of an interaction can have multiple meanings and conversational uses that shape the subsequent interaction between speakers (Gardner, 2007). The use of 'alright↑' with the increase in intonation suggested that this was used to draw attention the receiving team and create a sense of urgency as it was followed by instructions on how to proceed with the patient that was in their care. The use of the word 'alright' was shown to have arouse awareness between speakers and to obtain the focus of recipients (Beach, 1993; Turner, 1999; Gardner, 2007). In the context of extract 8 this was to give initial instructions the other members of the ambulance team member and the receiving team needed to work together to assist the physical transition of moving the patient to the correct position.

In extract 8 it was pertinent for the ambulance team to provide the relevant background medical history of the patient. The emphasis on the word 'right' in line 2 showed that the paramedic team member wanted to ensure clarity to the receiving team of where they would need to focus their treatment of the patient. This emphasis in line 2 was additionally supported by the micropause that follows the word 'right'. This pause would potentially give the opportunity to the receiving team to have a moment to absorb and retain the critical information that had just been given. In line 3 the crucial information about the history of CVAs the patient has had was shared and additional by detail of the timeframe they last occurred provided the receiving team with a level of detail and context of the frequency this issue has come up. Line 4 'by the time the crew got there' showed the paramedic separating what 'his crew' the air ambulance team members did when compared to the land ambulance team that was initially on site. This

separation between work done by the different ambulance teams allowed for clarity in the treatment that has been provided. By separating the events in order they have occurred there could be a potential to improve communication between the healthcare staff as they would have clearer understanding of care had been given to the patient and in this case have an awareness that there was no evidence to suggest the patient experienced a seizure.

In extract 9 a patient was brought in who had suffered anaphylactic shock as a result from a wasp sting.

Extract 9 Handover Clip 7 (2)

03 Amb: this is Val (.) she's 59 (.) stung by a wasp this  
04 afternoon (.) a:nd almost imme:diately went into  
05 anaphylactic reaction (.)  
06 Doc: Okay↑

Line 3-5 “this is Val (.) she's 59 (.) stung by a wasp this afternoon a:nd almost immediately went into anaphylactic reaction” saw the paramedic team member giving succinct background information for why the patient was brought into their care. The list of information that was provided was perfunctory with each important piece of information separated by a distinctly audible micropause to place emphasis on the information being shared. Within institutional talk this component of the opening parts of conversations had been shown to be the key points in which individuals would be providing a narrative account of the purpose of the interaction (Baker, Emmison, & Firth, 2001). The arrangement of the facts that led to the patient to be in the care of the paramedics showed that the paramedic team member was adhering to the confines of this style of institutional talk.

Following the initial exchange of patient information in extract 9 the doctor responds in line 5 with ‘Okay↑’. The usage of the word ‘okay’ was considered to have a different function than previously discussed as it was showing agreement and acknowledgment of the information that was just shared (Beach, 1993; 1995). This acknowledgement was further corroborated by the prosody used in line 5. The increase in intonation showed there was no ambiguity or problematic speech during the exchange. Fuller (2003) suggested that the use of ‘okay’ to be reception markers that are used by speakers to show transparency and understanding of a prior turn in an interaction. ‘Okay’ can also be a transitional marker as speakers can use it in conversation to show that as a way to end previous discussions. In this context ‘okay’ was used to indicate receipt of sufficient background of patient information and the doctor’s readiness to transition to the next stages of the handover. This further supported the boundaries of institutional talk as interlocutors would have had some awareness of the different activities and discussion points that needed to occur as part of the handover so they would needed to give a reaction like the word ‘okay’ in order to progress the conversation (McHoul & Rapley, 2001).

The handover in extract 10 was for a patient who suffered severe burns left shoulder down his arm to his hand. He was particular with detailing the patient’s occupation while communicating the information for why he was there in line 1. The purpose for this specific utterance was to direct the focus of treatment that the receiving team would need to take by explicitly showing the significance the injury could have on the patient’s livelihood.

#### Extract 10 Handover Clip 65 (1)

01 Amb:     uhh this is Jamie he’s a left-handed gardener and  
02           he’s suffered some flash burns to his left and his  
03           left scapula (.) he’s got about 2 percent uhh

04 partial thickness burns to his  
05 [left (.) sca↑pula:  
06 [((puts hand on left shoulder))  
07 area that's blistering (.) redness  
08 h[ere  
09 [((points to his left arm)) which >we're not  
10 counting< the main reason we're  
11 [he:↓re  
12 [((uses both hands to point to the ground))  
13 is because he's got blistering burns to left  
14 dominant thumb and thenar eminence

The detail of the patient's injuries were further made clear by the ambulance member's use of embodied actions in lines 5-9 (Goodwin, 2000). While relaying the patient's injuries he used his own body to show where the burns were on the patient. The use of his own body allowed for observability in the receiving team to know about the injuries and to avoid any potential harm to the patient (Clift, 2014). The use of embodied actions within institutional interactions has importance as it influences the coordinated efforts that speakers have to work through in order to meet their specific goals (Heath & Luff, 2013). Embodied actions will be a topic further explored in chapter 5.

In lines 7-10 of extract 10 the ambulance member used hand gestures to restate the purpose for why the patient was brought to their care by first dismissing the burn injuries the patient sustained by stating: "redness here ((points to his left arm)) which we're not counting the main reason we're here". The use of the word 'we' in this context has multiple meanings as it could be used to show the separation between the ambulance team and the receiving team. The word 'we' could also been used to separate what the air ambulance did compared the land ambulance

that were first on the scene. 'We' was used again in line 10 as the ambulance team member stated "the main reason we're here" to reiterate his purpose for why the patient was needing medical care and also creating an order and focus for the receiving team. The ambulance member has left no room for ambiguity in his purpose for the bringing the patient to A&E and what directives the receiving team needed to adhere to.

The handover in extract 11 involved a 10 year old patient who was playing football when she landed at an awkward angle after kicking a ball causing damage to her leg.

#### Extract 11 Handover Clip 95

01 Doc: good ((directing the paramedics where to position the  
02 patient))  
03 Amb: this is ashley (.) she's ten years old uhh playing  
04 football this evening went to kick the ball (.) went  
05 over the ball (.) but when ashley landed her left leg  
06 basically twisted awkwardly↓  
07 Doc: °okay°

At line 1, the doctor of the receiving team was seen to be directing the ambulance crew where to be positioning the patient, which would have acted as a pre-handover in this situation as it oriented members from both sets of teams to the handover activity. The ambulance team member began phase 1 with sharing the patient information in line 2 with the sharing of the patient's name followed by an audible micropause. This use of micropauses had been shown in previous examples as a potential assist in the clarity in the delivery of key information during that the (See extract 9). Micropauses illustrated a way speakers would punctuate information

being relayed and to assist in the focus on discussions (Liddicoat, 2011). The ambulance continued in lines 3-6 with depicting the scene and order of events that led to the patient to be injured.

In line 3 the paramedic continued with his pattern between each critical past event that led to the injury as a way to elicit clarity to the recipient of where specifically was an area of concern. This was evident by the paramedic elongating key words to stress their importance in lines 3-4: ‘...when ashley landed her left leg basically twisted awkwardly↓’. By accentuating that the patient landed on a particular leg which then twisted, the paramedic was able to create a focus for the receiving team on where they needed to direct their efforts for treatment. In this example, it was pertinent for the paramedic to indicate with clarity where the positioning of the injury was and to have that information received, which was indicated by the doctor by the way they responded with “°okay°” in line 5. The use of the word “okay” showed that the doctor followed the information that was just shared and agreed with the initial assessment as well be a tool for the paramedic to be able to continue with their exchange (Beach, 1995) and that their attention was given and focused on the handover.

### 3.3.1 Summary of phase 1

In this section it was shown during the first phase of the handover between ambulance services and emergency care staff has a distinct interactional sequence structure that includes how the initial patient information is shared. There has been an order of how paramedics relay beginning of the handover that sets the scene for the receiving team. This phase had been shown to include sharing the patients’ name and situation for why the patient was in their care. The style in which patient information was shared during this phase was often done in beats of

audible micropauses (see extract 10) as a way for the handoff team to punctuate and ensure clarity between the speakers as well as reduce ambiguity in any of the information that was shared.

### 3.4 Phase 2 – the clarification of treatment provided

This second phase of the handover has been found to occur where the ambulance service team member was exchanging information about the treatment that was provided to the patient prior to arriving to A&E. This phase allowed for the receiving team to ask questions about the treatment given and to also see clarification on what was done by each prehospital team. As the examples will show there would often be a land and air ambulance crew assisting a patient and there would need to be explicit information given to show what was provided by each of the teams as it could influence the next stages of treatment.

Issues in communication in handovers has shown to be a consistent problem that limits the efficiency in the transferring of patient care (Stiell et al., 2003; Sujan et al., 2015). CA has allowed the exploration of the different interactional features that speakers use to deal with potential communication issues. These features have included repetition of words said by each participants to ensure that there existed no misunderstanding (Pomerantz, 1984). Analysis of repetitions in conversations has shown that it can be form that allows individuals to take part in mutual sense making (Schegloff, 1997). Repetition of words and information shared by recipients in second or subsequent turn can signal different social actions occurring. Pomerantz (1984) has suggested that repetition by the recipient speaker can show their acceptance or rejection of what was said in the first turn and as such influence the sequential structure of the conversation.

Another unique feature that occurred in this phase of the handover was questioning between the offering and receiving team members. The use of questions during handovers was another way for individuals, in particular the receiving hospital team, to show there were possible misunderstandings during the exchange. This complemented what was already known about institutional talk, as speakers need to progress their interaction in order to come to their specific goals there needs to be clarity on what was being discussed so they can know what actions to follow up with (Drew & Heritage, 1992). The opportunities to question and correct or repair issues within a conversation allowed interlocutors to identify trouble areas where there has been ambiguity (Whalen, & Zimmerman, 1990).

Extract 12 was the continuation of a handover that was discussed previously (see extracts 1 and 9). The patient was brought into A&E after being stung by a wasp that sent her into anaphylactic shock.

#### Extract 12 Handover clip 7 (3)

07 Amb: the main issue has been circulation (.) when the  
08 first crew arrived she had a respiratory rate of 3  
09 Doc: Mm  
10 Amb: Unrecordable saturations and unrecordable blood  
11 pressure  
12 (0.4)  
13 when I<sup>↑</sup> assessed her she was relatively deeply  
14 unconscious very weak central pulse  
15 Doc: okay (.) what did the ambulance the  
16 [first ambulance crew do =

17 Amb: [first ambulance =  
18 Doc: when they found her in that state  
19 Amb: IM adrenaline  
20 Doc: IM adrenaline (.) right(.) okay (.)  
21 Amb: [IM adrenaline straight away]  
22 Doc: [okay okay]  
23 Amb: [IM adrenaline several times while they waited for  
24 us to arrive]  
25 Doc: [okay okay]  
26 Amb: she's also had hydrocortisone chlor-pheniramine

Line 7 saw the ambulance worker explicitly making it clear what the issue was with the patient and what the focus needs to be with treatment “the main issue has been circulation”. By the way the ambulance member stated the area of concern by stressing the word ‘main’ in his utterance he has shown that while there were other areas of potential concern the specific actions that receiving team need to take were to treat issues of circulation. The emphasising or stressing of words in this context showed how prosodic markers can be used by speakers to express the severity of the problem and the subsequent actions that need to be taken to address this specific issue (Sidnell & Stivers, 2013). The use of the words ‘main issue’, while dismissive of other potential concerns of the patient it allowed a way for the receiving team to focus their subsequent treatment on the areas that were priority and immediate risk. In institutional talk by making it clear what the overall objective or goal of the discussion taking place there could be a focus on how to best proceed (Zimmerman, 1992).

In lines 7 and 8 “...when the first crew arrived she had a respiratory rate of 3” the ambulance worker highlighted the differentiation between his efforts and those of the initial ground ambulance team that was on site. This feature to separate work treatment provided to a patient by different team members has been shown to be a way to improve clarity and created more of a sense of a timeline or order of events that took place. In line 11 he stated “when I↑ assessed her”, the intonation of the word ‘I’ showed that it was work he alone had done and needed to be distinguished separately from work done by the rest of his team and the first team responders.

The use of the word ‘I’ implied that the work and treatment provided by the ambulance services was conducted solely by the person leading the handover, while in the footage you could see multiple team members working together providing assistance (not included in the transcript). The extant research has shown the issues and potential risks associated with poor interdisciplinary team working (Olson & Bialocerkowski, 2014; Woods et al., 2014). By having individuals who are part of a ambulance service team consider themselves independent and not working cohesively could have implications on the risks to patients and poor work environments.

In lines 15-17 the receiving handover doctor realised that there was a difference in treatment provided by the different team members and looked to obtain transparency in what treatment was provided by whom. The doctor stated in lines 15 “okay (.) what did the ambulance the”. The ‘okay’ in this context was used to show acknowledgement and agreement with the previous turn where the paramedic explained the condition the patient was in (Beach, 1993; 1995). In the discussion at line 15 it was illustrated that the use of “okay” was to also allow the speaker

to have a moment to process the information that was given in the previous turn as it was followed by a micropause.

The doctor repaired her utterance in line 16 with “first ambulance crew do” and this was overlapped by the ambulance member repeating ‘first ambulance’ at the same time. The doctor initiated self-repair within the same turn (Liddicoat, 2011) as she first queried what the ambulance member did before realizing that can mean either the first responding team or the team who has brought the patient. This showed that both teams needed the clarification on what was being asked and which team the doctor was referring to. This emphasized a particular moment of trouble talk as interlocutors were both unclear and needed to remove the ambiguity to the doctor’s question (Jefferson, 2015). That both speakers repeated ‘first ambulance’ further supported that there was potentially a lack of clarity within the interaction as repetition and overlapping has been shown to resolve a troubled point within a discussion (Kim, 2002).

In lines 19-25 another form of repetition occurred that saw the ambulance team member stating what specific type of medication was provided to the patient. The medication ‘IM adrenaline’ was then repeated by the recipient followed by multiple micropauses in between the words ‘right’ and ‘okay’ (lines 20, 22, and 25). This showed that the recipient was considering the information that was stated to him and wanted to unequivocally make their understanding and agreement known. Repetition by the first and second speaker as illustrated in this extract has resulted in different interactional implications. Examination of lines 18-20 showed repetition of medication provided showed there was trouble between speakers in understanding what treatments were provided, which led to the exchange of repeatedly stating ‘IM adrenaline’ (Wong, 2000). As discussed in earlier examples, ‘okay’ has multifunctional purposes within an interaction. In this context, with the additional use of repetition there was a way for the

recipient to explicitly show their agreement with the treatment provided to the patient. The repetition of the word 'okay' in lines 22 and 25 showed confirmation and receipt of information, but also would allow for the progression of the conversation (Schleef, 2008).

The treatment provided to the patient was repeated in different turns by both the handoff and receiving team members highlighting particular areas of trouble in their discussion. The ambulance member initially stated "IM adrenaline" in line 19 as an answer to what the first ambulance crew did at the scene to treat the patient. The doctor responded at line 20 by stating "IM adrenaline (.) right(.) okay (.)". The repetition by the doctor showed acceptance of this information and acknowledgement (Wong 200; Kim, 2002). The ambulance worker did not appear to recognize this as acceptance and repeated the information, but added additional time detail at line 21 "IM adrenaline straight away" in the following in line 19. This part of the handover showed how discussions can break down between team members and the need for clarity in all information about a patient.

The overlap and repetition between speakers in lines 21-25 showed that the doctor was anticipating the repetition of treatment information from the ambulance worker and preemptively wanted to show her agreement again repeating 'okay okay' (lines 22 and 25). This was again taken an example of how the ambulance worker interpreted "okay" to be an insufficient response. The ambulance worker added supplemental information about the treatment provided at lines 21, 23-24 such as that it was administered several times by the first ambulance team while they waited for the responding air ambulance services. This final iteration was overlapped by another utterance of 'okay okay' from the doctor, which prompted the ambulance team member to provide additional information about treatment given to the patient that had not been shared previously "she's also had hydrocortisone chlor-pheniramine"

(line 26). This illustrated how team members could overcome issues within discussions as they deal with potential misunderstandings and ambiguity.

Extract 13 was a continuation of a handover discussed previously with a patient that was brought in with severe burns to the left-side of his body (see extract 10). The second phase of the handover saw a series of interactional features that the ambulance and receiving teams members worked through to ensure that all proper information was understood.

#### Extract 13 Handover Clip 65 (2)

11 Doc: so ABC wise [you're absolutely happy]  
12 Amb1: [yeah yeah]  
13 Doc: okay (.) and pain relief wise 250 micrograms  
14 o[f fentanyl<sup>↑</sup>  
15 Amb1: [3 350 micrograms  
16 Doc: 3 3 okay  
17: Amb1: he vomited once when we arrived I think (.) it was  
18 all pain he was he was very agitated with pain  
19 hyperventilating (.) he vomited once

This third part of the handover commenced at line 11 with the doctor questioning the ambulance team member on their ABC assessment of the patient “so ABC wise [you're absolutely happy]”. ABC referred to the airway, breathing, and circulation assessment of a patient to determine the critical level of a patient and could alter the continued treatment that was provided (Farhan, Brown, Woloshynowych, & Vincent, 2012). This question consisted of different key parts that make it a uniquely framed utterance, for starters with the extreme case

formulation of ‘absolutely happy’. Extreme case formulation (ECF) consists of a part of speech where speakers have used hyperbole to express their points and to pre-emptively defend against any potential arguments that might contradict (Pomerantz, 1986). In this example, the receiving doctor wanted to ensure there existed no ambiguity in the interpretation of his question to the ambulance team due to the vital importance of ABC assessment in patient care. The adjacency paired response in line 9 from the ambulance worker showed he was ready to give an expected preferred response to the doctor’s question of the ABC assessment (Heritage & Clayman, 2010). The response by the ambulance worker in line 15 showed a repetition of the words “yeah”, which acted as a discourse marker to signal the understanding of what had been asked and also as a transitional marker for speakers to assist in moving the interaction along (Jefferson 1984, 1993; Gardner 1997). Line 16 sees the doctor accept the ABC assessment conducted by the paramedic team through his acknowledgement utterance “okay” (Gardner, 2007).

Questioning of treatment provided to the patient occurred during the handover interaction between lines 13-16. The micropause in line 13 suggested that the doctor needed to process the information that was given and to consider the potential implications. As the interaction in lines 10 and 11 continued the doctor questioned the specific drug and amount administered to the patient ‘and pain relief wise 250 micrograms o[f fentanyl]’<sup>↑</sup>. According the British National Formulary Joint Formulary Committee, the particular drug administered, fentanyl is an opioid pain relief and adults would not be receiving more than a maximum dosage of 250 micrograms unless it was being used as part of anaesthesia during an operation (JFC, 2019). During this handover the doctor was potentially expecting this to have been the amount that was provided to the patient, but still questioned the ambulance team for clarification if this was an accurate assumption. The response by the paramedic team was to initiate repair to correct the doctor’s understanding of the treatment given (Liddicoat, 2011; Sidnell 2011). In line 12 the repair

occurred by the paramedic interrupting the doctor prior to him finishing his turn and stating ‘3 350 micrograms’. The doctor appears to be considering this new information in line 13 by his repetition of ‘3’ followed by an acknowledging ‘okay’.

Due to the potentially unexpected amount of fentanyl that was administered to the patient the ambulance member appeared to be justifying his use by adding in additional detail of the state the patient was in when he was found. In lines 17-19 it was explained that upon arrival to the patient he was witnessed to vomit once and was continued to be in an agitated state of pain. This extra layer of detail during the handover would have helped the receiving team to better understand the actual state of the patient and where to focus their efforts as they continued with the treatment they provide.

#### Extract 14 Handover Clip 75 (2)

06 Doc: so basically it's in a pub [°with a°]  
07 Par1: [Yeah  
08 Par2: had a couple of pints  
09 Doc: collapsed and altered [behaviour]  
10 Par2: [°collapsed after°]  
11 Par 1: correct afterwards [and]  
12 Par2: [and] then settled with midazolam  
13 Doc: how much is he responding to you  
14 Par2: umm not a lot not a lot see if you get any  
15 Doc: HELLO PETE HELLO he's not really doing much [is he?  
16 Par1: [no he  
17 isn't at all]

18 Doc: HELLO?

Extract 14 was the continuation of earlier handover (see extract 8) where a patient was brought in after he was witnessed to collapse in a pub. This third phase commenced with the doctor beginning to question the events that occurred prior to the patient needing medical assistance “so basically it’s in a pub [°with a°]” (line 6) . The use of the word ‘basically’ in line 6 would be considered adverbially hedging (Lehtinen, 2013). Adverbially hedging linguistically refers to when a speakers have reduced confidence and avoid using wording that could be considered an overstatement. In this case, the doctor appeared to be hesitating in his recollection of the events that surrounded the patient which would signal his lack of assurances in his understanding of the situation. This is further supported by the repeat of the events (lines 7-10) that took place leading to the patient being in ambulance service’s care.

As there were two ambulance workers actively participating in this example they both contributed by adding their own input to the interaction and helped build the recollection of events. At line 6, the doctor appeared to be recollecting the specific detail of the state of the patient was in but the second ambulance member would correct his statement before he finished the utterance (line 7). The overlapping speech in line 9 was said in a quiet tone that suggested the ambulance member did not want to interrupt the flow of speech and lead to potential communication issues. The other paramedic supported the detail provided and the utterances in line 10 and 11 saw further examples of teamworking in piecing together the information surrounding the events concerning to the patient. In line 10, “correct afterwards” stated by the first ambulance worker showed a level of agreement between the ambulance worker of the sequential order of events and before he finished with his utterance by providing the information about the treatment provided he was interrupted by the other ambulance team member. Teamworking has been shown to critical when conducting an effective handover

(Sujan et al, 2014; Sujan et al, 2015). This indicated that teams had a proper understanding of the issues surrounding the patient and could ensure that there was no ambiguity in the communication and exchange of patient information.

Lines 12-17 saw the doctor and paramedics attempting to rouse the patient by attempting to receive a verbal response from the patient. The doctor began this part of the handover by questioning the ambulance member's assessment of the patient's level of responsiveness in line 12 "how much is he responding to you". The first and second adjacency paired parts in line 12 and 13 created a sequence organization for how clarification between interdisciplinary team members could be sought. The second paired response by the paramedic in line 13 saw a repetition of the words 'not a lot', which suggests that the speaker wanted to be sure of his assessment of the patient (Keenan, 1977; Brown, 1998). The doctor continued with his actions to obtain a response from the patient by proceeding to speak in a loud tone calling the patient's name and repeating the word 'hello' (lines 14 and 17). The casual use of the utterance "he's not really doing much" by the doctor in line 14 showed that there was not much concern over the patient who was unconscious during the handover, which could influence the level of treatment that would need to be provided to him once fully admitted.

Extract 15 was a handover for a patient who was walking up the tower at Warwick Castle when he developed a severe case of shortness of breath, which led to him losing consciousness

#### Extract 15 Handover clip 18

01 Amb: 10 minutes unconscious (.) witnessed by a  
02 consulting physician (.hhh) with agonal breathing  
03 and deeply cyanotic still with central pulse

04 Doc:     okay  
05 Amb:     [uh  
06 Doc:     [and 10 minutes↑  
07 Amb:     ((nods head))  
08           and 10 minutes of unconsciousness witnessed by a  
09           consulting physician  
10 Par:     CABG 20 years ago  
11 Par:     so thank you very much↑  
12 Doc:     thank you

The ambulance worker stated the events that led to the patient needing medical assistance and also sets clear timeframes for how long the patient was unconscious for (lines 1-3). Line 4 saw the doctor accepting this exchange of information by stating “okay”, but the subsequent interaction (lines 6-8) suggested that she did not have a complete understanding of the length of time of unconsciousness. The questioning of the 10 minutes in line 6 (“[and 10 minutes↑”) was structured using a rise in intonation that saw the action of the ambulance member reiterating his previous statement in lines 8-9.

The ambulance began with using an embodied action of nodding his head (line 7) to answer the doctor’s question to show his nonverbal confirmation of the information before giving an exact repetition of his earlier statement of “10 minutes of unconsciousness witnessed by a consulting physician” (lines 8 and 9) (Svinhufvud, 2016). As discussed previously the use of repetition has been shown to be important in ensuring the understanding of information that has been shared and that communication between speakers has been free from ambiguity (Schegloff, 1996).

### 3.4.1 Summary of the second phase

This second phase of handovers has illustrated the importance in speakers communicating clearly with each other and ensuring that there was no ambiguity with the information being exchanged. This stage saw the ambulance team providing additional information about why the patient was brought to their care and details of treatment that had been provided. This phase was shown to a crucial step in the delivery of the handover as the information discussed during this point would allow for the receiving team to best proceed with treatment. Examples involving air ambulances, in particular, have depicted the significance of understanding what treatments were provided by the initial land ambulance crew before the air crew arrived. As shown through analysis of the extant research during handovers communication issues has consistently been a subject needing to be addressed (Wood et al, 2014). A variety of interaction features have been found to occur during this particular phase with questioning and repetition being the main focuses. Repetition during this stage highlighted the need for speakers to process and understand the information that was given by the one conducting the handover.

### 3.5 Phase 3 – bringing the handover to a close

In institutional talk the closing of discussions becomes a relevant task as it signals the accomplishment or completion of the social activity (Drew & Heritage, 1992). The closing of conversations signalled a completion in an interaction and in general everyday conversations this could be accepted as silences, but within institutional talk there exists a need for explicitness when bringing a discussion to a close (Schegloff & Sacks 1974; Heritage, 2013). In medical encounters, the closing of discussions has been explored in consultations between a consultant and patient where similarly to handovers boundaries were placed on time limits

and the institutional setting (White, 2012). West (2006) identified that in medical discussions speakers would often use common closing markers and they are a co-constructed activity as all relevant speakers need to disengage. Specifically, within handovers the way that speakers disengage and ended the exchange of patient information shaped the next steps or actions related to the further care of that patient. This third phase of the handover involved the way speakers ended their discussions and has been highlighted by key interactional features including final clarifications of information exchanged, closing remarks such as saying 'thank you', and directing orders of what should be done next.

### 3.5.1 Final clarifications

One common indicator speakers' used to bring the handover discussion to a close were the use of questions and final comments. Robinson (2001) identified that in clinical conversations that practices of obtaining these final questions were a pre-closing feature that gives speakers the opportunity prepare to disengage from an activity in a socially acceptable way. These final comments were typically about information that had been shared earlier in the discussion and did not have a clear direct implication on the future treatment of the patient. Final clarifications were seen as transitional pre-closing points that members of each team were able to interpret as readiness to disengage from the handover activity.

The handover for extract 16 involved a patient that was brought in by ambulance services after she was kicked in the leg by a horse. Following a series of questions of the level of pain and discomfort the patient was in, the doctor initiated the closing of the interaction by asking for the patient's name. The patient's name was something that was provided to the doctor at the beginning of the handover. In this current example the doctor repeated information that had

already been exchanged, but as this was not clinical information it could have been interpreted as speakers as a transitional point to bring the conversation to a close. This was also compounded by the doctor not asking questions related directly to the patient's injuries or treatment, which was what was thoroughly discussed in earlier parts of the handover. While there was not an explicit conversational closing between speakers the silently stated 'okay' in by the doctor signalled the finality of the discussion.

#### Extract 16 Handover clip 88

17 Doc: what's her name?

18 Amb: it's jamie

19 Doc: °okay°

The example in extract 17 and subsequent examples have shown that 'okay' was a way for speakers to announce finality in their discussions. Extract 17 was a continuation of an earlier discussed handover (see extract 4) involving a patient who was hit by a car while riding his bike. The use of this word showed that there were no further questioning or clarifications that needed to occur, which signalled potential success in the exchanging of patient information. Okay can act as a closer for conversations (Schegloff & Sacks, 1973). "Recurrently, "Okays" emerge as devices initiating movement toward closure and/or as passing turns en route to terminating phone calls" (Beach, 1993, pg. 327). 'Okay' also can work as a precursor marker signalling to speakers that an interaction was about to come to a close.

#### Extract 17 Handover clip 89 (2)

14 Doc: and was he at the front or the back<sup>↑</sup> was he the

15 driv[er

16 Amb: [he was driving

17 Doc: okay↑

Following a similar pattern as extract 16, the pre-closing of the interaction was initiated by the doctor asking for final clarification in lines 14-15 “and was he at the front or the back↑ was he the driv[er]”. The positioning of where the patient was located when the accident occurred would be necessary in understanding where focus needed to be for assessment and treatment once fully transferred into the receiving team’s care. He initiated self-repair within the same turn by correcting his question to instead ask if the patient was the driver (Bolden, 2013). Anticipating an answer to his question the ambulance responded before the doctor finished his utterance creating a potential issue of overlapping speech in line 3. This handover example was again brought to a close by the use of the word ‘okay’ in line 4. As the vital patient information exchange had already occurred during the earlier phases of the handover this ‘okay↑’ initiated the end of discussions and illustrated how it could be used to signal finality.

### 3.5.2 ‘Thank you’ signalling the end of the handover

Thanking has been found to be a feature marking the closing of interactions by initiating disengagement and finality (Schegloff & Sacks, 1973). Research exploring the closing of telephone conversations has shown that saying ‘thank you’ as a socially acceptable way for speakers to bring an end to their conversations (Aston, 1995). The particular application of using ‘thank you’ as a way to bring a conversation to a close allows speakers “to demonstrate [participants’] final alignment in a common frame of reference and a shared satisfactory role-relationship” (Ashton, 1995, pg. 57). This is a particularly useful feature within institutional talk as they indicated a pragmatic way for speakers to come to acknowledging that their interactions have come to completion (Schegloff & Sacks 1973).

The first example in extract 18 illustrated the use of ‘thank you’ as a closing discourse marker in handovers. This handover was for a patient who had lost a significant amount blood due to a nosebleed. The nurse concluding the handover in this extract was a different member of the receiving team.

#### Extract 18 Handover clip 90

12 Nur: ((speaking to another nurse)) do you want to put  
13 more of the uh (.) ((turns to the paramedic)) oh↑  
14 th[ank you]  
15 Amb: [alright]

The nurse began by speaking with the other nurse in the room about other jobs that they needed to attend to in relation to the patient. In line 2 the nurse paused before completing her question and turns herself to face the paramedic in the room to state “oh↑”. Heritage (1998) has suggested the word “oh” can multifunctional purposes in an interaction such as acknowledging information or to signal a speaker’s change in orientation or awareness. The nurse appeared to have not realized that the handover was not completed due to the remaining presence of the paramedic in the room and this was further made evident by the ‘oh↑’ said with an uprising intonation. This demonstrated the nurse use the word to indicated her lack of awareness of the ambulance member’s presence (Wooffitt, 1992; Heritage, 1998).

In line 3 the nurse clarified her readiness to bring an end to the handover by stating “thank you” to the ambulance member, which was overlapped by the utterance “alright” in line 4 by the member. This showed that both speakers were prepared to orient themselves to bringing the handover to completion. ‘Alright’ has also been suggested as being a pre-closing statement

(Liddicoat, 2011), but in extract 18 the paramedic used the word to signal acknowledgement and acceptance that the handover was over.

‘Thank you’ in this instance created a preclosing sequence as speakers were able to consider whether they had any additional mentionable or queries that needed to be addressed before finalizing the conversation (Liddicoat, 2011). Preclosing sequences shaped the turn-taking system of an interaction by allowing interlocutors the opportunity to initiate the closing of a conversation and asking any additional questions or adding anything that was not mentioned previously (Schegloff & Sacks, 1973). In handovers this would allow members of the different teams to clarify any points of ambiguity that occurred within their discussions and ensure clarity and agreement with the exchange.

### 3.5.3 Considering the next steps

The following extracts will highlight how the closing of handovers would also lead to the different team members directing the next steps to carry out. More specifically, the next steps would involve thoroughly finishing the process of checking a patient into A&E. Ambulance team members have been shown to request information on how a patient proceeds with their treatment.

#### Extract 19 Handover clip 65 (2)

20 Doc:     okay<sup>↑</sup> lovely<sup>↑</sup> [thank you]  
21 Amb2:                     [can you take this please] ((hands  
22             over waste container))  
23 Amb1:             [this for me<sup>↑</sup>] >thank you very much<  
24             alright [well then let me=

25 Doc: [thank you team]

26 Amb1: know how he does

The handover in extract 19 was a continuation of a previously discussed example (see extract 10). The doctor initiated the closing the handover in line 20 by his use of final assessment preclosing statement “okay↑ lovely↑ [thank you]”. The words were said with an increase in intonation suggesting that agreement and acknowledgement was obtained between the speakers. In the present example, ‘lovely’ was used by the doctor to indicate his preparedness to bring the interaction to a close and to give a final assessment of the information exchanged. There exists a juxtaposition of the use of the word ‘lovely’ in this context as it could be interpreted being in reference to the state of the patient. The particular word ‘lovely’ has been suggested as being a useful term in marking closing sequences in telephone conversations (Antaki, 2002). ‘Lovely’ tends to be an assessment statement and provides a way for interlocutors to initiate closedown sequences (Antaki, 2002).

As the doctor continued his turn in line 20 with ‘thank you’ there would be little chance for ambiguity behind his intentions to disengage from the conversation. This closing sequence initiation became problematic when the second ambulance member present overlapped the doctor’s turn by making a request to the first ambulance member at (lines 21 and 22). In this example lines 2 and 3 involved the ambulance workers exchanging a receptacle that contained that was used in the event the patient got sick again during transportation. Trouble during closing sequences can arise by speakers not understanding each other’s intentions or by the start of additional actions that need further clarification (Sack & Schegloff, 1973; Heritage, 1998).

In line 5 the first ambulance team member reoriented himself back to the closing of the interaction by stating 'alright'. The use of the word 'alright' was a way for the ambulance member to show his readiness to bring the conversation to a close. The ambulance team member continued his turn by stating to the doctor how he would like to be kept informed about the progress of the patient (lines 24 and 26). This utterance in line 25 was interrupted by overlapping speech by the doctor where he stated his thanks to the entire ambulance service team. "Thank you" provided a way to bring closure between speakers within an interaction and for the doctor this was the second time he offered his thanks. When speakers offered thanks at the end of a discussion allows for a polite assessment and disengagement to bring the conversation to a close (Aston, 1995; Martinez, 2003).

#### Extract 20 Handover clip 93 (2)

13 Doc: are they here<sup>↑</sup> °her son and husband°  
14 Amb: .hhh son's here at the moment husband's on the way  
15 y[eah  
16 Doc: [okay thank you I'll let you book her in

Extract 20 involved a woman who was rushed to A&E after she appeared to be developing symptoms similar to someone having a stroke. The doctor began the closing sequence for this handover by asking for clarification on the whereabouts of the patient's family members. In line 1 the doctor questioned "are they here<sup>↑</sup>" and within the same turn he clarified his question to °her son and husband°. The doctor asked for this information as the patient travelled to the hospital on her own in the ambulance. This line of questioning appeared to be part of a preclosing sequence as this information was not pertinent to the patient's treatment. The ambulance member responded with the information of the whereabouts of the patient's family

members in lines 2 and 3 “.hhh son’s here at the moment husband’s on the way y[eah]”. The ambulance worked initially paused and drew an inhale of breath as he recollected the information asked of him. The doctor interpreted the response by the paramedic as the final questions he had before bringing the interaction to a complete close, which is why he gave overlapping closing remarks of “okay thank you” (line 4). The final piece of the exchange saw the doctor issuing directions for the next steps the paramedic needed to take in relation to processing the patient by stating ‘I’ll let you book her in’ (line 4). This directive allowed for the handover to come to a conclusion as the doctor indicated their interaction was complete. The use of ‘I’ll let you’ stated by the doctor suggested that he was holding the paramedic back from continuing on with their work, which was another way for the doctor to bring an end to their discussions.

### 3.5.4 Summary of the third phase

This final phase explored the interactional features used by ambulance services and emergency care staff as they brought the handover activity to a close. Interactional features were identified that allowed speakers to disengage from their discussions. Closing in conversations has been shown to involve a multitude of interactional processes between speakers (Sacks & Schegloff, 1973; Heritage, 1998; 2013). Within institutional talk interlocutors need to ensure that finality of their discussions have ensured the success in their goals and direction for subsequent actions to take (Heritage, 2005).

The final phase of the handover was shown to be signalled by the doctor seeking clarification of information about the patient and through the use of the word ‘okay’. The information the doctor was questioning was a repetition of information that was already discussed in earlier phase of the handover. This repetition has been shown to help the receiving team in showing

their understanding and acknowledgement (Sitvers, 2005). Additionally, showing final acceptance and acknowledgement between speakers was a way to coordinate a mutual understanding that discussions were over.

These first examples showed the features used when team members were concluding the handover. The similarity drawn between these features was that they all included a way for one of the team members to question or ask for additional information about the patient prior to signalling the completion of discussions. These parts of the interactions were designed as a way for speakers to show their readiness to disengage from the conversation. By removing any final pieces of ambiguity that was part of the handover discussion there would be less potential issues for related to treatment of the patients.

One of the features this research found included asking questions and clarifying information exchanged. As discussed previously, ambiguity and lack of clarity during the handover exchange has been a significant hindrance to the success of the exchange of patient information (Yong, Dent, & Weiland, 2008). In the examples shown, this feature would see team members asking questions that were already covered previously and were not directly related to the handover. The line of questioning would allow the receiving team to reconfirm their understandings about the patient and would also signal their readiness to disengage from the conversation. Additionally, speakers were found to use words such as 'thank you' as a way to bring an end to the handover due to the connotations of finality of the words (Aston, 1995). Thanking each other was a way for team members to show their appreciation of the effort that was involved in caring for the patient prior to arriving to the hospital as well as their assessment during the exchange of information. The final closing feature that was shown involved

members of the receiving team giving some form of directive for the next steps the ambulance team members needed to proceed with.

### 3.6 Deviant Case

Deviant cases in CA breach normative conventions in interactions and as a result lead to a variety of social consequences (Maynard & Clayman, 2003). Deviant cases have also been referred to in the literature as methodological problems as they shift away from the usual pattern that an interaction would take and as such alter the adjacency paired responses and sequential organizational structure that follows (Sidnell & Stivers, 2013). By examining interactions deemed to be deviant cases a researcher can better understand a phenomenon and have additional evidence to support patterns found within interactions. This was due to deviant cases working against normative structures of conversations and highlighting what leads speakers to make exception to the common organization of their discussions (Sidnell & Stivers, 2013).

By examining deviant cases of clinical handovers, it was possible to create a deeper understanding of how interdisciplinary teams structured the exchange of information and the interactional features used in accomplishing the activity. These ‘methodological problems’ give credence to what was found about the structure of the handover as they highlighted what leads to exceptions to the rule. A key feature that altered the structured was the critical level the patients arrived in. When a patient was presented to hospital staff in a critical state and needing continuous care discussions would change to suit that situation. The following example will show a patient who was brought to the hospital in a highly critical state and how that impacted the structure of the handover discussion. The deviant case of extract 21 involved a handover

for a patient who was brought into A&E after he was sat on by a horse which ruptured a femoral artery. The seriousness of this situation altered the structure of the handover that followed as quick responses needed to be taken to ensure proper safety and treatment of the patient. When the patient was transferred from the care of the land to the air ambulance crew there was explicitness of direction given due to the excessive bleeding of the patient.

Extract 21 Handover clip 78

01 Doc: hello

02 Amb1: hiya (.) ri↑ght priorities↑ can someone put a line  
03 in this gentleman's left neck

04 Amb2: °keep your head dead still shane°

05 Amb1: UHM

06 Nurse1: I can hold that if you [want]

07 Amb1: [EHH] I don't want to  
08 move actually

09 Nurse1: >sorry<

10 Amb1: right heavy arterial bleed he's he's almost  
11 certainly got femoral aneurysm that's gone (.)  
12 uhm we really struggled to get vascular control  
13 we've got↑ control as long as we've got my fist on  
14 it if I take my fist off in the slightest not even  
15 full off it just hoses right all over the place he's  
16 in lots of pain because the police have been  
17 kneeling on him for half an hour on his groin  
18 to try and get it so can we get him a bit of ket as  
19 well

20 Nurse2: uh huh

21 Amb1: yeah give us a pad put the pad where my hand is

22 going to be and you need to follow it with your

23 right fist are you ready<sup>↑</sup> that's it (.) good okay<sup>↑</sup>

To begin with this handover involved multiple members from both the ambulance service and hospital teams actively being involved in the discussions and care for the patient. Upon arrival, the handover commenced with the initial greetings between team members. There was a casualness in the greetings as the paramedic responded in line 2 with “hiya”. This normal greeting was a juxtaposition to the events that were occurring. While the ambulance member gave his greeting, he was at the same time applying pressure to the patient’s wound. The first ambulance member’s responding greeting was followed by an audible micropause signalling his need to gather his thoughts before continuing his turn and potentially ensure that attention was obtained by the necessary receiving team members (line2).

Line 2 continued with the ambulance team member orienting attention the situation at hand by stating “ri<sup>↑</sup>ght priorities<sup>↑</sup>”. As discussed previously, “right” provided a way for speakers to obtain responsiveness from those around them and allows for focus to be given with the task at hand (Beach, 1995; Gardner, 2007). In this example, the paramedic said “ri<sup>↑</sup>ght” with an increase in intonation further ensuring the attention from the receiving team and their readiness to proceed with the handover. His use of the word “priorities” suggested that there might be other areas of concern related to the patient, but what he was about to say was the most salient and in need of direct attention. During this handover there were more individuals present and actively assisting in the treatment for the patient so by setting priorities the ambulance member was able to provide order to what was a chaotic scene. The ambulance worker’s remaining turn

saw further evidence of him directing the receiving team as he addressed the entire room and asked for someone to place a cannula into the patient's neck.

There was a second ambulance member present during this handover. The second ambulance team member had a specific task of caring for the patient and attempting to calm the patient as he was conscious during the exchange. This was evident through his quiet utterance to the patient in line 4 advising him to “°keep your head dead still shane°”. This turn was oriented in response to what was said by the other ambulance about situating a line in the patient's neck. The second paramedic gave this response as a way to show he understood the next step and was doing his part to prepare the patient.

The exchanges between the first nurse and first ambulance member highlighted important features of team working as they both had distinct jobs in relation to caring for the patient (lines 6-9). In line 6 the first nurse offered her help in applying pressure to the patient's wound, but this was phrased as a question to the ambulance team member. Before the nurse could complete her turn, it was interrupted and overlapped by the ambulance member loudly uttering ‘EHH’ (line 7). The ambulance service member further stressed the seriousness of the actions he was taking in caring for the patient by stating that he did not want to move (line 7 and 8). This was to show that where his hands were placed were too important to consider any movement. The nurse's immediately responded in a fast tone “>sorry<” (line 9). This apology provided by the nurse could have indicated her awareness of how it was possible to interfere and disrupt the activity being carried out.

Line 10 saw the first ambulance crew member start to relay information about the patient. The information the paramedic provided was not what was usually found as part of the handover

as nothing was given about the past medical history of the patient. In lines 10-11 the ambulance member stated “he’s he’s almost certainly got femoral aneurysm that’s gone (.)”. This utterance suggested he was not clear on the exact issue that was the source of the haemorrhaging but wanted to position the receiving team as to where to proceed when care had been transferred.

In lines 12-13 the use of the word ‘we’ showed that the ambulance member wanted to categorize the responsibilities and efforts made by him and his team as separate from what was done by others. An additional interpretation of the use of the word “we” could be he was referring to himself as this took place in the Northeast of England where colloquially “we” could be used to refer as singular first-person. As stated by the ambulance member “we’ve got control as long as we’ve got my fist on it” (lines 13 and 14), which again placed importance on applying pressure to the wound, but in this instance the use of the word control was a way to tacitly let the receiving team know that the efforts being made were the only thing preventing the patient from bleeding out. The delineation between actions taken by different team members prior to arrival was made clearer in lines 16-17 as the paramedic explained the involvement of the police “in lots of pain because the police have been kneeling on him for half an hour on his groin”. The ambulance member continued to communicate the work done by the police for the patient by stating they were the reason for some of the patient’s discomfort as a result of kneeling on his groin. The ambulance worker then used this reasoning to justify the receiving team needing to administer ketamine to the patient to help with the pain so can we get him a bit of ket as well (line 18 and 19) , which the nurse to acknowledged in line 20 “uh huh”.

The closing parts of this handover began at line 21 where the paramedic shifted his physical positioning to allow for members of the receiving team to take over in care of the patient. The

remarks would signal the start of the closing of the handover as there was no additional patient information being provided at this point in the interaction. Closing in conversations, as discussed previously, allow for speakers to transition to other activities and bring their discussions to a successful end (Schegloff & Sacks, 1973). The ambulance member began this part of the handover by stating directions to a member of the hospital team of where to specifically place his hands by stating "...put the pad where my hand is going to be and you need to follow it with your right fist..." (lines 21 and 22). In this turn the paramedic has shifted to a discussion and instead altering the focus and subsequent actions to treating the patient as he prepared the receiving team members on what the next steps in his care should be.

Line 23 saw a pre-closing statement being made by the ambulance member that signalled the finality of the interaction "are you ready<sup>↑</sup>" (line 23). Typically, this style of questioning has been shown to occur in the beginning pre-handover stage as a way for team members to clarify preparedness to proceed with the exchange of information (see extract 8). The first part of this utterance was a question checking the receiving team members were ready to proceed with treatment of the patient as he has now been passed on to their care. There was no verbal response to this question by the receiving team, but visual inspection showed the hospital team member beginning his work on the patient as it was directed. The ambulance member acknowledged and showed his approval by stating "that's it (.) good'(line 23)". By observing the actions of the receiving team, the ambulance member was able to fully bring an end to the interaction by stating "okay<sup>↑</sup>" (line 23). As shown previously, one of the main functionalities of the word 'okay' can be in ensuring the finality of a conversation as it showed agreement between speakers and when applied to institutional talk it could mean the specific goal of the interaction has been achieved (Beach, 1993; 1995; Gardner, 2007).

### 3.6.1 Summary of the deviant case

This example of a deviant case highlighted how the structure of a handover can be altered due to the severity of the clinical situation being presented. Healthcare team members must adjust the structure of their discussions to suit the specific clinical situation. This particular example illustrated how the ambulance service team was able to take on a more active role in directing the receiving team. The ambulance team member established the priorities for how the receiving team should proceed with treating the patient. The deviant case provided evidence for how the actual handover can be structured and how the work was done.

### 3.7 Chapter summary

This chapter was an overview of the structure of the clinical handover through the application of conversation analysis. Different interactional features were discovered that shaped the exchange of patient information. By applying conversation analytical properties as a way to examine handovers it was possible to understand how communication was sequentially ordered and conducted between interdisciplinary teams. The overall handover structure followed similar patterns to that of institutional talk (Mayor, Bangerter, & Aribot, 2012). Speakers must work together toward a specific goal, which would be the safe transfer of information of a patient and they also must abide by the boundaries ascribed by an institution. There had been a need to better understand clinical handovers between ambulance services and hospital staff (Sujan et al., 2015). By breaking down and closely examining the key features of a handover it has been possible to explore how issues of ambiguity in communication can come about and what speakers do to remove it as much as possible.

First, it was examined how a 'pre-handover' takes place between the ambulance team and the receiving hospital team. This pre-handover showed how certain words such as "okay" could initiate a handover and create focus and attention between team members. This added an additional layer of complexity to the clinical handover interactions by highlighting that there exists a difference between 'work as done' compared to 'work as imagined'. When one imagines what takes place as part of normal working practice that is referred to as work as imagined (Blandford, Furniss, & Vincent, 2014). Based on the evidence of how a handover should be structured according to the different standardization models (SBAR, IMIST, etc) the handover was imagined to commence at the presentation of patient information. The pre-handover has shown that something occurs between healthcare staff to orient them to the handover. The pre-handover stage illustrated how work was done or what people actually do during handovers (O'Flanagan & Seeley, 2016). This allowed for better understanding of how handover conversation should be structured to ensure clarity in the transferring of information. It showed there was an interactional exchange that potentially needed to occur to allow both sets of healthcare team to come together and focus on the discussion.

Following the action of a pre-handover, 3 distinct phases of the handover discussion were derived from the data. At commencement of the handover there was a form of initial patient exchange including relevant past medical history and the exact reason for the patient being brought to the hospital. This phase was found to be salient in ensuring the receiving team had the initial information of the patient's condition. This second phase would set the scene of the clinical severity of the patient. This initial discussion was similar to the structure of institutional conversation where the purpose for the talks would be presented at the beginning (Kendon & Ferber, 1973). The third phase would expand on the relevant information and would show the ambulance member providing detail of treatment that had been provided by their team or other

responders. This third phase would allow the receiving team to question information and help them to establish order of events. Repetition of words was a common interactional feature during this phase, which illustrated how speakers could indicate acknowledge and acceptance of the information exchange (Wong, 2000; Kim 2002). The final fourth phase illustrated how speakers would disengage from the conversation and bring it to a close. The closing of handover conversations saw the use of different interactional features such as “okay” and “thank you”. “Okay” at the end of a conversation indicated to speakers that relevant information had been received and acknowledged (Beach, 1995). The use of “okay” at the end of a handover conversation illustrated finality in a conversation. When speakers stated “thank you” they were able show a completeness in information transfer and that they were ready to proceed with the next steps outside of the handover (Ashton, 1995).

The deviant case illustrated further the difference in work as imagined compared to work as done. Work as imagined does not take into the variability of work situations and as such creates a limitation in the understanding of how is conducted (Hollnagel, 2016). Organizations imagine work to be carried out based on previous experiences, but this leads to issues of something can impact on regular day-to-day tasks (Hollnagel, 2013; 2016). The deviant case example highlighted how the handover structure needed to become altered to suit the critical situation the patient arrived in.

The next analytical chapter will explore the use of epistemics during handovers. Epistemics explores how individuals from different settings or backgrounds can create mutual sense-making during discussions. During handovers this approach will help to better understand how different healthcare members employ interactional techniques to create this level of understanding during the exchange.

# Chapter 4: Epistemic knowledge claims

## 4.0 Introduction

In the previous chapter, the analysis focused on exploring the overall structure of the handover. That chapter showed how speakers structured and sequentially ordered the handover conversation. This next analytical chapter focuses on epistemic knowledge claims that speakers assert to illustrate how that assisted in the transferring of patient information and responsibility.

Epistemics in conversation analysis research looks to explore how speakers create mutual sense-making when they come from different backgrounds of knowledge. John Heritage, one of the prolific researchers in this area (Heritage, 2012; 2013; Drew, 2018) began his work on epistemics based on previous research that examined how speakers of different languages were able to piece together information and create a shared sense of understanding. Epistemic research allows for the examination of “who knows what” by determining who has a right to information, who has the access to that information within an interaction and how speakers negotiate their different levels of understanding (Heritage, 2012; Landgrebe, 2012; Drew, 2018).

Heritage specifically focusses his work exploring epistemic status and epistemic stance, and the impact these have in an interaction for speakers to assert or request information (Heritage, 2012). Epistemic status refers to “a somewhat enduring feature of social relationship” (Heritage, 2012a, pg. 6), or the stance that a speaker takes in an interaction based on their own level of knowledge of a specific domain. The epistemic status of an individual varies with individuals being less or more knowledgeable about a particular domain, which can be

altered with each passing moment of an interaction as people contribute to the discussion (Stivers et al., 2011). This is due to individuals within an interaction having relative understanding, which then builds as information has been shared and they have been more knowledgeable. The concept of epistemic stance builds on the former as it refers to the moment by moment expression of those social relationships, which are then represented through expanded sequences and the design of turns within a conversation (Drew, 2018). For example, in healthcare discussions involving a doctor and layperson such as a patient, the doctor would be seen as the individual with the expert formal knowledge base to draw on (Lindström & Karlsson, 2016). In patient and doctor interactions continue, the patient would be seen as having their own particular knowledge base to draw on as they would have a first-hand account of living with the issues being discussed.

Another way of considering epistemic stance is exploring the grammatical tools used by speakers to show the change in their level of knowledge of a domain usually through a speaker inviting elaboration or requesting more detail. Stivers et al. (2011) considered a different approach to understanding epistemics in an interaction by creating three distinct categories of epistemics: access, primacy, and responsibility. This approach would help researchers to understand the development of mutual sense-making within an interaction.

Epistemic access focuses on the degree of certainty that an individual knows or does not know something (Stivers et al., 2011). There exists two distinct social norms within epistemic access that speakers normally would adhere to: 1. the speaker should not be stating any information that the listener would already have, and 2. the speaker should only be stating information that they have sufficient knowledge or understanding of a discussion. When a speaker has epistemic access in an interaction they need to have an awareness of what the

recipient or listeners already understands or has knowledge about (Heritage & Raymond, 2005).

Epistemic primacy is a way of referring to a speaker's relative rights to know a particular piece of information or domain or have rights or authority to that knowledge (Sidnell, 2012). Interlocutors orient to the asymmetries in a conversation due to each speaker having varying degrees of knowledge or understanding. Within a medical context there exist epistemic asymmetries as doctors would have more knowledge over specific domains compared to a lay-person or an individual who has not had the same educational training or experience (Stivers et al., 2011). Epistemic primacy is another way to consider the asymmetry in conversations as it takes into account that there could be varying levels of congruence between speakers over who has the rights to knowledge. Labov and Fanshel (1977) observed that speakers and recipients assert their epistemic position based on who possessed the primary source of knowledge or "A and B events". "A-events" refers to a speaker who had the primary source of knowledge and "B-events" meant that the recipient or listener had knowledge from second-hand accounts. Epistemic primacy congruence can also occur between speakers when one has greater authority or rights to a particular domain of knowledge or understanding (Stivers et al., 2011).

Epistemic responsibility is another way to consider one's epistemic status and stance within an interaction. To have epistemic responsibility refers to speakers having specific obligations to knowledge (Lindström & Karlsson, 2016). These obligations can involve speakers' right to know personal information about themselves, but there is no expectation that that information would need to be shared with others (Stivers et al., 2011). This expectation between speakers

shapes the design of actions and recipient design of turns as they must orient themselves to the boundaries of social norms.

This second analytical chapter will look at how speakers manage the exchange of knowledge during the handover process. Specifically, it will be an exploration of epistemic positioning of speakers through their design of turns and words used. Stivers et al. (2011) and Heritage (2012) created ways of exploring how knowledge is invoked and shared between speakers. For this analytical approach the focus will be on the former's ideas of epistemic access, primacy, and responsibility. This analytical approach was taken due to the presence of these key dimensions in my data. For example, how speakers negotiate who was more knowledgeable and who was less knowledgeable about events that led to a patient being injured.

In handovers, due to the interdisciplinary nature, speakers have different levels of understanding related to a patient and need to ensure that all relevant information has been shared and understood. The examination of epistemics in the conversation analysis literature has been concentrated on discussions between patients and healthcare providers (Drew, Chatwin & Collins, 2001; Maynard & Heritage, 2005; Landmark, Gulbrandsen, & Svennevig, 2015). Healthcare providers needed to find a way to communicate to patients in a way that they can understand the information being provided or in layman's terms (Maynard & Heritage, 2005). The epistemic responsibility that healthcare providers would have during an interaction with a patient would influence their decision-making process. Healthcare staff, such as doctors, would have a level of knowledge and expertise or epistemic responsibility that when in discussions with patients would it make it difficult for those not as knowledgeable.

Mori, Imamura, and Shima (2017) examined epistemic management by analyzing nursing shift handovers. Their focus was on how speakers and recipients would indicate their epistemic stance and create a sense of collective knowledge by exploring the use of different interactional features employed. One particular focus was how team members would construct a sense of shared understanding, which was supported through the use of questions specifically by the receiving team members. Within handovers there exist a need for team members to work collaboratively and to ensure that all relevant information about a patient has been shared (Wood et al., 2015). These are the institutional goals that staff are expected to adhere to as part of their roles to support patient safety. These expectations constrain how information can be communicated and the overall handover conducted (Heritage, 2012).

The handover consists, not only of communicating patient information, but also transferring the responsibility of the patient to another team member (Sujan et al., 2015). This process can be challenging for healthcare providers as they need to work out who has the epistemic access and primacy of the information. Ambulance workers would be presumed to have more knowledge and understanding of a patient's situation, but how they balance to interactionally share that knowledge can vary between speakers. The receiving team would be expected to have epistemic primacy over the patient's information as they would have had some access to information prior to the handover being conducted. Both team members involved in a handover would be responsible for efficiently communicating all the salient patient information and guaranteeing the success of transferring that knowledge between speakers.

## 4.1 Analysis

The first section will look at what interaction features were used to create mutual sense-making between the different team members. This will broadly look at some different tools such as repetition of words, the use of “oh, okay, yeah” to signal transfer of knowledge. This section will further be developing concrete evidence to show how two different professional groups can show they have a shared understanding.

Research that has looked at epistemics in a medical context has found that specific discourse markers within an interaction can signal to staff the achievement of mutual understanding (Gardner, 2007). These discourse markers as discussed in the previous chapter come in forms such as “okay” or “right” allow for speakers to signal acceptance and understanding of information (Gardner, 2007). The use of these epistemic discourse markers and how in an interaction they can determine the efficiency in the exchange of information will be examined. In particular, the focus will be on how these words construct a collective knowledge or mutual understanding between speakers.

The second analytical section will provide more granularity by exploring claims of entitlement to knowledge (Stivers, 2005). This section will show how paramedics claim to have knowledge of events leading up to the patient being in their care. Examples will include handovers where there was both air and land ambulance crews and how interactionally they separate what was done by each of the teams. This section will also involve clarification questions on the part of the receiving team where they are unclear about the chain of events that led to the patient’s injuries.

## 4.2 Discourse markers to indicate epistemic confirmation

This first section of analysis examines discourse markers to show the progression of understanding during handovers. Discourse markers can take different shapes within an interaction, but in the present data the use of “right” and “okay” were predominantly used to signal acknowledgement. The display of acknowledgement and agreement between speakers to signal the successful transferring of information. This analysis for this section drew on examples where speakers and recipients used discourse markers to show the shift of knowledge to ensure mutual understanding between team members.

The goal for a successful clinical handover lay within all relevant patient information being transferred to a receiving team (Sujan et al., 2014; Mori, Imamura, & Shima 2017). The staff handing over responsibility of a patient is assumed to be the ones with more knowledge and understanding of a patient’s condition and focus of future treatment. In the examples from this study the ambulance workers were the team members who had epistemic primacy over the patient’s information. Stivers et al. (2011) referred to those who were knowledgeable about particular events as K+ and those with less knowledge about those same events within an interaction as K-. The ambulance members have the knowledge (K+) of the events that led to the patient being in their care and treatment they provided to them prior to arriving to the hospital. The listeners or receiving team members have an epistemic right to the speaker’s knowledge and this asymmetry in their level of understanding was what was worked through in the handover interactions. To properly understand the scope and severity of the situation the patient was in, the receiving team needed to improve their level of knowledge of all the events that the patient had been through before arriving at the hospital care.

Extract 1 involved a handover for a child patient who injured herself while playing football and had fallen in an awkward position on her leg. The handover began with some initial descriptions of the patient such as her name and age (line 3). Following the introduction to the patient, the events that led to her injuries were described in lines 3-6. The events were described by the ambulance member as though he was present to witness them rather than being a second-hand account. This was one example of how ambulance workers developed epistemic primacy during a handover as they had the key information that needed to be communicated to the receiving team, who had limited knowledge or understanding of the situation (Stivers et al., 2011). The ambulance team members needed to construct their recollection of events in order to for the recipients to have the opportunities to challenge or question any of the information being detailed to them.

The description of the events that led to the patient's injuries in lines 3-6 followed a particular pattern called "I was doing x, when y" structure (Wooffitt, 1992). Wooffitt explored the way individuals recounted paranormal experiences and found that speakers followed a particular structure when reporting these events. Speakers would normally claim to have been doing something mundane (X) when something extraordinary would take place (Y). It has been suggested that this particular interactional feature is used for speakers to gain credibility in the claims they were making and also as a way to build up credibility with those they were speaking to (Potter, 1996). In this handover example, the patient "was playing football" (X), when her "left leg basically twisted awkwardly" (Y). By using this interactional feature, the ambulance worker showed the background events as factual and not something that could have been undermined (Wooffitt, 1992; Lamont, 2007). This particular feature was found to be in most of the handover examples.

Extract 1 Handover Clip 95

01 Doc: good ((directing the paramedics where to position the  
02 patient))  
03 Amb: this is ashley (.) she's ten years old uhh playing  
04 football this evening went to kick the ball (.) went  
05 over the ball (.) but when ashley landed her left leg  
06 basically twisted awkwardly↓  
07 Doc: °okay°  
08 Amb: had instant pain (.) left upper leg femur area  
09 there was significant deformity [uhh=  
10 Doc: [yeah  
11 Amb: to the f[emur  
12 [((points to the patient's leg))  
13 Doc: [okay  
14 Amb: it was a good (.) you know (.) ten centimetres  
15 shor[ter=  
16 Doc: [okay  
17 [((nods his head))

At line 6 the ambulance member summarized the cause of the patient's injury by stating it "basically twisted awkwardly↓". The use of the words "basically" simplifies the events being presented and highlights the doctor's epistemic access to obtaining additional information or to question this recollection of events. Following the description of events the doctors response at line 7 of "°okay°" showed epistemic acknowledgement that he understood and accessed the information. Okay was one form of a discourse marker that could also act as an

epistemic acknowledgment token to show the transfer of information (Beach, 1993; Gardner, 2007). The positioning of this word signalled to interlocutors that they were able to proceed with discussions. This was supported by subsequent utterances by the ambulance member where he continued to discuss the severity of the patient's injuries without pausing to see if any additional information or question need to be asked (lines 8 and 9).

In lines 8-17 the discussions continue with a focus on the patient's injuries with additional detail being provided by the ambulance team member and acknowledgement by the receiving team through the use of different discourse markers. At line 9 the ambulance member adds to the description of the injury by using extreme case formulation (ECF) "there was significant deformity". The use of this interactional feature of ECF further supported the ambulance claims of understanding the situation as it shows the epistemic assertion over that knowledge about the patient (Pomerantz, 1986). The doctor in line 10 responded to this utterance with "yeah" to show his agreement with the assessment by the ambulance worker and also to show epistemic confirmation.

The ambulance worker directly referred to the doctor's knowledge of the patient's injury at lines 14-15 by stating "it was a good (.) you know (.) ten centimetres shor[ter="]. The use of the words "you know" can presuppose knowledge about a particular subject. In this instance the ambulance member to acknowledge the doctor's understanding of how extensive the injury in the patient was, which showed the epistemic status of the different team members. By orienting to what the doctor knows it allowed for interlocutors to have an awareness of potential gaps in the knowledge. In lines 16-17 the doctor showed both through embodied action of nodding and verbally stating his confirmation with the discourse marker "okay".

In line 14 of extract 1 the utterance of ‘you know’ by the ambulance member suggested that he was displaying his epistemic stance by signalling the expected knowledge the doctor had of the situation (Landgrebe, 2012). The positioning of an epistemic stance here suggests there existed a shared common understanding between speakers within the interaction (Sidnell, 2012). The use of the words ‘you know’ have been shown to be epistemic interactional markers that allow interlocutors progress with a particular activity, specifically in institutional interactions where it would be necessary for speakers to have a sense of shared knowledge by which they can pursue an agreement and goal (Heritage & Clayman, 2011; Landgrebe, 2012). In this example the paramedic was orienting to the expected knowledge of the injury to the patient and attempting to elicit the doctor’s understanding of the situation. The doctor’s turn in line 16 was with an overlapping ‘okay’ combined with a nod of his head to signal his shared understanding of the event and the situation that the patient was in.

Extract 2 is a handover involving a patient who was picked up by the ambulance services after she sustained multiple injuries from falling off her horse. This example was similar to the previous one in how discourse markers were used to signal the transfer of knowledge between speakers. The handover commenced with the ambulance member stating the patient’s name followed by a brief pause (in line 1). The receiving doctor responded in line 2 with “ye↑p”, which showed his acknowledgement of that information and to also indicate his prepared to begin the handover discussion. This particular exchanged occurred over the patient while she was conscious. It was a rather consistent interactional feature to state the patient’s name, but not include the patient in clarifying points being discussed.

Extract 2 Handover clip 9

01 Amb: this is Liz (.)  
02 Doc: ye↑p  
03 Amb: she was riding on her horse (.) and her horse bolted  
04 fell↓ landed on her-catching her  
05 on the [righthand side of her chest (.)  
06 [(moves his arm across his chest to his  
07 righthand side)]  
08 Doc: right  
09 Amb: she's complaining of right sided chest pain (hhh)  
10 and also pain in her left-left foot  
11 Doc: mhm  
12 Amb: she hasn't been knocked out at all >remembers it  
13 all< hasn't been complaining of  
14 neck pain at all but has been in equivalent distress  
15 since we found her

This example showed the epistemic positioning or access of the speaker as they exerted their knowledge of the patient's basic background information. The pause after stating the patient's name further highlighted the ambulance worker's position of seeking some form of acknowledgement by the recipient to indicate the beginning of the knowledge exchange (Lynch & Wong, 2016). By providing that break the ambulance member has provided the epistemic access to the receiving team member to question the information being shared (Heritage, 2012). The features used in the description of the events followed the "doing x, when y" structure again in this example. The ambulance member stated the patient was

“riding her horse” (X), when “her horse bolted” resulting in her sustaining injuries from falling off (Y).

In lines 3-7 the ambulance worker further showed his position as the more knowledgeable individual in the discussion in relation to the patient’s background information. The combination of both verbal and embodied actions as he recalled the events that led to the patient’s injuries was done in way for the ambulance worker to act as though he was not reliant on the patient sharing her own account. The way the worker shared his knowledge of the events showed the succinct manner in which he wanted that information to be relayed to the receiving team member. This showed the ambulance worker having epistemic primacy over the patient’s injuries and how they were sustained. The positioning of epistemic primacy illustrated the speaker’s authority over knowledge and having the responsibility to share that knowledge with others in the discussion so as to create mutual understanding (Heritage & Raymond, 2005).

There were audible pauses between details of the events and the specifics of the injuries the patient sustained (lines 3 and 5). These pauses, as before, gave epistemic access for the doctor to question any of the information or ask for clarification. The lack of challenging or questioning on the recipients’ side of the handover indicated that they had a level of knowledge and understanding about the patient’s situation, which was further supported by the information the speaker was providing (Lindström & Karlsson, 2016). The receiving member responded at line 8 with “right” to show epistemic confirmation in the details that were provided about the patient (McCarthy, 2003). The use of “right” in this instance could indicate that the receiving member considered the information being shared to be correct based on his own prior understanding of the situation (Gardner, 2007). Prior to arriving at the

hospital there was a discussion by a different ambulance team member with hospital staff informing them briefly about the situation with the patient to prepare for their to the emergency department (not included in the data). This would mean that the receiving staff could have been using discourse markers to let other speakers know that what was being shared complemented their prior understanding.

The ambulance worker further elaborated about the patient's injuries by giving specifics to their location and also the complaints the patient had expressed as a result of their discomfort (lines 9 and 10). These lines also showed the ambulance member describing physical ailments that the patient experienced, but an actual diagnosis was not provided. This particular information did receive a non-committal response by the doctor of "mhm". This sort of response did not indicate agreement or epistemic confirmation as the other discourse markers provided in earlier parts of the handover. The use of a non-committal such as "mhm" indicate to speakers that attention was given and also that they understand the information that has been presented to them (Schegloff, 1993; Gardner, 2007). This token of acknowledgement helped to drive a discussion further as presents no challenge to information that a speaker has given and epistemically indicate common understanding between interlocutors.

In extract 3 the handover involved a young man who was hit by a car while riding a motorbike. The patient sustained serious injuries to various parts of his body and was brought to A&E with his friend who also hit by the car while on the motorbike. The pre-handover "ready for it↑" at line 1 by the ambulance worker allowed for the receiving team to come to awareness of the discussions about to take place (see chapter 3). The use of the word "it" was a vague descriptor of the handover activity. This initial utterance questioning the

preparedness by the receiving team drew an affirmative response at line 2 “yeah yep”. This showed epistemic confirmation that the recipient was ready to take in the knowledge about the patient and his condition. This confirmation was understood by the ambulance worker as he began to describe the events that led to the patient’s injuries in lines 3-7. At line 3 the ambulance member stated the patient’s name “George”, but provided no further information related to his past medical history or other demographical information such as his age. The description of events at lines 3-7 again followed the doing x, when y structure. The patient was riding a bike (X), when they hit a car (y).

Extract 3 Handover clip 89

01 Amb: ready for it↑  
02 Doc: yeah yep  
03 Amb: this is George (.) he was riding a bike and the  
04 f[riend outside (.)  
05 [(points to the friend off camera)]  
06 they were both on the motorbike >he’s alright<  
07 and then they t: boned the ca[r=  
08 Doc: [okay  
09 Amb: they didn’t see where it was coming fr[om=  
10 Doc: [okay  
11 Amb: so his upper leg it’s quite a big ((unclear))  
12 Doc: so it’s broken skin yeah↑  
13 Amb: °it’s broken skin° ((patient moaning loudly))  
14 Doc: and was he at the front or the back↑ was he the  
15 driv[er  
16 Amb: [he was driving

17 Doc:    okay↑

The ambulance worker introduced the patient and set the scene of what was taking place prior to the accident taking place in lines 3 and 4. There was an audible pause between point of description. This allowed for epistemic access by the recipient to challenge or question any of the details being provided. Interrupting and overlapping the speaker's description of events saw the doctor state "okay" at line 8. The positioning of the word "okay" in that instance showed acceptance and confirmation of the information that has been shared. This particular interactional feature was repeated at lines 9 and 10 where the recipient overlapped patient details from the speaker. This exemplified that the receiving member had found common understanding with the speaker and wanted to progress with the discussions (Gardner, 2007). The repetition of the word "okay" in this example was used by the doctor to show his readiness to progress with the other parts of the handover. This was further supported by how the doctor became more engaged with the discussion when it became more focused on the patient's injuries.

At line 11 the ambulance worker shifts the handover discussion to specifics about the injury the patient has sustained "so his upper leg it's quite a big". Asymmetry in the conversation became apparent by the doctor's response in line 12 "so it's broken skin yeah↑". This response by the doctor was him giving an assessment of the injury which indicated to the ambulance member what his knowledge of the situation was. Up until this point the ambulance worker had epistemic primacy over the information being shared about the patient as he was first on scene to assist and was able to detail a first-hand account of the information being provided (Stivers, 2005). The doctor seeking for clarification in line 12 showed that there was incongruence in the understanding between speakers and he needed additional

clarification in order to progress with treatment of the patient. This example highlighted the epistemic access of the doctor in relation to the ambulance worker as he did not have the full picture of the patient's condition. The ambulance worker responded in his turn at line 13 with "it's broken skin". The use of the speaker framing his response using the same words as the question showed his understanding the need to be explicitly clear with the doctor. This evidenced the ambulance worker's awareness of the level of knowledge the doctor had about the patient and his responsibility to clarify the information he had. Asymmetry in discussions such as handovers show how speakers needed to orient themselves to discrepancy in knowledge between each other in order to conduct the activity.

The actions of the receiving doctor questioning the ambulance worker's knowledge and account of events continued with lines 14-17. At lines 14 and 15 the doctor questioned the positioning of the patient when the accident occurred "and was he at the front or the back<sup>↑</sup> was he the driv[er]". This further exemplified the doctor's epistemic right to additional information about the patient that had not been provided by the ambulance worker. In the phrasing of this question the doctor also realized the potential misunderstanding that it could have led to as by stating the patient was in the front does not necessarily mean that he was the driver. The ambulance worker positioned his response in a way that there was overlap interrupting the doctor's question at line 16 by stating the patient was the driver. This showed that the ambulance worker had not provided sufficient information in his explanation of descriptive events. The doctor questioning events further showed how turns can be designed to pull out additional salient information and the epistemic access receiving staff have on the ambulance team member's knowledge (Pomerantz, 1980). The doctor concluded his line of questioning with an epistemic confirmation token of "okay" at line 17. The doctor's confirmation evidenced increase in knowledge of the relevant events about the patient's

injuries, which led to a more symmetrical level of understanding between speakers (Stivers et al., 2011).

The handover in Extract 4 involved a patient who suffered injuries following an incident with her horse. The handover commenced with the ambulance worker providing a succinct recount of the events that led to the patient's injuries and the location of the injuries in lines 1-3. By initially stating patient information the ambulance worker exhibited epistemic primacy over the knowledge. The patient was once again conscious during this handover exchange, but was not included in the discussion of the events that led to her injuries. The events relayed by the ambulance member were stated as though he was present to witness them rather than having obtained that information from the patient. The retelling of the events followed the doing X, when Y structure. "...she was with her horses today and one of her horses kick her back le[g]" (lines 1-3). The patient was doing something ordinary like riding her horse (X), when her horse kick her (Y).

#### Extract 4 Handover clip 88

01 Amb: that's forty-four year old Janine (.) Janine she was  
02 with her horses today and one of her horses kicked  
03 her back le[g  
04 Doc: [where t-  
05 Amb: hitting her in the[re  
06 Doc: [caught her here↑  
07 Amb: there [yeah  
08 Doc: [okay  
09 Amb: the hip area and the pelvic ar[ea  
10 Doc: [okay yeah

11 Amb: she basically<sup>↑</sup> crawled to get the phone she called  
12 us  
13 Doc: yeah  
14 Amb: so when we get there she was very tearf[ul  
15 Doc: [okay  
16 Amb: in quite a lot of pain  
17 Doc: what's her name?  
18 Amb: it's Janine  
19 Doc: °okay°

The doctor interrupted the speaker's utterance at line 4 with an overlapping question to clarify the specifics of the location of the injury. The ambulance worker responded in line 5 to this incomplete question by stating "hitting her in the[re". In this instance it was not clearly shown in the data, but the doctor looked down as the ambulance member showed on herself where the patient was hit. The doctor continued to show that he did not fully understand the information being shared as evident by his reply in line 6 "[caught her here<sup>↑</sup>". This example of back and forth questioning between speakers showed how the ambulance worker had the epistemic access to the information about the patient as the doctor did not have the knowledge about the patient's injuries.

The use of discourse markers to signal epistemic confirmation on the part of the receiving team members was an interactional feature that was used at different point in extract 3. The doctor specifically used the words "okay" and "yeah" to respond to each turn by the ambulance worker. At line 9 the ambulance further explained the injuries the patient sustained "the hip area and the pelvic ar[ea". This explicitness in the location of the injuries

was a response to doctor's previous line of questioning and at line 10 he showed acceptance to this information by stating "[okay yeah". The use of okay showed his acceptance of the transfer of information, but the "yeah" in this instance indicated his readiness to move on from this line of discussion. Evidence of this is then in the following line as he does not continue giving more information on the injury but changes slightly to give a narrative on how she crawled to get the phone – which supports the analysis that yeah was a marker for progressing the discussion.

#### 4.2.1 Section Summary

The first analysis section focused on the use of discourse markers to signal epistemic confirmation between speakers. The evidence has shown how the ambulance workers have the epistemic access over the information being presented and the success of transferring that information was dependent on the use of discourse markers (Gardner, 2007). Words such as "okay" signalled the successful transferring and receipt of the information exchange. Healthcare team members were able to orient themselves to the discussions and progress with the knowledge exchange using different discourse markers (Beach, 1993). These markers would give opportunities for speakers to question information and seek clarification which would remove ambiguity in conversations. Speakers were able to attain focus and attention, which allowed handover discussions to advance.

#### 4.3 Claiming second-hand knowledge

This next section focused on information presented by a second-hand account. Epistemics allows for the exploration of knowledge exchange and how speakers assert and defend knowledge claims through turns-at-talk (Heritage, 2012). Information that speakers claim

knowledge of does not have to be based on first-hand accounts of events (Pomerantz, 1980). Pomerantz determined there were two types of knowledge that a speaker can have claim to: type 1 and type 2 “knowables” (Heritage, 2013). Type 1 knowledge was obtained directly through first-hand account of a particular experience or event (Pomerantz, 1980; Smith, 2013). Type 2 knowledge was obtained through indirect second-hand account such as stories heard from others. As a result Type 2 “knowables” were individuals who repeated information that was derived from another individual’s personal experience (Stivers et al, 2011). Whether an individual was a Type 1 or Type 2 knowable, speakers would be required to answer questions or provide information of events when asked due to the epistemic responsibility they have of sharing information.

The extant work on epistemics in medical contexts has focused on consultations between patients and medical staff (see Frankel, 1990; Drew, 1991; Lindström & Karlsson, 2016). In those studies patients had a direct involvement in the discussion of their treatment and the decisions they would like to make going forward. In patient and healthcare interactions there exist asymmetries between speakers as the patient would not have the medical knowledge to make decisions for themselves (Lindström & Karlsson, 2016). The patients would be Type 1 knowables as they had direct first-hand knowledge of events or experiences of what they were discussing, but this comes with the assumption that patients can recall the events. In the handover examples there was no input from patients when discussing events that led to their injuries or particular issues they were experiencing.

Ambulance workers had Type 2 knowledge of events of issues pertaining to their injuries and in certain examples like the one below the crew conducting the handover were not the first responders to the scene. This posed a potential hindrance in the transferring of knowledge

between teams and ensuring mutual understanding of all relevant patient information. It could lead to an attenuation of accuracy and detail in the discussions.

The handover being conducted in extract 4 was for a patient seen to collapse at a public house from a potential stroke. The structure for this handover followed an alternative format from what has been commonly seen in previous examples due to the active participation of 2 ambulance crew members. The patient in this instance was not conscious during the handover exchange. The commencement of the pre-handover at line 1 was direction being given by the first ambulance member to assist with the correct placement of the patient. It called attention to the exchange of information that was about to begin as all team members oriented themselves to toward the patient.

Extract 4 Handover clip 75

01 Amb1: Alright on lift ready steady lift (.) (hhh)  
02 Amb2: This is Paul (.) relevant past medical history of  
03 right sided CVAs he's had 3 in the last 18 months  
04 today in a pub where he was witnessed to collapse  
05 no seizure activity unresponsive initially (.) by  
06 the time the crew got there he was very agitated  
07 Doc: So basically it's in a pub [°with a°]  
08 Amb1: [Yeah]  
09 Amb2: had a couple of pints  
10 Doc: collapsed and altered [behaviour]  
11 Amb2: [°collapsed after°]  
12 Amb1: correct afterwards [and]

13 Amb2:

[and] then settled with midazolam

At line 2 the second ambulance member stated the patient's name and details of their past medical history going back over the last 18 months: "This is Paul (.) relevant past medical history...". The use of the word "relevant" at this point indicated that the information he was providing was what he had chosen to be of relevance which exemplifies his epistemic authority over what information he chose to share. There was no diagnosis provided by the ambulance team but the interactional arrangement of detailing the patient's medical history. The ambulance member stated "...no seizure activity...". This did not provide a diagnosis, but gave a description of what the patient was experiencing.

At lines 4-6 the second ambulance member needed to refer to information that he did not obtain directly and a second-hand account by both witnesses to the event and also first team responders: "today in a pub where he was witnessed to collapse no seizure activity unresponsive initially (.) by the time the crew got there he was very agitated". By his statement of "he was witnessed to collapse" showed that him as a Type 2 knowable and also could show how he questioned the accuracy of the information that he obtained. The ambulance worker also was establishing his epistemic advantage over the information being shared as he was showing the receiving team members that he was the more knowledgeable participant (Heritage, 2012; 2013). His statement of "by the time the crew got there he was very agitated" (lines 5-6) illustrated how he divided his work from the first ambulance crew and how the information that he was relaying was based on what was exchanged by that other crew.

The formulation of how the recount of the events that led to the patient's injuries followed the "doing X, when Y" structure (Wooffitt, 1992). The second ambulance member stated that the patient was "in a pub (X) where he was witnessed to collapse (Y)". The patient was doing a rather ordinary everyday event when something out of the ordinary happened. This interactional arrangement was to allow the ambulance member to relay this second-hand account by a witness as factual. The use of this structure has been suggested as a way for speakers to overcome potential scepticism of events being shared (Potter, 1996). As evident by the following line (line 7) where the doctor questioned these events and highlighted the scepticism of the claims the ambulance member made.

At line 7 the doctor began to question the events that were being relayed in order to seek clarification on the details being provided by stating "So basically it's in a pub [°with a°]". The use of "so" in this utterance acted as discourse marker to indicate the speaker's attention was focused on recollecting the information he had just been provided and wanted to resume that particular line of dialogue with the ambulance team members. "So" has been shown to allow speakers to return to previously discussed information and to illustrate the mental process of interlocutors as they orient themselves to a discussion (Bolden, 2008). By seeking clarification of information, the doctor has shown his position of not having sufficient knowledge of the patient's background (Pomerantz, 1980). The doctor displayed epistemic access by seeking assurance of having the correct order of events prior to the patient sustaining his injuries (Mondada, 2013). Before the doctor was able to complete his utterance one of the ambulance workers responded at line 8 with "yeah". This illustrated that the ambulance member agreed with this level of understanding and wanted to progress with the conversation.

At line 9 the second ambulance member stated, “had a couple of pints”, which was a response to the doctor’s incomplete question at line 7. This showed that the second ambulance member was monitoring the epistemic status of the speakers and that the doctor had the right to know this piece of patient information (Lynch & Macbeth, 2016). The doctor responded to this at line 10 with a succinct statement of what he understood happened next with the patient “collapsed and altered [behaviour]”. This utterance illustrated how the doctor was orienting to his own level of knowledge of the events and information provided. The statement by the doctor was a modified repeat of the information the first ambulance member provided about the patient witnessed to collapse and become agitated. A modified repeat would be a form of repetition of a previous statement or claim by one speaker but altered in a way to show epistemic primacy over knowledge by another speaker (Stivers, 2005). Modified repeats allow speakers to manage known information, and what information speakers have the right to know. This example illustrated how the doctor could have been asserting his epistemic primacy to the information by making his own assertions (Stivers, 2005). The ambulance member then reasserted his epistemic authority to the knowledge at the next turn by his utterance “[°collapsed after°]” (line 11). This statement by the ambulance member asserted epistemic primacy and authority by repairing the doctor’s claims at line 10 and correcting his understanding of the events that took place. By repairing the doctor’s claims the ambulance worker showed himself to have more knowledge over the information (Bolden, 2013). Interactional features like this highlighted how speakers during handovers would ensure clarity during discussions as the ambulance member here identified trouble as the doctor had a misunderstanding.

Both ambulance team members showed how there can be struggles between epistemic primacy within a handover as they both looked to assert their position as more

knowledgeable at lines 12 and 13. At line 12 the first ambulance member used a modified repeat “correct afterwards [and]” in response to the other ambulance member’s repair at line 11 (Stivers, 2005). This showed the first ambulance member wanted to show their agreement with the repair, but also potentially wanted to assert his claims over the knowledge as his utterance ended with “and”. The utterance was interrupted and overlapped prior to completion by the second ambulance member asserting epistemic primacy at line 13 “[and] then settled with midazolam”. By the second ambulance member repeating “and” in his utterance showed how he anticipated what was about to be said by his colleague. This action also showed how he was able to establish epistemic primacy over the patient’s information by having the knowledge of the specific medication that had been provided. Examples like what was illustrated in lines 12 and 13 showed how there can be a competitiveness in conversations over establishing who knows what and has particular authority over the exchange of knowledge (Mondada, 2013; Drew, 2018).

In Extract 5 the focus of the handover is a patient who suffered anaphylactic shock as a consequence of being stung by a wasp. The structure for this handover was explored in Chapter 3, but an understanding of the epistemic positioning of the speakers was omitted and described here with a focus on the exchange of knowledge. The ambulance member began at line 1 with a pre-handover drawing attention to the discussions about to take place and ensuring focus between staff members by his statement “okay↑ so:”. This was followed by a 0.6 second pause, which further allowed for speaker to orient themselves to the handover and to bring attention to the speaker (line 2). The first phase of the handover at lines 3-5 established the initial information about the patient being presented. The ambulance member used the doing X, when Y structure to relay the events. The patient was stung by a wasp (X), when she has an

anaphylactic reaction (Y). This information was then accepted and acknowledged by the receiving doctor at line 6 with her statement of “okay↑” (Gardner, 2007).

Extract 5 Handover clip 7

01 Amb: okay↑ so:  
02 (0.6)  
03 Amb: this is Val (.) she's 59 (.) stung by a wasp this  
04 afternoon (.) a:nd almost imme:diately went into  
05 anaphylactic reaction (.)  
06 Doc: Okay↑  
07 Amb: the main issue has been circulation (.) when the  
08 first crew arrived she had a respiratory rate of 3  
09 Doc: Mm  
10 Amb: Unrecordable saturations and unrecordable blood  
11 pressure  
12 (0.4)  
13 when I↑ assessed her she was relatively deeply  
14 unconscious very weak central pulse  
15 Doc: okay (.) what did the ambulance the  
16 [first ambulance crew do =  
17 Amb: [first ambulance =  
18 Doc: when they found her in that state  
19 Amb: IM adrenaline  
20 Doc: IM adrenaline (.) right(.) okay (.)  
21 Amb: [IM adrenaline straight away]  
22 Doc: [okay okay]

23 Amb: [IM adrenaline several times while they waited for  
24 us to arrive]  
25 Doc: [okay okay]  
26 Amb: she's also had hydrocortisone chlor-pheniramine  
27 Doc: alright (.) gosh<sup>↑</sup> very efficient [okay  
28 Amb: [uhh:

At lines 7 and 8 of this extract the ambulance member conducting the handover was stated as not part of the initial team who were on scene to assist the patient: “the main issue has been circulation (.) when the first crew arrived she had a respiratory rate of 3”. In footage not included in this transcript it was shown that there was a land ambulance crew attending to the patient who then did a handover with the air ambulance team who were the ones present who led the A&E handover discussion<sup>1</sup>. By referencing “the first crew” the air ambulance member acknowledged that he was a type 2 knowable as the information he was relaying was based second-hand accounts (Stivers, 2005; Smith, 2013). The air ambulance member has shown his epistemic authority over the information being exchanged and that it was obtained through his own direct observations.

The ambulance member worked to show what he individually did for the patient to indicate what information he had derived from a first-hand account at lines 13 and 14 “when I<sup>↑</sup> assessed her she was relatively deeply unconscious very weak central pulse”. The emphasis and rising intonation on the “I” illustrated how the speaker wanted to draw attention to the work done

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<sup>1</sup> The researcher observed full episodes of the shows from where the handover extracts were obtained from, but as the focus for the analysis was only on the handovers from ambulance services certain points of discussion outside of that were not included as analytical points.

individually and how he saw it as separate work his own team members to that of the first responders to the scene. This further demonstrated how the speaker was able to establish epistemic primacy over the patient's information as per his assessment the patient was "...relatively deeply unconscious...". The particular wording that was used to describe the state of the patient was interactionally unique as it appeared the ambulance member was using epistemic hedging to avoid stating with certainty the level of consciousness by the patient. Epistemic hedging occurs when a speaker cannot state something with certainty due to not having sufficient evidence to support claims of knowledge (Weatherall, 2011; Heritage, 2013). The use of epistemic hedging by the ambulance member could account for the questioning and use of repetitions by the receiving doctor in the subsequent turns as she worked to better understand what was done and by whom (lines 20, 22 and 25).

At lines 15 and 16 the doctor showed she was processing the information that had been previously exchanged but needed clarification of what work was done and by whom "okay (.) what did the ambulance the [first ambulance crew do =]". The micropause following the use of "okay" showed the doctor processing information and signalling acknowledgement of what the ambulance member provided (Beach, 1995). The continuation of the turn showed the doctor questioning the epistemic primacy or claims made by the ambulance member by seeking clarification of what was done by the first ambulance team. The doctor first used self-initiated repair from "the ambulance" to the "first ambulance crew". This illustrated how within this discussion the doctor was unclear what work was done first for the patient and also identified the trouble with her initial question as it lacked specificity. The use of repair in this instance allowed for the speaker to highlight the gap in her knowledge and to directly refer to that gap (Bolden, 2013). At line 17 the ambulance member stated "[first ambulance =]", the use of repetition and overlap between speakers showed that the ambulance member as well identified

the potential trouble-talk and was prepared to repair the doctor's question. The doctor further clarified her line of questioning at line 18 by stating "when they found her in that state", which showed her lack of knowledge was on the work done by the first ambulance team. This example illustrated how when speakers have second-hand knowledge there exists a need for clarification for claims stated.

Between lines 19-25 both speakers used repetition to show where there was potential ambiguity within the talk, but also to indicate epistemic confirmation in the knowledge exchange. At line 19 the ambulance worker stated "IM adrenaline" as a response to the doctor's question of what the first ambulance crew did when they initially found the patient. The doctor repeated this statement back at line 20 "IM adrenaline (.) right (.) okay (.)". This full repeat made by the doctor initially indicated epistemic confirmation of the receipt of information (Kim, 2002; Stivers, 2005). This confirmation was further supported by the micropauses punctuating the words "right" and "okay" stated by the doctor at line 20.

The ambulance worker at line 21 showed that he interpreted the doctor's repetition as undermining his epistemic authority and worked to reassert his primacy over the knowledge by stating "[IM adrenaline straight away]". Line 21 showed that the ambulance worker had additional information about what the first ambulance crew did for the patient, which asserted his epistemic primacy. The utterance at line 21 was a modified repetition as he was restating both his earlier claim and also what was stated by the doctor. This action of modified repetition allowed for the speakers to assert authority over claims being made and typically done by a second speaker in an interaction to override earlier claims that were made (Stivers, 2005).

In this example, the ambulance worker appeared to be competing with himself by asserting epistemic authority as he used modified repetitions of his own claims and this is further evident by the next couple of turns. At line 22 the doctor overlapped the ambulance member's modified repeat by stating "[okay okay]". This repetition indicated epistemic confirmation that she agreed with the information being provided and that she wanted to progress with the rest of the discussion. The ambulance worker again interpreted the response by the doctor as an indication that he needed to reassert his epistemic authority and used a modified repeat at lines 23 and 24 "IM adrenaline several times while they waited for us to arrive". In this instance, the modified repeat allowed for the receiving team to have a clearer understanding of what was done by the first team and additionally evidenced that this was work that the present ambulance member was not present for as he stated "...while they waited for us...". The ambulance worker in each modified repetition (lines 21, 23, and 24) was upgrading his earlier claim (line 19) by providing additional layers of detail not shared previously (Heritage & Raymond, 2005; Stivers, 2005; Sidnell, 2012). By adding this supplementary information the ambulance worker considered the level of epistemic access of the recipient as unknowing and was working to ensure they had been provided with enough information (Stivers et al., 2011).

The doctor again repeated "okay okay" at line 25 to signal to the ambulance member epistemic confirmation of receipt of information and to also encourage a change of activity to progress the discussion (Gardner, 2007). The use of "okay" repetitively by the doctor illustrated how she considered the asymmetry within the conversation to have been addressed as she became more knowledgeable about the patient's information. The phrasing of "okay okay" does not require to interlocutors the request for additional information, but the ambulance worker at lines 26 added additional detail of the treatment provided to the patient "she's also had hydrocortisone chlor-pheniramine". The utterance by the ambulance member in this instance

additionally established his position of epistemic authority. This further exemplified how the ambulance member was aware of the epistemic access of the recipient and that while she did not explicitly request for the additional information, he had taken into account gaps in her knowledge (Stivers et al, 2011).

The doctor brought the handover discussion to a conclusion by her statement at line 27 “alright (.) gosh<sup>↑</sup> very efficient [okay”. Alright in this position worked as a pre-closing as it was a change of activity token that signalled to interlocutors final acceptance of information and to progress to the end of a conversation (Turner, 1999; Gardner, 2007). The doctor further indicated her readiness to disengage from the conversation as she gave an assessment to the all the information provided by first expressing surprise to all that had been provided to the patient “...gosh<sup>↑</sup> very efficient...”. By the doctor providing her own assessment of the information she has shown that an epistemic alignment had been achieved between speakers, which would support the disengagement of the activity and the successful transfer of information (Mondada, 2013). The use of the discourse marker “okay” by the doctor in line 27 further evidenced her epistemic confirmation of the knowledge transfer and her acceptance of all the information that had been provided (Gardner, 2007).

#### 4.3.1 Section Summary

This section explored the implications of a speaker presenting second-hand knowledge as part of the handover discussion. Second-hand knowledge or Type 2 Knowables are terms used to describe speakers who did not have direct contact or experience with knowledge they were sharing, rather it was based on someone else’s account (Pomerantz, 1980; Stivers et al, 2011). In the examples used, the speaker from the ambulance team was not part of the first responder

who assisted in treating the patient. This meant that the speaker's epistemic claims of knowledge were not of their own experiences. Interactional outcomes of relaying second-hand information led to receiving team members to question, challenge, and seek clarity in order to progress the discussion. One of the keyways the receiving team members became more knowledgeable and improved epistemic access in the examples was through repetition (Wong, 2000; Kim, 2002). A series of repetition within interactions shows the recipient has acknowledged and understood the prior utterance (Schegloff, 1997). Repetition during handovers could be considered an important feature in expressing shared understanding between speakers as well as removing ambiguity so interlocutors can progress with treatment for the patient. The following section will further summarize the main points from this analytical chapter.

#### 4.4 Chapter summary

This chapter was an exploration of the exchange of knowledge between speakers known in conversation analysis as epistemics. Epistemics provided a way to see how interlocutors manage the exchange of information, as it takes into account asymmetry in the knowledge between speakers (Heritage & Raymond, 2005). The asymmetry in the handover discussion would result from the ambulance service member presenting information about the patient to fill in the gaps in knowledge of the recipient. Ambulance workers were shown to have epistemic primacy over a patient's information, which would result in them taking the lead in discussion (Stivers et al., 2011). In order to address the imbalance in understanding in the handovers, the receiving team member would use different interactional tools to improve epistemic access to the ambulance member's knowledge.

Overall this chapter demonstrated how knowledge was exchanged and transferred between the interdisciplinary team members, in order to progress the handover discussions. The first analytical section of this chapter looked out how specific discourse markers used in the interactions would lead to epistemic confirmation between speakers (Gardner, 2007). Speakers would use words such as “okay” in order to signal understanding and to encourage progression in discussions. The use of discourse markers would assist in letting speakers know that there was an acknowledged gap in their knowledge and that that they accept what was being shared with them. Discourse markers showing epistemic confirmation were typically used by the receiving team members to indicate their receipt of information and to move on to a new topic and information. The use of discourse markers such as “okay” and “yeah” would indicate to speakers that they were engaged with a discussion, which would support the efforts being made by both team members to safely transfer the responsibility of the patient over. It was shown to be an important interactional feature to demonstrate epistemic confirmation of information being shared in order to show the achievement of mutual understanding.

The second point of this analytical chapter was how speakers would present second-hand information about a patient that would lead to epistemic challenges of epistemic primacy of knowledge (Stivers et al., 2011). Ambulance members conducting handovers were not the ones who were the first to respond to a patient and as a result the information they shared were based on second-hand accounts. Establishing what was done by another team member or witnessed by a member of the public would have implications on the sequential structuring of the handovers. By having epistemic primacy over a patient’s information meant that speakers would need to navigate what was provided to the patient and by whom, which would lead to speakers using a series of repetitions. Repetitions would indicate sources of trouble or

misunderstandings within discussions, but the examples have shown how they would also be used to construct epistemic acceptance of information shared.

The examination of epistemic authority and control of information highlighted hierarchical structures between ambulance workers and receiving physicians. The ambulance worker would arrive on scene with typically a second-hand account of events, which would lead to a power play in terms of how the physicians would pull that information out. The power dynamics between healthcare staff was particularly emphasized in extract 5 where the physician at multiple points in the exchange had to question, repeat, and clarify what specific information she needed clarity on. Once she was satisfied in the information that she obtained she gave a particular remark of the efficiency of the work done by the ambulance staff, which was potentially indicative of a physician being surprised by the level of work provided by other healthcare staff. The data did not appear sufficient in drawing conclusions on the interprofessional tensions between healthcare staff, but future studies could focus on the implications this had on interactional structures of handovers.

The particular use of the “doing X, when Y” interactional feature was prominent in how the ambulance workers would retell the events that led to a patient’s injuries. This feature would highlight how patients were doing something seemingly innocuous such as being in a pub when they would next be on the ground having a seizure (see extract 4). This interactional feature was used as a way for the speaker to claim the events as factual and to pre-empt scepticism from interlocutors (Wooffitt, 1992). It was highlighted that ambulance workers were using this structure in reporting events that they were not witnesses to and in certain situations the information was obtained through multiple parties when the patient was not conscious. The use

of this interactional feature in past literature showed that when the speaker could potentially provoke disagreement (Potter, 1996). The handover examples indicated that receiving hospital staff would question the events by either repeating the word for word what was stated or by asking follow up questions near the completion of the exchange.

The analysis of silences described in this chapter presented these occurrences as indications of interlocutors considering or processing information being presented before formulating a response. For example, in extract 5 a micropause was included in the analysis as a point to show a speaker processing information that had been shared before replying with a relevant question. This way of exploring silences was at risk of moving beyond the traditional conversation analysis discipline as it showed silences as a cognitive feature of interactions CA. The exploration of speakers' cognitive states has been said to go beyond the boundaries of CA as it focuses on the visibility of an interaction (Potter, 2006). The examination of silences has been an area of analytical difficulty. There has been recent CA literature that has supported the inclusion of this perspective of silences when exploring interactions (Chowdhury, Stepanov, Danielli, & Riccardi, 2017). The previous study showed how silences in discussions indicated that a speaker needed a longer time to consider their response. Additionally, Wooffitt and Holt (2010) found that silences were an introspective activity used by speakers indicating that silences were a mental process that speakers use when considering their next responses. It was suggested that the use of silences by participants was a way understanding of a particular task as it was a cognitive activity (Wooffitt & Holt, 2010).

The following analytical chapter will look at the use of embodied actions during handover discussions.

# Chapter 5: Embodied Actions in Clinical Handovers

## 5.0 Introduction

This third analytical chapter will explore the embodied actions used during clinical handovers. This chapter builds on the previous two analytic chapters by developing a more in depth understanding of the clinical handovers by turning to examine non-verbal activity during interactions and a focus on embodied action. Embodied actions involve the exploration of the relationship between the verbal and non-verbal features of an interaction (Goodwin; 1979; 1981; 2000). These nonverbal actions manifest in a variety of ways by interlocutors such as gesticulations, using objects, and facial features (Streeck, Goodwin & LeBaron, 2011). For example, Goffman (1971) conducted analyses of embodied actions of gesture to explore interpersonal communication, which showed that non-verbal behaviour was able to assist in the coordination of discussion. The way individuals structure their discussions stems from speakers using both vocal resources and gestures (Goodwin, 1981). In conversation analysis (CA), embodiment is considered a multimodal approach as it looks at interactions as a combination of verbal language and non-verbal activity (Heath & Luff, 2013; Mondada, 2016).

The use of embodied actions by speakers has a way of influencing the sequential organization of a conversation and the subsequent activities that follow. Goodwin's (1979) initial work exploring embodied actions showed how sentence structure was not enough to understand communication between speakers. In Goodwin's analysis of movements in face-to-face interactions was needed to fully understand how speakers orientate to each other to construct the turn-by-turn design (1979). CA research has focused on understanding non-verbal actions

they provided a way to make sense of how social actions can be accomplished particularly within institutional settings (Heath & Luff, 2013).

For example, Heath and Luff (2013) illustrated that during an auction the embodied action of striking a hammer was used as a social action to accomplish the closing of a transaction. The study found how embodied actions during an institutional setting, such as auction house, would assist the participation of large amounts of individuals in the activity. Kleifgen and Frenz-Belkin (1997) used embodied actions to examine the manufacturing floor in order to understand how the employees orientate to each other during problem-solving events. It was found that the organization around the work activity was supported by workers orientating to the problem-source through gesturing, which allowed for an exchange of knowledge and collaboration (Kleifgen & Frenz-Belkin, 1997).

The extant research on embodied actions in medical settings has explored the impact of embodiment during patient-doctor interactions (Heath; 1986; 2002; Nielsen, 2016). Heath (1986) conducted a series of studies exploring body movement and verbal language in medical interactions. One study explored involvement between patients and doctors during medical consultations. The study highlighted how gestures could be used to draw attention during discussions (1986). Another important finding from Heath (1986) was that the doctors were shown to be doing different activities separate from the consultation which spurred the patient to use non-verbal movements to bring focus back to the discussions. Non-verbal activity used by patients allowed for staff to clearly understand issues of illnesses, which improved clarity of speech during interactions (Heath, 2002). When words have failed or there were difficulties in communication between speakers embodied actions supported the social activities and discussions. The use of embodied actions during medical interactions

eliminated moments of trouble talk and ambiguity in conversations as speakers had a visual characterization of issues being presented (Heath & Luff, 2000).

By understanding the coordination of physical movements and conversations it could allow for a deeper understanding of how speakers accomplish social activities and actions (Llewellyn & Hindmarsh, 2010). Nevile (2015) conducted a systematic review of CA research that has explored embodiment. It was found that embodiment allows speakers to draw attention and focus during discussions. It was also shown that research on embodiment In reference to handovers, the examination of nonverbal activities highlighted the key interplay between healthcare staff and their environment and the important influence this has in also shaping their how patient information is communicated.

## 5.1 Analysis

Luff and Heath (2015) developed a framework for analyzing embodied actions, which helped focus the analytical approach in this chapter. Luff and Heath (2015) suggested that a way to consider analyzing embodied actions was to move away from the talk, but instead to focus on the social actions and resources, such as objects, that speakers use to support the completion of activities. Analysis of the data showed 3 key areas of embodied actions during clinical handover discussions. The first analytic focus of this chapter examined the use of objects within interactions and their impact on recipient design and subsequent actions (Section 5.2). These objects involved either the use of particular equipment that a patient was wearing when they obtained their injuries such as motorbike or horse-riding helmet. The use of these objects shaped the way speakers would interact with each other. The second analytic focus examined how speakers would use the patient's body as a source to create a sense of focus during

interactions (Section 5.3). The third analytic focus examined how speakers used their own bodies to visually represent injuries the patient had sustained (Section 5.4).

## 5.2 Embodied Actions Using Objects

This first section will explore the use of material objects and embodied actions during the clinical handover. Objects in conversations provided a resource for speakers to use to focus their collaboration and team working (Hindmarsh & Heath, 2003). There exist a variety of forms which objects can be used to support interactions from everyday items to, while in clinical work, objects could be various medical equipment to assist in daily work of patient care (Nielsen, 2016). Objects are interweaved into different types of everyday conversations and provide a multitude of functions for speakers to draw on (Zimmerman, 1999). Objects progress a social activity and interaction by allowing speakers to have a form of reference and establishing mutual understanding of what is occurring (Zimmerman, 1999). As discussed previously, conversation analysis aims to explore how speakers make sense of situations and the use of objects within discussions allows for that deeper sense making process to occur by creating a focal point (Liddicoat, 2011). The way individuals interact with objects signalled the importance of the item in ensuring clarity between speakers and to eliminate potential issues of ambiguity.

Objects presented during the handover interactions could be distinguished between those associated with the patient; such as, motorcycle and horse-riding helmets, objects that impaled patients, and those associated with the healthcare professionals conducting the handover, such as clipboards and other writing utensils used by staff members. These objects were influential to the actions that speakers would take and could shape the organisational

structure of their conversations (Nevile, Haddington, Heinemann, & Rauniomaa, 2014). Use of objects becomes a resource that speakers would draw upon during an interaction. One function was to help with the flow of the conversation as the speaker work through ideas being shared and constructed. Other studies in medical settings have explored how the inclusion of objects during medical consultations allowed speakers to topicalize it and draw it into an activity as it was made relevant (Heath, 1986). Objects also became connected to spoken language and bodily actions, such as gestures and pointing making it a social phenomenon worth examining (Nevile, Haddington, Heinemann, & Rauniomaa, 2014; Brassac, Fixmer, Mondada, & Vinck, 2008).

In extract 1 the use of a motorcycle helmet is central to the interaction and demonstrates the connectivity of interaction and bodily action. The extract involved a handover where the whole body is discussed. However, the focus in the extract is the head and motorcycle helmet.

Extract 1 Handover 8 clip (1)

- 14 Amb: his helmet↑  
15 Doc: ((taps on helmet))  
16 Amb: [got damage to the outer and inner shell]  
17 Doc: [((picks helmet up and turns it around while  
18 examining it both inside and out))]  
19 Amb: [okay?]  
20 Doc: [°thanks very much°] thanks very much↑

Extract 1 was a handover involving a patient who was riding a motorcycle and was hit by a car. The patient was unconscious during the handover and suffered from injuries to various

parts of his body, but most time was dedicated to discussing the concerns with the head injury. In line 14 the ambulance service member directed the focus and attention of the receiving team to the helmet the patient was wearing when the accident occurred. This attention was created in two separate ways by the ambulance member in his turn; firstly, by stating the object and secondly by his increase in intonation thus placing an emphasis on the word “his helmet↑” (line 14). The response by the doctor from this initial turn was to inspect the helmet by first examining it for any signs of damage by tapping on different areas of the helmet. The receiving member was thorough in how he examined the object. The receiving doctor picked up the helmet and conducted his own inspection of it. Inclusion of the helmet did not stop the flow of discussions which further showed how it could be a tool for collaboration. The helmet became part of this process, while the handover could be conducted without the helmet it became a central part. This example demonstrates how embodied actions, in this instance through the examination of the motorcycle helmet, could support collaborative team working

In this example the initial reaction when first approaching the helmet was to show acknowledgement of its importance as he immediately moved to interact with it (line 15). The turn at line 16 saw the ambulance member directing the doctor to specific areas of damage to the helmet, which would all reflect to points of concern on the patient. Lines 16-18 highlight key points of structuring agreement between speakers. The overlap between these lines showed that the receiving team member was processing and considering the information being provided by the speaker as his examination of the helmet followed the points directed. Through the bodily resources displayed in lines 17-18 the doctor was able to show the continuous attention he was providing to the interaction. The importance of clarity during handover interactions has been highlighted previously (Apker et al., 2007). One of the key

points that has been brought up was staff not feeling as though what was being discussed during these exchanges was actually being acknowledged and understood between team members. Through physical touch individuals created a deeper understanding of inanimate objects and the significance they hold (Nevile, Haddington, Heinemann, & Rauniomaa, 2014). These embodied actions using objects such as helmets can show acknowledgement and agreement between speakers (Nevile, 2004; 2015). By physically interacting with the object the doctor has shown the importance it has within this handover example (Hindmarsh & Heath, 2003).

The closing remarks of this handover beginning at line 19 saw the ambulance member first seeking agreement with the doctor's assessment of the object. As discussed previously (see chapter 3), okay has multifunctional purposes (Beach, 1995). The placement of 'okay' at this point in the interactions was showing agreement between speakers as the ambulance team member wanted to ensure clarity in what was discussed, and the key points related to the object and its importance. As highlighted in the previous chapter, the need for speakers to show agreement, in particular, during closing remarks has been an important feature in order to disengage from conversations. The combination of both verbal acknowledgement and visually being able to observe speakers interacting with objects were key interactional features supporting the handover discussion.

Material objects support actions of collaboration between speakers as they exist as integral parts of a discussion (Streeck, 1996). Objects have been shown to encourage the process of social actions as they encourage active engagement with a discussion. In this example the helmet illustrated how items brought in during handover discussions allowed speakers to come together and use them as a focus as part of their assessment process. The handover in

extract 2 involved a patient who was in a motorcycling accident but was wearing a helmet during the incident. This was similar to extract 1 as the inclusion of a helmet supported the discussions and activity between team members.

Extract 2 Handover clip 14

01 Amb: SOREN? have you got the helmet please  
02 41 year old biker (0.7) on track there at  
03 Silverstone (.) went into Beckett's uhhm 90  
04 miles an hour my side he's come down on his left  
05 side (.) >head to toe< his only pain  
06 is high lumbar  
07 ((ambulance team member looks over the damage to the  
08 patient's helmet by turning it around and rubbing  
09 parts of it))  
09 ((passes the helmet off to the receiving doctor))

The initial statement by the ambulance worker saw him seeking assurances by his colleague that the helmet the patient was wearing had been collected and was being brought to the receiving team (line 1). This was achieved through the loud pitch through which he states his colleague's name which was an interactional feature that had previously been identified as a way to obtain attention. The helmet was brought into the interaction at line 7. The ambulance member first inspected the helmet himself by turning it around and rubbing parts of the object. No verbal acknowledgement was observed during the handover to signal key areas of concerns like what was found in extract 1.

The ambulance team member in line 6 was shown looking over the helmet and inspecting it for potential damage points, as these points could indicate injuries to the patient's head and would need further examination. The physical and tactile nature by which the ambulance worker employed to examine the helmet could illustrate how speakers could have indicated to the receiving team member where they should carry out their assessment of the object. This type of embodied action would allow the development of understanding between speakers (Mondada, 2011). By the team member touching the helmet, he has allowed for the receiving team to understand the importance of paying attention to the object and how he should follow a similar examination of the object (Mondada, 2011). Hindmarsh and Heath (2003) explored the use of gestures during medical encounters and found that speakers would use particular gestures as a way to explain things that were difficult to describe verbally. It was found that when gesturing to an object, speakers were able to show significance of that particular object. This would provide a level of clarity and understanding between speakers.

Extract 3 illustrated a different use of objects during the handover. The incident involved the patient accidentally impaled herself on a metal fence and she had to be brought into A&E with part of the fence still embedded into her. The implications of the object that injured the patient being present during the exchange influenced the interaction and subsequent actions employed by both the handoff and receiving team members. This was different to the use of other objects which aided the assessment, but not the cause of the visit.

#### Extract 3 Handover clip 15

01 Amb: this is Shelagh ↑ she was uhh: up pruning trees and  
02 slipped and fell on railings ((points to the metal  
03 protrusions in her abdomen)) (.)

04 she's got two 20 centimeter spikes embedded in her  
05 left thigh  
06 Doc: °right°  
07 Amb: [this one is  
08 [((points to her left thigh))  
09 [in almost all the way that one  
10 [((points to her right thigh))  
11 is about probably 10 to 12 centimeters

The handover began in the standard format as shown previously with the ambulance worker stating the patient's name and supplying a bit of background as to the reason for her injuries (lines 1-3). At lines 2 and 3 of the interaction the ambulance member made it a point to direct the attention of the receiving team to the pieces of metal, which was supported by the receiving team member turning his gaze to the area of the patient. The embedded object provided a shared area of focus for the team members as they had a material object, they were both able to draw their attention on. Heath and Luff (2013) found that an object such as a hammer was able to bring about collective gaze and participation in multiparty contexts, which was what was shown to be true in this example.

The ambulance worker reached over and pointed to the object embedded into the patient, which was his way of stressing the importance of observing the object. The ambulance member repeatedly pointed to the object to highlight the importance of ensuring attention was given (lines 8 and 10). This was followed by an audible micropause, which would indicate the ambulance worker awaiting an acknowledgement by the receiving team that the opening remarks were understood (Sidnell & Stivers, 2013). This particular movement involved the

ambulance worker to partially pull his finger back and point multiple times to the specific area.

Drawing attention and focus was a key part of how embodied actions can influence interactions as it promotes collaboration between speakers and helps to signal issues that might not have been made clear using words (Luff & Heath, 2015). By being able to refer to the physical object the ambulance worker would not need to verbally communicate as much about the present condition the patient was in. Particular examples using medical consultations have shown that the use of non-verbal actions provide a way to voice issues of pain or suffering (Heath, 2002). While the extant research on this topic was between patients and doctors it could be applied to handover in extract 3 as the ambulance worker as the receiving team could be easily informed of the state the patient was in and come to their own conclusions about the level of pain she was in.

As the handover progressed the ambulance worker continued to employ a variety of embodied actions to support their discussion and improve clarity for the receiving team so they would be prepared once the patient transfer was completed. The paramedic stated how deep the wound to the patient was in lines 4 and 5, which the receiving doctor in line 6 responds with “right” which indicated an acknowledgment or acceptance of the assessment provided (Garnder, 2007). The ambulance member continued to add clarity and specificity to the patient’s injuries in lines 7-9. This was done by the person first drawing attention to the protrusion by stating “this one is...”, this was followed by him reaching over and pointing to the specific thigh and piece of metal. Pointing as embodied action allowed for speakers to know where their attention and focus needed to be and was an action found to encourage collaboration (Mondada, 2007). These particular movements were repeated in lines 8 and 10,

when the ambulance worker spoke about the injuries on the other thigh of the patient. These particular embodied actions used in conjunction with verbal detailing of injuries acted as a way to paint a clear scene for the receiving team and to ensure there was understanding of the specific condition the patient was in (Haddington, Keisanen, Mondada, & Nevile, 2014).

The handover being discussed in extract 4 involved an older patient who was picked up by emergency services due to a nosebleed he had that would not stop bleeding. The blood from the patient and receptacle used to collect the blood involved some key embodied actions that shaped the interaction.

#### Extract 4 Handover Clip 90

01 Amb: [this is val (.) ]  
02 [((holds up his hand with blood))]  
03 he's eighty years old umm val's has a continuous  
04 epistaxis (.) not sure roughly how much blood he's  
05 lost but↑  
06 [since we've arrived whatever's in that bucket  
07 there]  
08 [ ((points to the bucket))]  
09 initially the blood's been quite clotty but it's  
10 been more kind of seeping through even with the  
11 dressings on

Starting at the beginning of the handover while the ambulance worker introduced the patient and commenced the handover, he held his hand up, which was covered in blood in a way to highlight the key points about why the patient was brought to their care (line 2). This gave a

visual representation of the severity of the of the situation and also illustrated how attention could be achieved between team members as there was a focus point. The ambulance worker was able to establish priority and attentiveness from the receiving team while conducting the handover. By holding his hand up the ambulance worker was able to establish that he was the speaker and required the attention of the handover team members while completing his turn (Mondada, 2007).

In lines 4 and 5, the ambulance member stated “not sure roughly how much blood he’s lost but↑”, “[since we’ve arrived whatever’s in that bucket there]”. In referring to the bucket of blood the object is brought in as a reference point by his statement. The use of this bucket allowed the speaker to not have to clarify on specific amount of blood loss, but be able to explain to the receiving team visually what had occurred and have an object they could be referenced and checked as part of their assessment. The use of objects in this instance was for the speaker to allow the receiving team members the opportunity to conduct their own evaluations by observing the object and coming to their own conclusions about the seriousness of the situation (Hindmarsh & Heath, 2003). This was an example of how objects could have more of an impact than words due to the amount of information the visual observation provided (Hindmarsh & Heath, 2003). This also referenced the epistemic access of all team members as by the visual representation of the blood lost drew on their existing knowledge of the severity of the clinical situation the patient was in (Stivers et al., 2011).

### 5.2.1 Writing notes during handovers

Another type of object that was shown to shape and have interactional implications on handovers were the use of written notes used by both the ambulance and receiving team

members. Writing down handover information has been shown to lead to some potential communication issues. It was reported that during handovers when the ambulance team provided written patient information the receiving team would disregard the information (Yong et al., 2008; Murray et al., 2012). The use of written information being part of the handover was a type of standardisation process that was encouraged for healthcare providers to adopt (e.g. SBAR) (Beckett & Kipnis, 2009). The incorporation of written notes or taking notes during a handover could hinder communication as it could potentially detract attention from what is being discussed as speakers would have their attention split between writing, speaking, and listening to information. In clinical settings, the embodied action of note taking can have important consequences on the future treatment of a patient as it affects the accuracy of the information that was captured due to potential split of attention (Haas & Witte, 2001; Mondada & Svinhufvud, 2016). These first examples have highlighted the impact of using written information during handovers has on the transferring and receipt of patient information.

The handover in extract 5 involved an older gentleman who had injured himself from a fall. The patient was brought straight through for an MRI where the handover was conducted to assess head injuries.

#### Extract 5 Handover clip 108

01 Amb: this is richard (.) he's 66 (.) just before 9 this  
02 morning he:: fell out of his loft  
03 [uhhm  
04 [((looks down at her written notes))  
05 he also then consequently fell through a landing↑

06 walked to his neighbor's  
07 house and an elderly neighbor said look he looked  
08 really dazed (.) very gray and bleeding from his  
09 [head  
10 Doc: [((writes notes about patient directly onto the  
11 patient's bed))]  
12 Amb: he's got a probably 10 to 15 centimeter full  
13 thickness  
14 l[aceration  
15 [((points to the top of her head))  
16 over his head  
17 Doc: ((continues to write notes on the patient's bed))  
18 Amb: and a tender clavicle on the left

The particular objects used during this handover were written notes by the ambulance team member. The notes provided a reference point by which she was able to ensure all salient information was provided to the receiving team. This could be a particularly useful tool to support the discussions of handovers as these objects allowed for speakers to have little to no ambiguity in their communication (Al Mahmud, Eichenbrenner, & Mubin, 2009). In lines 2-4, the ambulance worker read down from her the notes she brought with her as she appeared to have forgotten what she was going to say as evident by the “uhhm” in line 2 prior to her needing to check with her notes. The ambulance worker after having collected her thoughts and was prepared to continue with the handover began her utterance in line 5 with “he also”. This indicated that there were pieces of information that she was potentially not able to recall without the use of her notes.

The focus on writing and reading notes from both team members led to examples highlighting issues in communication. The receiving doctor did not directly engage with the handover ambulance member during the interaction, but instead focused on writing notes throughout the exchange. At lines 10,11, and 13 the receiving doctor was seen bending over the patient and writing notes directly onto a sheet, this action overlapped with the ambulance member's utterances. The doctor had his body positioned away from the ambulance member conducting the handover. This specific example of embodied actions can signal possible barriers to communication as it could mean a lack of engagement between speakers. It had been shown that there needs to be some evident of engagement between speakers in order to show acknowledgement or understanding with what was being discussed (Mondada & Svinhufvud, 2016). Speakers looked for interactional cues to show in some way that what has been said has been understood. In this specific example, the ambulance member did not stop her speech, which could show that she had some sort of acceptance of what the doctor was doing. The gaze of the receiving doctor was given to the ambulance team member, which further indicated how problematic writing as an activity could be during the handover. Gaze had been shown previously as a way for speakers to show their participation in an activity and discussion (Heath, 1986).

There continued to be no direct response to the ambulance team member through the interaction as the doctor maintained his focus on writing notes. The ambulance member in line 11 pointed to her own her head to visually show where specifically the patient's injury was. This specific movement was to highlight to the receiving team exactly where they should focus their continued efforts in treating the patient. This type of gesticulated action was similar to what you see when patients attempt to explain issues of pain or distress when they do not necessarily have the capacity to verbally do so (Heath, 1986). There was no

response by the doctor or other members of the receiving team to let her know that they acknowledgement what she has said. At line 13, it was observed that the doctor was continuing to write notes.

In extract 6, the patient has been brought into A&E as he fell off of a ladder at 20 feet and suffered some severe injuries as a result. The ambulance worker in this particular example needed the support of written notes in order to assist with communicating the patient's information.

#### Extract 6 Handover clip 12

01 Amb: ((reading from written notes))okay↑ uhhm this is  
02 uhh Patient Name (.) 50 year old gentleman  
03 previously fit and well uhm >quick survey< air  
04 entry's fine on both sides (.) >he's got a hematoma<  
05 (unclear) he's got an open fracture on his right  
06 elbow that was bleeding a lot↑ uhm it settled  
07 ((looks up at the patient)) with pressure but he was  
08 complaining ((looks back down at his notes)) of  
09 (hhh) (.) a numb right hand ((looks at the receiving  
10 doctor)) at this point ((looks back down at his  
11 notes))

The notebook that he used during his talk gave him a frame of reference, as he at multiple points seemed unsure and had to check what was written down. For example, prior to commencing the handover at line 1 the ambulance worker looked down at his written notes

and when he looked up to begin his turn, he had the notebook close to his chest. This particular action showed how an object within an interaction can be managed (Mondada, 2019). Some of the different ways that objects can be used within interactions and the way that speakers treat and handle those materials can support collaboration and mutual understanding (Neville, Haddington, Heinemann, & Rauniomaa, (2014); Mondada, 2019). The ambulance worker, by his positioning of holding his notebook close would be able to convey to the receiving team that he has the additional information should he be questioned on other matters relating to the patient.

In lines 7-10 of this handover the ambulance worker looked at both the patient and the receiving doctor in between different turns of talk. This may indicate that he was seeking some additional support or acknowledgement in what was being said by those present in the room and while a response was not given, he looked repeatedly at his notes. Another perspective of the use of this object was it provided an epistemic referential point (Mondada, 2019; Heritage, 2012). The epistemic point being that the ambulance worker had the knowledge base by physically holding it in his notebook and as such those in the room needed to rely on the information that he gave in order to create their own shared understanding. Those in the room depended on the information that was being shared by the ambulance worker as they do not have access to his notes, but only what he was verbally supplying.

Extract 7 involved a patient who while out at a shopping collapsed due to a possible seizure and has an established history of various medical conditions. The doctor first interacted with the patient prior to beginning the handover with the ambulance team member, which was a different structure than previous examples have shown.

Extract 7 Handover clip 98

01 Doc: hello<sup>↑</sup> my name's helen I'm one of the doctors  
02 Amb: here we have harry an eighty three year old (.)  
03 [he's had a sudden onset of breathlessness]  
04 Doc: [((writing notes down))]  
05 Amb: he's got a slight weeze<sup>↑</sup> more so on the righthand  
06 side [((looks at the doctor))  
07 [. . . . . X  
08 (.) [uhhm ((looks over to the patient)) he's really  
09 [. . . . . X  
10 tight and [seems quite congested as well ((looks back at  
11 the doctor))  
12 [. . . . . x  
13 Doc: okie<sup>↑</sup> dokie  
14 Amb: and that's pretty much it

When the ambulance began his turn at line 2 the team have moved to a separate table a bit of a distance from the patient and had their own sheets to read notes from and write notes with. The pause at the end of line 2 could imply that the speaker wanted to give the opportunity for the doctor to match what was being said with their notes. The overlap at lines 3 and 4 brought to focus the implications of writing notes during a handover as multiple activities took place at the same time which could have interfered with the communication and team working between speakers. Writing can potentially be a problematic action taken by interlocutors as it can create a sense of perceived disengagement by speakers (Mondada & Svinhufvud, 2016; Ruusuvuori 2001). In this instance the ambulance worker attempted at multiple points

throughout the discussion to obtain the gaze of the receiving consultant but was unsuccessful giving an implication that engagement was not achieved during this interaction (lines 6, 9, and 12).

In this example at lines 7 and 12, the ambulance worker looked to her each time he finished giving a new piece of information about the patient, which seemed to indicate the use of gaze as way to encourage engagement by the recipient. The research on eye gaze during an interaction has shown that it can have different ways of influencing understanding and subsequent actions and turns taken by speakers (Rossano, 2013). Gaze is considered a type of embodied action that highlights where attention was given during a conversation as well as a form of engagement that interlocutors use to show to whom they are directing their utterance towards (Kendon, 1967; Goodwin, 1981; Rossano, 2013). The doctor did not acknowledge this movement and continued writing her notes. It was not until line 13 that the doctor gave a verbal acknowledgement of the information by stating “okie↑ dokie”, with the ambulance member responding with the utterance “and that’s pretty much it” (line 14). The concluding remark by the ambulance member could have implications that all that was stated was not all the necessary information as “pretty much” can be consider implicative of additional things to follow, but enough had been stated.

In extract 8, a patient who collapsed from possibly having had a seizure has been brought to A&E. The handover was conducted on a separate table with 3 people present. The ambulance worker transferring over the patient information and the other two were members of the receiving team, but only one person from the receiving team was writing notes and engaging directly with the ambulance member.

Extract 8 Handover clip 100

01 Amb: ((looks down at her notes)) so we've got Gerald (.)  
02 umm ((points to her notes)) basically since last↑  
03 ((points to her notes)) saturday he's been  
04 f[eeling unwell]  
05 Doc: [feeling unwell] ((looking and pointing to her own  
06 notes))  
07 Amb: sh[ortness of breath]  
08 Doc: [shorteness of breath] ((nodding her head while  
09 reading and writing additional notes))  
10 Amb: ((reading her notes)) he's got AF

This example highlighted the effect of embodied actions such as writing can have on the organizational structure of the handover discussion as attention was evidently diverted, but interactional strategies were still used to potentially show some levels of engagement. The handover began with the ambulance worker looking down and reading from her notes. Her notes worked as an object for her to reference and focus on, but as her gaze was not at those around her it was potentially problematic due to being seen as a lack of engagement (Goodwin, 1984). Goodwin (1984) particularly acknowledged how gaze by the listener provided encouragement and showed the speaker there was engagement with the discussion. As discussed previously, writing during a discussion can impact on team collaboration within institutional settings as speakers cannot be sure if those around them are listening to what is being said (Mondada & Svinhufvud, 2016). Examples of writing in medical consultations has highlighted this particular issue with patients communicating their ailments with a consultant who would write down the information being relayed, but due to their body posture and gaze

during those discussions the patients were not clear if they were being listened to (Ruusuvuori, 2001; Mondada & Svinhufvud, 2016).

The embodied action of pointing to her notes in lines 2 and 3 allow the ambulance worker to reorient herself to the information that she had available about the patient and ensure that what she was stating was accurate. The action of pointing to the particular object, her notes in this case, showed to the receiving team where she was getting her information from should they have any questions or need any clarifications on what was being shared (Mondada, 2007). By having an object that acted as reference point speakers were able to orient to each other and create a sense of shared understanding as evident by the subsequent turn structuring. Between lines 4-9 the receiving team member started repeating information being stated by the ambulance crew. From the footage it was shown that the consultant had filled in information about the patient on the notes that she brought with her to the handover, which would have been supplied when the ambulance crew phoned in about the patient to the department prior to their arrival. In line 4, the ambulance crew member stated the patient was “feeling unwell” this utterance was overlapped by the consultant repeating the same statement while reading her notes about the patient. Repetition during conversations has been shown to be an interactional feature that speakers use to indicate mutual sense making and acknowledgement between them, as well as agreeing to information being discussed (Wong, 2000).

Within this short sequence there was a variety of interaction features occurring simultaneously starting with the repetition of words, which indicated engagement with the discussion and team collaboration (Wong, 2000). In lines 5 and 6 the consultant referenced their own notes while repeating the information. This action showed that the receiving team

had been engaged with the information being relayed and that her focus had been on ensuring she had the correct information written down. The consultant's gaze was not toward the ambulance worker, but by repeating the same words showed that she was acknowledged and agreed with her statements (Stivers, 2005). This repetition continued in lines 7-9 with the ambulance worker stating in her turn "shortness of breath", which was repeated and overlapped by the consultant making the same statement while again confirming with her notes.

The consultant used different actions to show that she agreed with the ambulance worker's utterance. She nodded her head while repeating and overlapping in lines 8 and 9. This embodied action of nodding showed a nonverbal confirmatory response by the receiving team that they agree with the information being shared and there has been mutual understanding between both parties. Nodding has been shown to be an embodied action used during professional settings to indicate a strong agreeing stance with an utterance (Goodwin, Goodwin, & Yaeger-Dror 1992; Stivers, 2008).

### 5.2.2 Section summary

This section was an analysis of embodied actions of using inanimate objects during handovers and how they shaped discussions and actions taken by speakers. Inanimate objects took different forms, but from the evidence it showed that if patients suffered from a head injury while riding a motorized bike with a helmet, that helmet was brought in by the ambulance service team. The helmet provided a focus point from which interlocutors could draw on for more information as well as create a more detailed relaying of injury points

(Hindmarsh & Heath, 2003). The use of these objects required speakers to carry out different forms of embodied actions such as gestures and pointing, which are nonverbal activities speakers employ to draw attention from others as well as create a sense of urgency or importance. Having a point of reference such as an object provided both members of the handoff team to coordinate their efforts through team working as they were more jointly involved in assessment. Examples discussed have shown members from both teams would point to the same object being referred to showing acknowledgement of what was being discussed (Hindmarsh & Heath, 2000).

Other types of embodied actions involved the use of written objects. Writing as an embodied action can be both a hindrance and support to discussions (Ruusuvuori, 2001; Mondada & Svinhufvud, 2016). When listeners wrote during an interaction they performed an action that showed others that they are noting down what was being said. In the examples discussed, this action of writing was potentially problematic as those who were writing did not show engagement with those speaking due to their posturing and gaze being directed only to their notes (Mondada & Svinhufvud, 2016). Conversely, examples of this type of embodied action also showed how interlocutors showed engagement with the discussion when writing was accompanied by a repetition of words by the listener (Wong, 2000).

### 5.3 The patient's body as a reference point

This next analysis section will show how patients' bodies were used as points of reference to support handover discussions. There exist various research that has examined how a patient's body acts an object during medical discussions (Heath, 1986; Heath & Luff, 2000). During medical discussions such as GP consultations, patients would use their own bodies as a way

of describing symptoms they were experiencing and areas of concern (Heath & Luff, 2000). Heath (1986) explored how body movements during medical consultations supported involvement between both patient and staff in their discussions. The activity of physical movements during a medical consultation would encourage the sustaining of attention between speakers. The patient's body acted as another type of resource or object for speakers to draw on. The following examples will highlight how healthcare team members would point and use gestures when explaining injuries or areas of concern relating to the patient and these embodied actions were shown encourage teamworking and communication. Using the patients to depict points of interest supported handover discussions as they had visual representations of the severity of the clinical situation.

The handover being discussed in extract 9 was an earlier portion of a previously discussed handover (see extract 1). The patient was brought A&E after being in a head-on collision with a car while on his motorcycle. This part of handover did not refer to the patient's head injury for the focus of discussions, but instead attention was given to the injuries the patient sustained to the rest of his body.

Extract 9 Handover clip 8 (2)

3 Amb: he's complained of some pain ((points to the  
4 patient's lower right-hand side)) down there  
5 (. ) but it's actually [superficial ((gestures to the  
6 patient's side))  
7 Doc: [((lifts the patient's  
8 blanket and looks at the wound on his side))]  
9 Amb: if you'll see he's got a lovely deep  
10 [gravel rash down there]



collaboration between team members as they were both showed involvement in the activities (Hazel & Mortensen, 2013).

The interaction between the ambulance and receiving team members when examining the patient's injury in lines 9-13, further support how the action of gesturing impacted their engagement. In line 9, the ambulance member started his utterance with "if you'll see", while both were observing the patient's injury and lifting the blanket covering to improve their observation. This additionally showed how the patient's body created a focus point by which they could coordinate their actions. In line 11, the doctor does show his agreement with the observations and provided a verbal acknowledge to complement the embodied actions he used. The ambulance worker reiterated his lack of concern over the patient's injuries in lines 12-14 by stating they are superficial in tandem with using a sweeping gesture across the patient's body, additionally showing his dismissal.

Objects, and in the case the patients, provided a way for interlocutors to engage with each other and to better coordinate their efforts (Hindmarsh & Heath, 2000). This example highlighted how gestures and pointing could encourage team working as the ambulance worker was able to cue to the doctor the additional concerns about the patient, which created a visual presentation of their engagement to the discussions (Brassac, Fixmer, Mondada, Vinck, 2008). As handovers are considered to be inherently a collaborative activity (Sujan et al., 2014), these nonverbal actions showed how speakers worked together to complete the tasks required.

Extract 10 was a handover involving a patient who was riding a motorbike that crashed and was struck in the chest by the handlebars of his bike. This particular example highlighted key points of how embodied actions encouraged engagement between team members.

Extract 10 Handover clip 17

01 Amb: handlebars have caught him uhh sort of upper gastric  
02 [and he's got reduced air entry=  
03 [(points to his chest]  
04 [. . . x  
05 Doc: [. . . x  
06 Amb: [=into his right lung  
07 [. . . . . . . . x  
08 Doc: [. . . . . . . . x  
09 Doc: °okay fi<sup>↑</sup>ne°

When the ambulance member began her turn at line 2 she pointed directly at the at the patient's exposed chest to show his injuries. By pointing to the patient the speaker was able to show what was about to be discussed and what she needed the receiving doctor to be paying attention to. The wound on the patient was the object providing additional detail to the handover as the ambulance worker did not have to verbally state the injury, but still was able to use as a reference point. This movement of pointing to draw attention to the injury brought on corresponding posture shift by the speakers as they both directed their gaze to the same location. Goodwin (1979) suggested that gaze in this sense showed speakers levels of engagement with a discussion. By showing their engagement with each other, the speakers would be able to coordinate their efforts to completing the handover (Goodwin, 1981; Bavelas, Coates & Johnson, 2002).

When the ambulance member continued her turn at line 6 she moved her gaze from the patient to the receiving doctor. This posture and gaze shift was overlapped by the doctor making the same movement and directing her gaze to the ambulance member. This action further highlighted how the receiving team member was actively listening to the discussion. Evidence has shown that when a participant gazes at a speaker they are actively listening to the discussion and showing their participation and engagement (Nielsen, 1962; Goodwin, 1981; Rutter, 1984). This would be a rather important feature when observing handovers due to the different issues of communication and engagement (Rabøl et al., 2011; Bruton et al., 2016). The concluding remark by the doctor in line 9 showed that she had been listening and in agreement with the information that was provided as evident her “okay” statement (Beach, 1993; 1995). The prosody by which the doctor stated “fine” in line 9 placed an additional emphasis on the sufficiency she found in the handover discussion (Sidnell, 2010).

The handover being conducted in extract 11 was for a patient who was working on a building site when a wall collapsed on him, which completely crushed him. The handover commenced with the ambulance team member reading from his notes, which as discussed before notes can be supportive to the handover discussion.

#### Extract 11 Handover clip 72

01 Amb: [this (.) is (.) richard (.)]  
02        [((reading from his notes))]  
03        uhh he's a thiry-six year old builde:r who was working  
04        in a house  
05        [when a internal wall made of breeze blocks collapsed  
06        [onto him

07            [((sweeps his arm across the patient))]  
08            >crushing<sup>↑</sup> him< from his pelvis downwards (.)  
09            and he's complaining of pain from his neck (.) pelvis  
10            (.) and predominantly in the right leg  
11            [where there's deformity in his tibia  
12            [((gestures to the patients legs and moves up his  
13            body))]  
14            he was >incredibly< distre:ssed when we arrived and we  
15            had to give him 500 mics of fentanyl (.) .hhh and 120  
16            of ketamine [in order to move him from scene]  
17                            [((open palm gesture while looking around  
18                            the room))]

In this example, the ambulance team member appeared to need his notes in order to recall the information about the patient. This was made clearer in line 3 by his utterances of “uhh” that showed how this object allowed for him to focus and recollect the pertinent information he needed for the exchange. One potential way of considering this was the fact the ambulance crew that delivered the patient was the second emergency crew on site. A land ambulance crew was the first on site to assist with the patient and the crew conducting the handover was air ambulance, which meant there was more of a need to clarify all treatments provided to the patient. When multiple crews would be involved in a handover the risk to information being lost or misconstrued increases (Hilligoss & Cohen, 2013; Hilligoss, 2014). This issue meant that having physical notes to refer to could assist the multiple sources of information that was obtained relating to the patient.

In lines 5 and 6 the ambulance member employs a sweep gesture across the patient body when stating “when a internal wall made of breeze blocks collapsed onto him”. This type of embodied action was referred to by McNeill, Cassell, and McCullough (1994) as an iconic gesture. Iconic gestures are a type of gesture that participants use to display aspects of an event that was being discussed (McNeill, Cassell, & McCullough, 1994). These gestures help speakers create a visual representation of a discussion. This type of gesture would support an interaction as speakers were able to better communicate events that led to a patient needing clinical care. In this example, the ambulance worker used an iconic type of gesture over the patient to help the receiving staff visualize how the wall collapsed onto the patient, which would provide additional clarity to the injuries that he sustained.

Iconic gestures were used again by the ambulance worker in lines 12 and 13 where he further detailed the injuries and pain the patient had been in. The paramedic made the statement “where there’s deformity in his tibia” (line 11) in tandem with gesturing his arms from the bottom part of the patient’s body to his upper half ending near the neck. This movement was brought on by earlier utterances (lines 9 and 10), where he explained how the patient had pain in his leg and neck. By using iconic gesturing, he was able to reiterate the key injury points on the patient to ensure the transferring of information (McNeill, Cassell, & McCullough, 1994).

The ambulance member concluded the handover with information pertaining to the drugs given to the patient to calm him as the patient was in clear severe distress. In lines 16, he stated the reason for why so much was prescribed to the patient was “in order to move him from scene”. This utterance was stated by accompanying open palm gesture, which would have two implications in this scenario. It would allow for attention to be drawn to the speaker

as the room had quite a few people from both teams and there was not a direct individual who was acting as the receiver for the information being passed on. Another effect this gesture would have would be to create a visual representation of carrying the patient to emphasise the effort put into physically transferring the patient.

### 5.3.1 Section summary

This section has explored how a patient can be a reference point or object by which the healthcare workers can refer to in the development of the handover. The patient's body had been shown to provide a level of detail when wanting to recreate facts that led up to their injuries or to better convey where critical injuries were on their bodies. Ambulance members were shown using iconic gestures (McNeill, Cassell, & McCullough, 1994) in the retelling of patient injuries as well as creating a clear focus on where they perceived future treatment should be after the transfer of care. Gesturing to the patient's injuries showed to increase the level of engagement with the handover (Heath, 1986; Hindmarsh & Heath, 2003). The embodied actions of gesturing and pointing would create a sense of urgency between team members and increase their coordinated efforts in examining a patient.

Gesturing and other types of embodied actions in these examples highlighted ways in which speakers drew attention and focus during their assessment. Examples have highlighted that when gesturing to a wound on a patient, it would encourage team working and collaboration as they would have somewhere to direct their attention. There would also be verbal responses to the nonverbal cues given by speakers to show confirmation in engagement with the discussion.

## 5.4 Using their own bodies to relay information

This next analysis section will highlight how handover team members both from the ambulance services and the receiving team used their own bodies as a reference point to relay vital patient information. Handover examples have shown the necessity from the ambulance crew to explain events that led up to a patient being in their care. This stemmed from some of the situations involving multiple handovers from ground and air ambulances before arriving to A&E. Similar to the analysis in section 5.3, discussion and engagement between staff members would be encouraged through the use of physical movements. The following examples showed how healthcare staff would re-enact how a patient sustained their injuries through the use of iconic gestures (McNeill, Cassell, & McCullough, 1994). The gestures assisted in the retention of the recipient's focus and attention while also supporting involvement in discussions (Heath, 1986; 1989).

Extract 12 was a handover for a patient that had suffered a fall and had multiple injuries to different points on his body. The ambulance worker displayed a series of embodied actions using his body to relay the events that led up to the patient's fall as well as to explain how he fell. These actions were used to better communicate to the receiving team of where injuries were and key points of concern.

### Extract 12 Handover clip 1

01 Amb: Ladies and gentlemen good evening (.) I've brought  
02 Pete here he's uhh 53 years old he's been running at  
03 speed down the staircase (.) and one set of the  
04 staircase he's  
05 [. . . . . x

06 [run into the wall turned out and fallen down 10  
07 stairs  
08 [((uses his hand to show movement towards a wall and  
09 then turns his whole body to show which direction  
10 the patient fell))  
11 Doc: [wow  
12 Amb: he's got multiple lacerations to the  
13 [top of his head  
14 [((points to his forehead))  
15 they are deep and they sh: come you know they do  
16 show the story that his head that he has gone  
17 straight into sumink (.) he's got one straight at  
18 [the top  
19 [((points to the top of his head))  
20 >and there's a little one< but the one at the top  
21 will probably give you some interest(.) I've been  
22 unable ((gestures back to the patient and back to  
23 himself)) to do a second survey because John has  
24 been very very poorly compliant we've been  
25 immobilized we did we had the proper stuff on and  
26 that's gone and that's now the third attempt  
27 Doc: °okay°  
28 Amb: he just keeps ripping it off

The setting for this handover was at a large A&E department and as such there were quite a number of healthcare staff present during the interaction. This required the ambulance worker to not have a direct point of contact to conduct the handover with, which encouraged the

wider gestures he used to draw attention from the larger crowd (Markaki & Mondada, 2012). When in larger settings (e.g. board meetings or classrooms) embodied actions can support the attention given to the speaker as they can be drawn in by the movements they are using, which in turn improves the engagement by all who are present (Mondada, 2007).

In line 1 the ambulance member made a call to attention by his statement of “ladies and gentlemen”. He follows this utterance with information relating to the events that led to the patient being injured (lines 2-7). In lines 5-7, the ambulance member employed a series of iconic gestures to support the retelling of the events (McNeill, Cassell, & McCullough, 1994). This re-enactment was achieved by the ambulance worker first obtaining the gaze of one of the receiving staff members, which allowed to have focus on someone to direct his utterance to. He put his palm up to symbolize a wall and then used his body to act as the patient coming into contact with the wall. The movement of his whole body to shift in the direction the patient would have when he took his fall could have significance to the receiving team on how to proceed with treatment. The gestures the ambulance worker employed provided a layer of imagery to assist the receiving team members to understand the important parts of the events that led to the patient’s injuries (McNeill, 2008).

At lines 5-10 the ambulance member used a combination of gestures, verbal speech, and moving his gaze around the room while relaying patient information. Gaze was used to capture the attention of the receiving team and to help the speaker check for engagement among the staff members which would ensure focus (line 5) (Goodwin, 1981). This combination of gestures and gaze while relaying the events helped to explain to the receiving staff where the impact was on the patient when he hit the wall. The iconic gestures supported the retelling of the story of the patient’s fall and the subsequent head injuries that he sustained as a result. One of the doctors expressed potential disbelief at line 8 with the events

that had just been relayed with his utterance of “wow” (line 11). This verbal response by one of the receiving doctors showed that there was engagement with the retelling of events.

From line 12 the ambulance team member began to use his own body to highlight where injuries existed on the patient. At line 12 he stated, “he’s got multiple lacerations to the”, this is followed at 13 with “top of his head” where the ambulance worker was seen to point to his own head. The use of pointing in this example was to draw attention to himself so he could clearly show the receiving staff where the injuries on the patient were. This action of pointing to his own head recurs at different points during this handover, but each reference was accompanied by a verbal utterance to the top of the patient’s head. In lines 15-19, the ambulance worker again refers to and elaborates the story of the patient’s injury to his head by his utterance of “...they do show the story that his head that he has gone straight into sumink (.) he’s got one straight at [the top]”. This verbal utterance was complemented simultaneously with another pointing action to his own head. This repetition of both verbal and nonverbal information was the ambulance worker’s strategy in managing of the sharing of the patient’s information. Similar to research on patient’s using gestures around injured areas of themselves to add a layer of contextual detail to the suffering they were experiencing (Heath, 2002).

By using his own body as a reference, he was able to safely show the injuries of the patient without causing any potential harm to the patient, as in lines 24-28 he stated how the patient was very difficult to manage and needed to be “immobilized”. The difficulty with managing the patient was made apparent at lines 21-24 where the ambulance worker stated, “I’ve been unable ((gestures back to the patient and back to himself)) to do a second survey because John has been very very poorly compliant”. In this stance he was able to refer to both the

patient and himself in his explanation of the situation he had to deal with in managing the patient. The act of gesturing to himself showed that he was solely the person who was responsible for this aspect of the patient's care. He used extreme case formulation by stating the patient had been "very very poorly compliant". This emphatic form of speech and repetition additionally illustrated the difficulties he had with the patient and the justification in the methods he used to restrain the patient.

In extract 13, the handover that was conducted was for a patient who suffered burns to the left-side of his body while working. The ambulance worker in this example wanted to emphasize what he considered the most essential points the receiving team needed to be aware of after the transfer.

Extract 13 Handover clip 65

01 Amb: uhh this is Jamie he's a left-handed gardener and  
02 he's suffered some flash burns to his left and his  
03 left scapula (.) he's got about 2 percent uhh  
04 partial thickness burns to his  
05 [left (.) sca<sup>↑</sup>pula:  
06 [((puts hand on left shoulder))  
07 area that's blistering (.) redness  
08 h[ere  
09 [((points to his left arm)) which >we're not  
10 counting< the main reason we're  
11 [he:↓re  
12 [((uses both hands to point to the ground))  
13 is because he's got blistering burns to left

The beginning of the handover involved the ambulance worker stating the patient was a left-handed gardener, which shaped the sequential organization of the information he provided as he focused his discussions and embodied actions to emphasize the left side of the patient (line1). Due to the burns on the patient, the ambulance worker's use of his own body as a reference point allowed for him to provide details of his condition.

In lines 5-9, he worked to explain the severity of the burns the patient suffered through verbal utterances and embodied actions. When the ambulance member wanted to show where specifically the burns were on the patient at line 5 he gestured to his own shoulder. This gesture was done by hovering his hand over his shoulder and making repeated movements around the area. This type of gesture would act as a signal to the receiving team of where he wanted their focus to be during the discussion (McNeill, 2008). One of the reasons for this particular action was to draw the attention and improve engagement with those present (Heath, 1986), but this was also a way for him to emphasize the location of the injury without disrupting or potentially causing harm to the patient. This action of referring to his own body to display the injuries of patient occurred additionally at lines 7-9 where he explained the blistering the patient was experiencing and pointing to his own arm to show the location of it. It became further evident by the subsequent utterances of the ambulance member that he wanted to stress to the receiving team specific areas on the patient where he wanted them to pursue with their treatment. Embodied actions in this instance provided a way of expressing urgency to speakers (Mondada, 2013) and in institutional settings such as this these actions supported the focus of team members in achieving their goals with the interaction (Hazel & Mortensen, 2013).

There was a shift in focus in the handover that occurred at lines 9-12 where the ambulance worker was dismissive of the patient's burn injuries. After detailing both verbally and nonverbally the extent and damage caused by the burns, he stated at line 7 and 8 "...which >we're not counting< the main reason we're...". This utterance was said in a quick manner to additionally support the claim that what was said was not the main priority as he saw it for the handover. The use of "we" in this instance could have multiple implications as he could have been referring to his own team, himself and the patient, or the entire group of both teams present in A&E. At line 11, the utterance of the word "[he:↓re" was strongly emphasized by the elongation of the beginning of the word and decreasing of the pitch (Sidnell & Stivers, 2012). This utterance was additionally accentuated by the action of pointing his index fingers down to the floor. The action of pointing to the floor allowed for the speaker to show the receiving team that he wanted their attention to be directed to the present and to be keep them grounded in the information exchange (Mondada, 2007). At lines 13 and 14 he stated what he considered to be the purpose for the handover was for the receiving team to focus on the injuries specifically to the patient's "dominant thumb and thenar eminence". These embodied actions supported the interaction by making it explicitly clear what the ambulance worker deemed to be the purpose for their discussion.

The handover being discussed in extract 14 was for a patient who had been gardening at her home and while on a ladder fell some feet to the ground and sustained a series of injuries. In this example both members of the handover team (ambulance and receiving) were shown to employ a variety of embodied actions organizational structure of the interaction.

#### Extract 14 Handover clip 106

01 Doc: hi[ya↑]

02 Amb: [hi] uhhm this is christina she's a seventy four

03 year old lady (.) today she was  
04 [ga:rdening  
05 [((gestures a digging motion))  
06 Doc: mhm  
07 and she's overbalanced >not noticing this at all<  
08 she's f[allen five feet down  
09 [((moves his body in falling motion))  
10 to her face on the driveway bel[ow  
11 Doc: [okay↑  
12 Amb: uhhm  
13 [the whole of the weight has been pushed down on her  
14 [. . . . . x  
15 [((hands sweeping down))  
16 Doc: [yeah  
17 Amb: uhhs three head injuries (.)  
18 [mouth nose and eye  
19 [((points to those parts on his own body))  
20 possible fracture uhhs  
21 she also [ha::s tenderness  
22 [((points to the back of his neck))  
23 she has [pa↑in in her neck  
24 [pats the back of his head  
25 but tenderness even more so on pal[p  
26 Doc: ((nods his head)) [you said it was=  
27 from [a standing position sorry↑



scenario for the patient, the ambulance worker can affect the ability of the listener. Embodied actions, such as whole movements, can help a listener better understand a problem and how to solve it (Cook & Tanenhaus, 2009). The ambulance member completed his turn at line 10, which concluded the trajectory of the patient's story of when she fell and sustained her injuries. The combination of both verbal and nonverbal information assisted the doctor in his understanding of the situation by his "okay" in line 11 and also showed his engagement.

The ambulance team member further attempted to engage with the doctor at lines 13-15 as he expanded on how the injuries came to be. While explaining the amount of weight that had been pressed on to the patient's head, he worked to capture the doctor's gaze as he also made a sweeping motion with his hands to show pressure coming down on to the patient. These multimodal activities occurring simultaneously within the same turn showed how much activity an individual could have to exhibit when conducting a handover. He did not capture the gaze of the doctor, but instead was given a verbal affirmative of "yeah" at line 16 showed that he was in agreement with what was being said and did not require clarity.

The lack of direct questioning on the part of the doctor could have potentially been problematic when examining lines 16 and 17. The "yeah" response by the doctor did show his engagement with the discussion, but at line 17 the ambulance worker appeared hesitant with how to begin his statement as evident by his "uhhh" utterance. The detailing of the head injuries was again explained both with verbal and embodied actions. At line 17, it was stated that there were three head injuries, and this was followed by an audible micropause that the ambulance worker would have used to collect his thoughts as he prepared for his next utterance. The location of the injuries (mouth, nose, and eye) was punctuated by the ambulance member pointing to each of those areas on himself. This use of pointing allowed

for the identification and understanding of each of those injuries by using himself as a reference to visualize them (Heath & Hindmarsh, 2000; Heath & Luff, 2000). Pointing also allowed for the speaker to symbolize to those present that his turn was not completed and that he was the person seeking their attention (Mondada, 2007).

The discussion of the injury to the back of the patient's head at lines 21-25 led to development of a variety of interactional features. The ambulance worker began his turn by pointing out the issues of "tenderness" to the back of the head at line 21 and this exchange was complemented by pointing and patting to the back of his own head to show exactly where the spot he was referring to was. At line 23 he seemed to repair his initial statement of it being tenderness and corrected that to pain (Liddicoat, 2011). This repair of the word tenderness to pain would alter the receiving team's perception of the injury and condition the patient was in as it has more severe connotations associated with it. The prosody the word pain was said with placed additional emphasis on the word (Liddicoat, 2011; Sidnell, 2010) and was said with the action of patting the back of his own head. He then referred to the injury as being tender in line 25, which showed how using embodied action can help an individual consider what they say (Goodwin, 1981; McNeill, 2008). This information of the patient's injuries was acknowledged by the receiving team member with a nod at line 26, which showed that he was engaged with the discussion.

At lines 26 and 27 the doctor sought clarification on the details that had been presented and interrupted the ambulance worker with his overlapping statement "[you said it was= from [a standing position sorry↑]". This was potentially problematic for the speakers as he did not allow for the completion of the ambulance member's turn. The doctor worked to resolve this problem in the interaction by verbally stating "sorry" and also accompanying his turn with a

gesture to his eye level to clearly state the height he believed the patient to have been at the time of her fall (Goodwin, 1981). Embodied actions can be used to resolve issues in overlap as movements can allow speakers the time needed to reorient themselves to the discussion and as a result being prepared for the subsequent turns (Oloff, 2013). The ambulance worker re-joined the interaction at line 29 by raising his own hand to the same level as the doctor's, which showed active engagement with the handover as they both were working to show a mutual understanding of the events. This mimicking of body movements between speakers showed the attention they had for each other and also can benefit the processing of the information being shared (Weyers, Mühlberger, Kund, Hess, & Pauli, 2009; Winkielman, Niedenthal, Wielgosz, Eelen, & Kavanagh; 2015). This mimicking of embodied actions showed to help the doctor to understand the situation and remove the ambiguity in the conversation as evident by his "okay" utterance at line 31.

The ambulance worker again stated the way the patient fell at lines 32-34 with both verbal description of the events and gesturing to visually show the movements of how the patient fell. The iconic gestures used at lines 33 and 34 used both his hands to symbolize the action of an individual falling (McNeill, Cassell, & McCullough, 1994), but he also used his own body to display how she fell on her left side. This gesturing to allow speakers to visually understand the events that led to an injury can support a handover as the receiving team members were able to understand points of impact better. The doctor showed his understanding and agreement of the information that had been presented to him by repeatedly stating "okay" at line 35, which was accompanied by a nodding of head (Beach, 1995; Gardner, 2007). The repetition of words in this utterance supported the idea that he wanted to stress his agreement with the exchange and also to put a finality in the transferring of the patient to his care (Wong, 2000).

The patient being discussed in handover of extract 15 was a woman who fell off while riding her horse and then struck a tree causing some severe injuries to various parts of her body, but primarily her shoulder was of concern to the healthcare team.

Extract 15 Handover clip 26

01: Doc: hi (.) what do we: got?  
02: Amb: she was riding her horse and came off and hit her  
03 [le↑ft side (.) down=  
04 [((pats his left shoulder))  
05 [. . . x  
06 Doc: [. . . x  
07 Amb: =a tr[ee (.)  
08 Doc: °right°  
09 Amb: complaining of left shoulder pain (.) left pelvic  
10 pain  
11 Doc: [was it dislocated or just spliced]  
12 [((covers and rubs his left shoulder))]  
13 [. . . x]  
14 Amb: [it's hard to tell (.)  
15 Doc: °right°  
16 [it does look full anteriorly  
17 [. . . x  
18 [((waving his hand in front of his shoulder))  
19 (.4)  
20 [((rubs his left shoulder)) uhh but

21           (.)sitting by her side it does look a bit better so  
22           uhh (hhh) probably not (.)

The ambulance worker at lines 2-4 used an embodied action of pointing to his own left shoulder when he introduced the information about the location of the injury. This movement caught the attention of the receiving doctor as both joined to make eye contact with each other at that point of the exchange. Pointing had been shown to capture the attention of speakers as it shows where focus should be given and also directing interlocutors to the one speaking (Mondada, 2007). The recipient responded to this action by bringing his gaze to the speaker (line 6). It showed that the doctor was engaged with the discussion, so this movement encouraged team working in the transferring of patient care (Goodwin, 1981; Charman, 2004).

Gaze, as discussed previously, was a way for speakers to show directionally where their focus was during an exchange and it also was an indicator of speakers' level of engagement (Goodwin, 1981). This act of both participants gazing at each other showed there was active listening occurring and also there was a mutual sense of understanding between speakers (Vertegaal, Slagter, van der Veer, & Nijholt, 2001). The doctor additionally exhibited his understanding with what the speaker said by his statement of "right" at line 8, which acted as a discourse marker to indicate his acceptance (Gardner, 2007).

At lines 11-18, the interaction between the speakers further demonstrated their engagement with the handover through mimicking of embodied actions (Weyers, Mühlberger, Kund, Hess, & Pauli, 2009). The doctor initially places his hand to his left shoulder while gazing at the ambulance worker (line 12) and this action was reciprocated by the ambulance member

worker making the same gesture at (line 18). This indicated how these actions supported how teams create mutual understanding and connect with each other during these discussions (Weyers, Mühlberger, Kund, Hess, & Pauli, 2009).

After providing more details of the injuries and discomfort the patient was in (lines 9 and 10), the receiving doctor sought additional information about the injury at line 11, “was it dislocated or just spliced”. This question was accompanied by the speaker moving his arm to his shoulder while directing his gaze at the ambulance worker. The ambulance worker responded with a dispreferred answer to his question in line 14 by stating “it’s hard to tell (.) it does look full anteriorly” (Liddicoat, 2011). This verbal statement was said by both gazing directly at the doctor and the action of waving his arm in front of his shoulder. The movement to his shoulder displayed to the doctor that that was the injury they were referring to as that had not been verbally clarified. At line 19, the ambulance worker paused for .4 seconds, which indicated his consideration of his next turn and how he wanted to proceed with providing additional information about the shoulder (Sidnell, 2010). This was followed by a movement to his left shoulder again, which gave a visual representation of how he considered his next utterance and had an object as a reference to collect his thoughts.

#### 5.4.1 Section summary

This section illustrated how handover discussions were supported by healthcare members using their own bodies to explain patient injuries. By speakers explaining events that led to a patient’s injuries and highlighting key areas of concern they would employ a series of embodied actions that would encourage involvement in discussions. By team members using their own bodies they were able to avoid potentially harming the patient and to also draw attention to themselves during the handover activity. Speakers were commonly shown to use

iconic gestures to create a visual representation of how patient came to be injured (McNeill, Cassell, & McCullough, 1994). This added a layer of imagery during the handover that would allow speakers to better focus their attention and support collaboration between team members.

## 5.5 Chapter summary

This chapter explored the use of embodied actions during clinical handovers. Embodied actions come in a variety of forms such as: gesturing, pointing, and eye gaze, with each having different implications on the direction and sequential organization of a conversation (Goodwin, 2000; Sidnell & Stivers, 2013). Embodied actions play a pivotal role in all settings of social interactions as they support conversation and add an additional layer of detail to the understanding of human behaviour (Goodwin, 2000).

The first analytical point of this chapter focused on speakers used inanimate objects as a reference to assist in the recall of information, but also as a tool with which they could better explain patient injuries. The use of objects came in a variety formats, such as items worn by patients during their accidents and also items that remained embedded into a patient as they were brought into A&E. The use of objects shaped how speakers approached their discussion as it encouraged, in some examples, the receiving team to take a closer inspection of damage an item sustained by turning it around in their hands. This action showed how items could encourage engagement between speakers through actively displaying their involvement in the discussion (Hindmarsh & Heath, 2000; Brassac, Fixmer, Mondada, & Vinck, 2008). Items could also pose potential problems or barriers to communication as was evident by the use of the activity of writing during a handover. Evidence from the data in this chapter has shown that when receiving team members were not showing they were listening to a conversation,

but instead focused on writing of information it became problem for speakers as they would attempt different ways of capturing their attention.

The second analytical point was the use of the patient's body to nonverbally state where focus or injuries existed to better clarify where receiving teams should be focused on when the transfer was completed. The examination of bodily actions when conducting an assessment of a patient showed how this encouraged joint activity between the multidisciplinary team members. By having the patient as a reference point, speakers were able to come to an agreement on the injuries as well have the ability to recall vital information pertaining to the patient (Heath, 1986).

The third analytical point was how speakers would use their own to reference events that led to a patient's injury to help with the location of specific injuries. Ambulance workers, in particular, would use iconic gestures to recreate the events happened prior to a patient's accident as well to indicate the positioning from which they fell (McNeill, Cassell, & McCullough, 1994). This visual representation allowed speakers to come to mutual agreement on the injuries a patient sustained as well as encouraged the ability to work collectively.

This chapter was an overall exploration in how the use of resources whether an inanimate object or a person supported the activity of handovers. Embodiment was shown to be a key analytical point in understanding how interdisciplinary team members use resources around them to structure their discussions about the patient and also to encourage engagement.

Research exploring the use of these actions in a clinical setting has been focused on how patients use nonverbal activities to explain illnesses and pain they are experiencing with a

healthcare professional (Hindmarsh & Heath, 2003). This analysis allowed for a deeper level of understanding of the complexity involved in the exchange of patient information and how team members navigate their discussions to improve communication.

The following chapter (chapter 6) will conclude this thesis by drawing on the key findings from the whole study and addressing research points to consider going forward.

# Chapter 6: Discussion

## 6.0 Introduction

This final chapter will be a reflection of the previous chapters written. It will be a collection of the main points of the analyses that have been conducted. First there will be overview of how each study combined in answering the underpinning research question of the PhD. Then it will consider the research and practice implications of the work that has been undertaken. Finally, it will describe the limitations with this study and how the research will be carried forward in future studies.

## 6.1 Summary of the thesis

### 6.1.1 Summary of research aims

This thesis set out to answer the following research question:

*What are the dominant interactional features that shape the handover processes conducted by ambulance personnel and A&E staff?*

To address this question this study had two aims. The first aim of this study was to explore the interactional features of a clinical handover between ambulance services and emergency care staff. The purpose for looking at this particular area was to also address the need to better understand handovers involving ambulance services, due to the lack of research that has previously been conducted (Fisher et al., 2015; Sujana et al., 2015). National Institute of Health Research (NIHR) reports have previously shown that handovers from ambulance services are an important area that needed to be better understood due the implications it

could have on patient safety (Fisher et al., 2015), particularly when also considering environmental concerns, such as overcrowding, in emergency departments that have been shown to be a hindrance communication between interdisciplinary team members (Wood et al., 2014).

The second aim of this study was to investigate what was imagined to be part of the handover activity with the actual patterns of work activities, what Hollnagel (2016) has distinguished as the difference between work as done and work as imagined. To explore this aim elements of human factors were considered by focusing on the non-technical skills of communication and teamworking (Carayon et al., 2014). Human factors as a concept was important to consider as it could account for potential issues that can occur between interdisciplinary teams during discussions (Catchpole et al., 2007). By taking this focus it was possible to examine how conversations supported collaboration between team members and transferred patient information. This study explored these features by looking at how the work of clinical handovers was actually done compared to how it was previously imagined using naturally occurring data examples.

To address these aims and to answer the research question a video analytic approach of examining secondary data in the form of a reality/fly on the wall programmes involving handover recordings was used. This approach follows (Jackson, Land, & Holmes, 2017) and also draws on concepts of conversation analysis (CA) to examine the data within the three empirical studies. Use of CA allowed for the exploration of the structuring of handover discussions and the different tools used between speakers as they progressed with the activity. This was a novel approach to take as much of the extant research that has used CA to study institutional talk in medical contexts has often focused on discussions between patients

and staff (Lindström & Karlsson, 2016; Drew, 2018). Also novel in that much of the literature on handovers (what little there is) is based on work as reported or imagined and not work as done. Consequently, there exist a gap in understanding how members of interdisciplinary teams conducted their discussions and issues such as how potential ambiguity or how troubles in communication that occur between speakers are resolved remains under explored.

Each of the analytical chapters took a particular granular perspective on the data in order to illustrate a complete picture of how handovers were conducted. The first chapter used CA to look at handover structures as a whole in order to consider the different phases that speakers go through in their discussions. This first analytical study examined how handovers progressed from opening to closing. The second analytic study focuses on the knowledge exchange, or epistemics, between ambulance team members and hospital staff. The third analytical chapter examined the use of embodied actions; how they were used by speakers to address ambiguity and how speakers used their environments to support their discussions. Overall, it was concluded by using CA to look at these different aspects it was possible to achieve mutual understanding to allow for transferring of responsibility of the patient.

### 6.1.2 Summary of research findings

The first analytical chapter (Chapter 3) looked at the general structure of clinical handovers from start of when patients were being presented to hospital staff to the conclusion of activities. It provided an overview of some of the different interactional features that speakers would use to progress the discussions and address potential barriers or trouble-sources. This initial chapter highlighted that there existed different interactional features that shaped the exchange of patient information. Handovers could also be used to understand an interaction

where communication was sequentially ordered and conducted between interdisciplinary team members. Prior to the handover commencing a pre-handover alert phase was found to occur between speakers. The pre-handover discussion was not a part of the extant handover literature (Iedema et al., 2012; Sujan et al., 2015). Following this, the handover was found to go through three distinct phases: an initial background discussion explaining the medical history of the patient, clarification of treatment provided, and a final conclusion phase. The findings from this study highlighted how healthcare staff would need to formulate their discussions to support the transferring of patient information and responsibility. It showed that simple wording or actions could engage handover activities between ambulance and hospital team members.

The pre-handover alert phase was found to involve speakers using discourse markers to signal their readiness to begin with the discussion. This demonstrated how the use of simple wording and acknowledgements could support collaboration between team members by ensuring engagement in the discussions. In some instances, speakers would use the word “okay” to draw attention to themselves and assess whether receiving team members were prepared to begin discussions. This was found to be in line with the known research on the use of discourse makers such as “okay” and “yeah”, which showed that they could be used by speakers to gain attention (Beach, 1995; Bangerter & Clark, 2003). These pre-handover alerts would shape the subsequent handover discussions as they would ensure speaker engagement and focus in the work activity. These actions showed that something needed to occur between speakers prior to the patient information being exchanged and the actual handover taking place.

The first phase of the handover included the critical activity of the ambulance members sharing initial background information about the patient and the patient's reason for needing medical assistance. The main purpose of this phase was to communicate to the receiving team the most important background information about the patient so they can understand the situation. During this first phase the speaker ambulance member would provide a narrative account of what occurred, which would show the purpose for the discussion (Baker, Emmison, & Firth, 2001). How the interaction occurred during this phase was found to follow a specific pattern of introducing the patient's name, their age, some relevant past medical history, and a succinct description of events. This finding confirmed what was known about the standard procedures of communicating handovers (Sujan, 2014). In particular speakers were shown to be following the SBAR approach to handover with this first phase being the 'Situation' and 'Background' part of the mnemonic (Idema et al., 2012).

The structural organization of the rest of the handover discussion was shown to be dependent on the clarity of the first phase of information being exchanged. Recipients were found to indicate their acceptance and acknowledgement of the information being exchanged during this first phase again through discourse markers such as "okay". The positioning of a word such as a "okay" would have multifunctional purposes within the discussions (Gardner, 2007). By the word being placed following the initial information exchange it would assist in the progression of the conversation by signalling to interlocutors that information had been received and communicated with no ambiguity (Beach, 1993; 1995). This was an important finding in this study as it showed how speakers ensure clarity in communication and indicate their engagement with the discussion, which has been shown to be a critical factors in handover success and patient safety (Apker et al., 2007; Siemsen et al., 2012; Jensen et al., 2013).

The second phase of the handover incorporated a point where speakers would discuss treatment provided to the patient prior to arriving at the hospital. This phase opened up more of a dialogue between speakers as the receiving team members were often seen to question treatment provided and to identify and redress any sources of miscommunication. The use of CA allowed for an understanding of how participants deal with these matters in communication and what interactional features were commonly used (Drew & Heritage, 1992). This study showed how important it was for team members to clarify treatment provided when more than one ambulance team member was involved in the care of the patient prior to coming to the hospital. For example, when an air ambulance crew member was bringing the patient to the hospital there commonly was a land ambulance crew first on site to assist the patient and as a result there was a risk of ambiguity on what treatment was provided and by whom. This was an important find because it showed how ambulance services and hospital staff addressed issues in communication and were able to clarify order of events related to the care of the patient (Stiell et al., 2003; Sujan et al., 2015).

To deal with issues of potential ambiguity or miscommunication speakers would often repeat information exactly as it was stated. By using repetition interlocutors they would be able to ensure that there existed no misunderstanding since by repeating information they would be showing what they heard was exactly as they believed it to be (Pomerantz, 1984), repetition by the recipient speaker can show their acceptance or rejection of what was said in the first turn and as such influences the sequential structure of the conversation (Pomerantz, 1984). This held true with the findings from this study as speakers would signal to each other their engagement with the discussions as they would be able repeat back exactly what was said, which would assist in the progression of the discussions. This was different to what the

research on clinical handover, which suggested that the repetition of information was a hindrance and led to issues of delays and risks to patient safety (Jenkin et al., 2007; Jensen et al., 2013). Härgestam, Lindkvist, Brulin, Jacobsson, and Hultin (2013) identified developments in human factors research to improve verbal communication in healthcare, which stemmed from repetition of words referred to as closed-loop communication. It was identified that repeating key points of a discussion assisted in the reduction of miscommunication issues between interdisciplinary team members (Härgestam et al., 2013). The findings from this thesis has further supported the previous research and gave additional evidence for how repetition during handovers was a particular feature of the interaction order.

Another distinctive feature in the second phase of the handover was the use of questioning by the receiving team members. Questions during handovers was another way for individuals to show there were misunderstandings during the exchange. This confirmed what was already known about institutional talk, as speakers need to progress their interaction in order to achieve their specific goals. This has meant there needs to be clarity on what was being discussed so they can know what actions to follow up with (Drew & Heritage, 1992). The opportunities to question and correct or repair issues within a conversation allowed interlocutors to identify trouble areas where there had been ambiguity (Whalen, & Zimmerman, 1990).

The third and final phase of the handover involved the closing of the interaction and was characterised by how speakers would signal their readiness to disengage from the activity. In order for the handover discussions to close it would be dependent on all the relevant patient information being received and the transfer of care moving to the hospital staff, therefore speakers looked for ways to confirm this through the interaction. One of the ways speakers

would move to this phase was through the use of final clarification questions. Receiving team members would ask questions that were not directly relevant to the patient's condition such as the patient's name, which had been shared previously in the discussion. This line of questioning illustrated how speakers would come to an awareness that the conversation was coming to a close or that team members were ready to disengage. Upon repeating this information speakers were shown to indicate finality through the use of the word "okay" or 'thank you' as a means of confirming they accepted all of the information shared, which acts as a closing device when positioned at the end of a sentence (Schegloff & Sacks, 1973; Beach, 1992; Aston, 1995). These indicators provided an alert to show how speakers were accepting all information that had been shared and team members were prepared to deal with the next steps outside of the handover.

Another commonly used interactional feature to bring handover discussions to a close was the use of final remarks or directions of the next steps to take. Typically initiated by the ambulance team member, they would signal their preparedness to bring a conversation to a close by seeking assurances to be kept informed about how the patient progresses once out of their care. This illustrated that speakers were bringing conversations to a close as they were beginning to discuss information not pertinent to the handover discussions. This had implications for practice as it showed what could occur interactionally to indicate what team members perceived to be the end of a handover activity (Fisher et al., 2015).

In CA, deviant cases are viewed as have been referred as methodological problems as they shift away from the usual pattern that an interaction would take and as such alter the sequential organizational structure that follows (Garfinkel, 1963; Maynard & Clayman, 2003; Sidnell & Stivers, 2013). In Chapter 3, a deviant case was identified where it provided further

evidence for the structure of handovers by highlighting what was an exception to the rules and practices featured in the rest of the analysis. The deviant case involving a patient who was high priority due to the severity of the clinical situation he was in. The patient had a severe bleed that needed constant pressure in order to staunch it, and as a result the discussions and activities for the handover were altered with respect to the handover structure description outline. The ambulance member was found to take more of an active role in directing the receiving team members in how they should proceed with treating the patient. The analysis of the deviant case allowed for a better understanding of the handover practice and this finding provided the evidence to further examine what was happening during these activities at a deeper level, which led to the next analytical chapters.

Chapter Four progressed the findings of the first analytical chapter by taking a more granular approach with the analysis through exploring how knowledge was exchanged between speakers, also known as epistemics (Heritage, 2012). The analysis of epistemics generated insights into how speakers would develop mutual sense-making as they had to negotiate the discrepancies in their knowledge (Heritage, 2011; 2012). Within the handover discussions there existed an awareness that each speaker has their own level of knowledge or understanding about a topic being discussed and as a result they coordinate their conversation so the necessary information had been exchanged (Heritage, 2012; Landgrebe, 2012; Drew 2018). Two main analytical points, epistemic discourse markers and epistemic authority over second-hand accounts, were described through the examination of the data.

The study showed how epistemic discourse marker could be used between speakers in order to indicate their understanding and acceptance of information presented. Epistemic discourse markers such as “right” were shown to signify understanding and the successful transferring

of information (Gardner, 2001; 2007). “Right” was used in examples as a receipt of information shared by a speaker in a previous turn. This was an important finding in this study as it showed how patient information had been shared between speakers. The use of the word “right” also illustrated that speakers did not contest the information given as it gave a sense to speakers of stating “correct”. Findings from the study additionally showed how commonly used words such as “yeah” and “okay” had more interactional importance due to their use to signal information transfer and acceptance, but transitioning of topics (Beach, 1993; Turner, 1999). By participants using words to progress handover discussions it showed the relevant patient information had been received and the different interactional features needed so that all members of the handover team member had the same level of patient knowledge.

Throughout the data corpus it was common that the ambulance members who were conducting the handovers with hospital staff were not the first responders to the patient. This added a further element to the discussions as speakers needed to share information that they did not directly observe, referred to as Type-2 knowables (Stivers et al, 2011; Smith, 2013). Ambulance members, in particular, would have to provide information that was obtained by a witness account who then passed that information to the initial responder before it being shared with them. Speakers would often have to work out what happened and what was done for the patient through the handover discussions and commonly when presenting Type-2 knowledge speakers would commonly contest and challenge the information being presented (Pomerantz, 1980; Smith, 2013).

One of the key features this study found was how speakers would handle the exchange of Type-2 information and the potential ambiguity it presented during handover discussions. Evidence showed that when an ambulance member was presenting information they would have epistemic primacy or authority over that information as they were the more knowledgeable speaker who held control over what was shared to the receiving team (Stivers et al, 2011; Heritage; 2012). Examples illustrated this would cause communication issues that led to the receiving team members to challenge the information being presented through the use of questioning and modified repetitions (Stivers, 2005). Receiving team members were shown to question what treatment was provided to the patient and by which team member, which demonstrated how speakers would need to navigate handover discussions in order to make sense of the necessary information. Modified repetitions were a common approach to deal with trouble points in a discussion and an interesting interactional feature displayed by speakers to epistemic acceptance of information presented (Stivers, 2005).

Chapter Five progressed the findings from the previous two analytic chapters by examining communication and teamworking during handovers through the exploration of embodied actions. A focus on embodied actions allows for an understanding of how interlocutors interact with each other and their environment through physical movements (Goodwin; 1971; 1981; 2001). By incorporating an analysis of embodied actions it was possible to understand how healthcare staff would connect their physical actions with the social activities being conducted. In approaching speaker's embodied actions three key analytical points were examined: the use of inanimate objects to further their discussions, using the patient's body as an object reference point, speakers using their own bodies as an object to display patient injuries.

The first analytical point was how speakers would support their handover discussions through the use of inanimate objects. This study found that when the inclusion of inanimate objects would be brought into discussions as a result of its direct implications to support the understanding of a patient's condition. Most commonly if a patient was being presented with head injuries as a result of motorcycling accident the ambulance staff would incorporate the patient's helmet into the handover. The use of objects in this way allowed speakers to have a reference point to support their discussions, which in turn indicated team collaboration (Nevile, Haddington, Heinemann, & Rauniomaa, 2003; Luff & Heath, 2015). By having an object that speakers were able to physically touch it was found that they could coordinate their discussions in a more focused way. This was done partly through having something to focus their attention on by pointing to and both speakers touching the item (Mondada, 2007).

While this study showed that inanimate objects can support communication during handovers, certain objects such as written notes were shown to be a potential hindrance to speakers. Ambulance workers would bring in written notes to assist in their recollection of relevant patient information for the handover discussion, but the reliance on written notes showed that focus was on the notes and not the engagement with the team members. This complemented what was known about written notes detracting attention and focus during handover deliveries (Yong et al., 2008; Murray et al., 2010). By having additional tasks taking place during the handover such as reading or writing notes it was found that focus was split and there was potential for miscommunication between speakers (Haas & Witte, 2001; Mondada & Svinhufvud, 2016). Conversely, examples did illustrate that handovers where both sets of team members were both looking at written notes there was improved communication and potentially collaboration during the discussions. This was demonstrated by speakers both directing their attention to the written information, which had been

suggested as a way to improve communication during handovers as they actively would be engaged with the information being exchanged (Al Mahmud, Eichenbrenner, & Mubin, 2009).

Healthcare team members were found to refer to the patient as an object or reference point to gesture and point to injuries in order to support the handover conversations. The embodied actions used to indicate the patient's injuries assisted the discussions because they created a sense of focus and ensured that receiving team members were aware of specific areas of concern. By speakers gesturing and pointing to a patient this study found it encouraged collaboration between healthcare team members as they would actively shift their focus to what was being addressed (Brassac, Fixmer, Mondada, & Vinck, 2008). Examples showed that speakers would point to a patient's injury during discussions, which encouraged team members to turn their attention to those particular points of concern. This was similar to what was known to occur during medical consultations where a patient would gesture to points on their body that were causing issues, which led to the medical staff member to focus their attention (Heath, 1986; Heath & Luff, 2000).

Healthcare staff members were seen to use their own bodies as a way to convey injuries of a patient and to also relay the events that led to a patient being in their care. One of the key features of team members using their own bodies this way was that it allowed for attention and focus to be given to the speaker during discussions. Examples showed how when conducting a handover there could be quite a few people present and the speaker would need to ensure that attention was on them (Mondada, 2007; Markaki & Mondada, 2012). Speakers would use a form of gesturing called iconic gestures in order to relay details of events leading up to a patient's injuries (McNeill, Cassell, & McCullough, 1994). This type of gesture

involved sweeping movements by speakers as they worked to create a visual representation of what they were verbally stating. Evidence to indicate collaboration and engagement between team members was how when one speaker would gesture there would be a responding mimicking gesture by another speaker (Weyers, Mühlberger, Kund, Hess, & Pauli, 2009; Winkelman, Niedenthal, Wielgosz, Eelen, & Kavanagh; 2015). This was an interesting find for this study as it illustrated how embodied actions could allow for team members to physically indicate their understanding and acknowledgement of what has been communicated.

Each of the three analytic chapters functioned to understand the handover process focused on different aspects and in doing so provided increased understanding of the contribution of structure, embodiment and epistemic understanding to the handover process. In recognizing the scope of these findings, the focus will now turn to the consideration of this to CA research and practical implications.

## 6.2 Contribution to CA Research

In addressing the research aims, this thesis has shown the applicability of using CA to explore an institutional setting (Antaki, 2011) and generated a deeper understanding of the interactional features involved in clinical handovers. This thesis has made contributions to the research on institutional settings by examining clinical handovers from naturally occurring examples. The focus of this study was to understand how this work and social activity was conducted in order to better understand clinical handovers.

This thesis progresses extant CA literature as evident by each of the analytical chapters. The first chapter fits in with the CA research on institutional talk (Drew & Heritage, 1992; Mayor, Bangerter, & Aribot, 2012), openings and closing of conversations (Schegloff & Sacks 1973; Schegloff, 1974; Heritage, 2013). This was followed by the analysis of epistemics (Stivers et al., 2011; Heritage, 2011, 2012, 2013; Drew, 2018). The third chapter on embodiment (Goodwin; 1971; 1981; 2001; Hindmarsh & Heath, 2003). This analytical approach showed that this study had direct implications for existing research.

The focus of this thesis has filled a gap in the knowledge in CA as it explored work discussions between two professional groups in a medical context. Existing CA research examining medical settings has been between a lay individual or patient and a healthcare staff member (Heath & Christian, 1986; Heath, 1990; Drew, Chatwin, & Collins, 2000; Hindmarsh & Heath, 2003; Lindström & Karlsson, 2016). These previous studies provided a limited scope as they explored institutional interactions where speakers had an expected discrepancy in their knowledge base. This has meant that prior to this thesis there was little understanding of the different tools and interactional features used in discussions between healthcare staff members. The findings from the three analytical chapters have built on the previous research, by showing through the use of CA, how handovers were sequentially structured. This was done by highlighting the implications of the turn-by-turn design within the discussions.

### 6.3 Contribution to Practice

This thesis had direct practical applications due to it being an exploration of a routine work activity. Previous research has shown that using CA to explore interactional features has led

to the successful creation of training material to improve employee work activity (Drew, Toerien, Irvine, & Sainsbury, 2010). The examination of naturally occurring data allowed for an understanding of how practitioners carry out discussions and how sequences unfold, which created evidence for effective practice methods. This thesis showed how handovers form ambulance services were conducted, which could provide the basis for training materials on improving elements of communication and interdisciplinary team working. This section will further explore the practical implications of the conducted research.

### 6.3.1 Work as done

An aim for this study was to explore how handovers were conducted in order to align what was imagined to occur during this work activity to what actually was done (Blandford, Furniss, & Vincent, 2014). Recent ways of considering the implications of human factors in healthcare practice has seen the attention move away from what was perceived to be part of work routine to actually examining the experience and what goes into the work activities (Catchpole & Alfred, 2018). By identifying work practices improvements can be made to patient safety and quality of care given by staff (Hollnagel, 2016). Work as done has been considered one of those important areas that needs to be explored because it allows for clarity to identify mistakes or other problematic areas. Through the different analytical approaches this thesis has taken an understanding of the activities involved in conducting a handover have been highlighted. This thesis examined the human factors element of communication and teamworking, which found different features used by staff to support their discussions. The findings have shown granular interactional features used by ambulance service and emergency care team members that indicated the transferring of information and coordination of efforts during the handover process.

Having explored how handover work was done the findings from this research could be used to assist the shaping of future policy. The National Institute for Health Research (NIHR) has issued different reports focused on clinical handovers and patient safety in ambulance services and concluded the need for greater practice-based evidence (Sujan et al., 2014; Fisher et al., 2015). This research can be used to improve the understanding of how healthcare teams deal with issues of communications and teamworking that have previously been shown to occur within handovers. This thesis has shown the different interactional features speakers use to verbally and nonverbally share patient information and the techniques used to show receipt of that information.

Through the use of examining human factors in healthcare has led to the development of an approach titled Crew Resource Management (CRM) (Roche, 2016). CRM has been a way to train healthcare staff and increase awareness about key non-technical human factors skills such as communication and teamworking. CRM training development has often been originated in simulation-based studies or what was perceived to be part of work tasks (Gore et al., 2010), however a number of studies have challenged the use of this approach (Stokoe, 2011). The findings from the thesis could lead to the development of a CRM content, drawing from work as done and real world practices, which could lead to enhanced fidelity that could be the basis of effective tailored training interventions for clinical handovers.

CA research has been used in different ways to support and develop training materials through the Conversation Analytic Role-Play Method (CARM) approach (Stokoe, 2014). CARM developed as a way to allow for an empirical basis for training by presenting findings to relevant practitioners to evaluate interactional sequence structure and turn design. CARM approach has been shown to be adapted to different work environments as a way to

understand institutional encounters and to be a communication skills training tool (Stokoe, 2014). The findings from this thesis and areas of future studies (see section 6.5) could be used to develop CARM approach to train healthcare staff on the different communication methods to be used to support handover discussions and to become more aware of how conversations were structured could shape the success of the patient exchange. This could be done by showing footages of handovers to allow individuals to reflect on areas of their practice. Such approaches have been already adopted in other setting (see Iedema et al., 2012) therefore offers a further opportunity to apply the thesis findings.

#### 6.4 Critical reflection and evaluation of the limitations

While this research was novel in its approach and the findings it derived, there are study limitations to consider. One example was the data that was used for the analyses, which was obtained was naturally occurring handover discussions however due to the nature of it stemming from TV programs considerations had to be made in the analyses. While there exists precedent in the CA and video analysis literature for the use of data from TV data or other secondary sources such as YouTube (Jackson, Land, & Holmes, 2017; Laurier, 2016) it should be acknowledged that there are also implications to using this approach.

The data used the handover clips from programmes that were edited for length. These edits did not consist of any staff being informed of what to say or directions to take, but they would have cut out some of the dialogue to shorten sequences or on occasions include a narrator providing a voice over. A consequence of this was that it was difficult to consider pauses, unless it was clear break in the discussion and the comparison between handovers was occasionally problematic.

The validity of the data, as produced for television could be challenged for fidelity as to how it reflects reality. In addressing this, data segments were presented at a number of conference to seek reassurances of accuracy (National Paramedic Conference (Shapiro, 2019), CACE and internal PGR conference). The PhD also generated consistent findings to previous CA research, in medical and institutional settings (Goodwin, 1979; Drew, Chatwin, & Collins, 2000; Heritage, 2012; Mori, Imamura, & Shima, 2017). Furthermore, informal discussions with those involved in filming for similar TV programs provided assurances that it would never be allowed for them to be influenced or told what to do for the recordings. With this in mind there would potentially have been an awareness that work activities were being filmed, which could have influenced naturalistic behaviors being observed. Participants may have demonstrated behaviors outside of normal activities due the presence of a film crew, but there could be an argument that video recorded data could never be completely naturalistic as there would be some level of researcher presence.

A further consideration to be made through the consideration of the alternative methodological approaches available. For example, ethnographic researchers may perceive a limitation in examining a work setting without having been present in that environment. For this thesis and the approach taken it was not necessary to interact with individuals who work healthcare roles such as ambulance members or emergency care staff. The researcher did not visit the sites and observe handovers taking place or engage with relevant healthcare staff to obtain a holistic understanding into their working environments. These considerations would be more relevant for research using an ethnographic approach as it would have likely generated rich detail on issues around organisational culture and practices it would have not the in-depth scrutiny of the handover process that was offered through video analysis.

A further, alternative, methodological approach would be to collect primary naturalistic data, through recordings in situ of clinical handovers (this is discussed further in 6.5 Areas of future research). As an approach this would have addressed some of the limitations considered in this section. While this was explored within the timeframe of the PhD, it was not feasible to navigate organisational access (for both the separate Ambulance Trust and Acute Hospital NHS Trust and associated approvals, governance and ethics processes, and data collection within the project lifespan). This was discussed further in the appendix and section 2.31.

#### 6.4.1 Reflection on data collection challenges

It is likely that the time restriction of the PhD was insufficient to achieve the access and ethical approvals required for data collection in the NHS for a project that was considered extremely sensitive due to the methodology of video data collection within an emergency care setting. Where CA studies have relied on NHS data for a PhD these have often relied on pre-existing data sets (e.g. Alexander & Stokoe, 2019). As such the approach adopted for the PhD does resemble the work of Jackson and colleagues (Jackson, Land & Holmes, 2016) who undertook an analysis of secondary data prior to then seeking funding and approvals for primary data collection within the NHS. As such, while this process did not lead to the outcome hoped, the knowledge gained as a result may provide the foundation for future primary data collection in this area.

#### 6.5 Areas of future research

While this research did set out to explore the interactional features of clinical handovers, as outlined in the previous section there were some considerations to make that could be used

when expanding on the findings in future research. The intention of future research would be built on the findings from this study in order to create a deeper analytical approach. The following examples highlight key areas by which this research could progress further such as exploring more potential examples of deviant cases to better understand these outliers and how they shape how the handovers were conducted.

Firstly, future research could seek to obtain primary data of clinical handovers. This would allow for analysis that could support the findings from this thesis while also addressing some of the limitations identified in the current study. By obtaining primary recordings of these interactions the researcher could obtain information on the team structures such as hierarchy or “power”. The term “power” was a way of describing different levels of influence speakers in a conversation could have due to their professional or social status (Woffitt, 2005). In future research, this could mean considering the particular roles or positions that individuals were in (e.g. nurse, doctor, paramedic, etc.) and what that could mean for the organization of the discussions. By adding this approach to the analysis role dynamics could be explored to better understand discrepancies in knowledge and the organisation of discussions.

Due to the potential editing of the footage used there was insufficient scope to look at standardized approaches to handover discussions. While this present research did find some evidence of SBAR mnemonic used to shape the order of patient information dissemination and also the use of written information as part of the exchange, future areas could look at this more in depth. It has noted that there has been confusion and disagreement over standardizing approaches to clinical handover, which was an area of concern relating to patient safety (Wood, Crouch, Rowland, & Pope, 2014). Additional studies, in particular with the use of

primary data, could evaluate whether mnemonic devices were used to structure handovers and how they were used.

Future research could explore different settings that ambulance services handovers take place. The present thesis focused on interactional settings by air and land ambulances working primarily in the Northeast of England. In the future different settings involving handovers from ambulance services could be explored. For example, the UK Search and Rescue Services has responsibility for assisting individuals in remote areas of the country, but need to coordinate their efforts and care for patients with local authorities. By focusing on this area the structuring of interactions during critical points between interdisciplinary team members could be better understood.

## 6.6 Conclusion

This thesis provides a new perspective to our understanding of pre-hospital emergency clinical handovers through examining these through a ‘work as done’ rather than the traditional ‘work as imagined’ lens. The findings illustrate that the consistently adopted structure of clinical handovers reflects the prevailing ‘work as imagined’ conceptualisation of a standardized event and not the actual ‘work as done’ reality. Consequently, the thesis provides new insights into the structuring of the handover interaction, how the epistemic exchange of patient information develops, and how such exchanges are acts of embodied interaction. Our current understanding of clinical handover interaction has been extended as a result of the thesis and in pivoting away from previous approaches to examining the clinical handover. This thesis serves as a foundation for future research of clinical handover interactions as it provides potential new directions for research that most importantly has long-term implications for clinical practice and potential for improved patient safety.

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# Appendices

## Appendix A Handover clip citations

### Handover clip 1

24 Hours in A&E, 01:00 20/07/2017, More4, 65 mins.  
<https://learningonscreen.ac.uk/ondemand/index.php/prog/057FF3E0?bcast=124588875>  
(Accessed 1 Feb 2018)

### Handover clip 6

The Real A&E, 05:00 28/12/2012, Pick TV, 30 mins.  
<https://learningonscreen.ac.uk/ondemand/index.php/prog/0165B4A5?bcast=93010186>  
(Accessed 8 Feb 2018)

### Handover clip 7

The Real A & E, 07:30 23/07/2013, Pick TV, 30 mins.  
<https://learningonscreen.ac.uk/ondemand/index.php/prog/00C349BE?bcast=99220566>  
(Accessed 8 Feb 2018)

### Handover clip 8

The Real A&E, 05:30 27/12/2012, Pick TV, 30 mins.  
<https://learningonscreen.ac.uk/ondemand/index.php/prog/01648E80?bcast=92921099>  
(Accessed 8 Feb 2018)

### Handover clip 9

The Real A&E, 19:00 16/12/2011, Pick TV, 60 mins.  
<https://learningonscreen.ac.uk/ondemand/index.php/prog/00FBC3FE?bcast=75645802>  
(Accessed 9 Feb 2018)

### Handover clip 12

The Real A&E, 08:00 02/05/2012, Pick TV, 30 mins.  
<https://learningonscreen.ac.uk/ondemand/index.php/prog/00C0B824?bcast=84019254>  
(Accessed 10 Feb 2018)

### Handover clip 14

The Real A & E, 07:00 23/07/2013, Pick TV, 30 mins.  
<https://learningonscreen.ac.uk/ondemand/index.php/prog/00C18155?bcast=99220444>  
(Accessed 18 March 2018)

#### Handover clip 15

The Real A & E, 05:30 08/01/2014, Pick TV, 30 mins.

<https://learningonscreen.ac.uk/ondemand/index.php/prog/00BCC0EF?bcast=105582650>  
(Accessed 5 Aug 2018)

#### Handover clip 17

The Real A & E, 07:00 22/01/2013, Pick TV, 30 mins.

<https://learningonscreen.ac.uk/ondemand/index.php/prog/01146610?bcast=93434434>  
(Accessed 18 Aug 2019)

#### Handover clip 18

The Real A & E, 07:00 22/01/2013, Pick TV, 30 mins.

<https://learningonscreen.ac.uk/ondemand/index.php/prog/01146610?bcast=93434434>  
(Accessed 18 Aug 2018)

#### Handover clip 26

The Real A&E, 15:00 26/01/2012, Pick TV, 60 mins.

<https://learningonscreen.ac.uk/ondemand/index.php/prog/01048228?bcast=78022321>  
(Accessed 28 Aug 2018)

#### Handover clip 65

Emergency Helicopter Medics, 01:10 20/08/2018, More4, 65 mins.

<https://learningonscreen.ac.uk/ondemand/index.php/prog/11679580?bcast=127329971>  
(Accessed 16 Oct 2018)

#### Handover clip 72

Emergency Helicopter Medics, 01:00 06/08/2018, More4, 65 mins.

<https://learningonscreen.ac.uk/ondemand/index.php/prog/1152BC4D?bcast=127234114>  
(Accessed 20 Oct 2018)

#### Handover clip 75

Emergency Helicopter Medics, 20:00 21/10/2018, More4, 60 mins.

<https://learningonscreen.ac.uk/ondemand/index.php/prog/113F1416?bcast=127735953>  
(Accessed 28 Oct 2018)

#### Handover clip 78

Emergency Helicopter Medics, 20:00 15/09/2018, More4, 60 mins.

<https://learningonscreen.ac.uk/ondemand/index.php/prog/110D082B?bcast=127498717>  
(Accessed 28 Oct 2018)

#### Handover clip 88

24 Hours in A&E, Only Yesterday, 02:20 09/06/2018, More4, 60 mins.  
<https://learningonscreen.ac.uk/ondemand/index.php/prog/OCA4EAEA?bcast=126862835>  
(Accessed 18 Dec 2018)

#### Handover clip 89

24 Hours in A&E, Only Yesterday, 02:20 09/06/2018, More4, 60 mins.  
<https://learningonscreen.ac.uk/ondemand/index.php/prog/OCA4EAEA?bcast=126862835>  
(Accessed 18 Dec 2018)

#### Handover clip 90

24 Hours in A&E, Only Yesterday, 02:20 09/06/2018, More4, 60 mins.  
<https://learningonscreen.ac.uk/ondemand/index.php/prog/OCA4EAEA?bcast=126862835>  
(Accessed 19 Dec 2018)

#### Handover clip 93

24 Hours in A&E, Altered State, 23:10 16/11/2018, More4, 65 mins.  
<https://learningonscreen.ac.uk/ondemand/index.php/prog/OBC198AA?bcast=127913663>  
(Accessed 20 Dec 2018)

#### Handover clip 95

24 Hours in A&E, Daddy's Girl, 23:05 23/11/2018, More4, 60 mins.  
<https://learningonscreen.ac.uk/ondemand/index.php/prog/0C0D35AB?bcast=127960925>  
(Accessed 20 Dec 2018)

#### Handover clip 98

24 Hours in A&E, Lean on Me, 01:10 03/11/2018, More4, 60 mins.  
<https://learningonscreen.ac.uk/ondemand/index.php/prog/0A425BAE?bcast=127819541>  
(Accessed 2 Jan 2019)

#### Handover clip 100

24 Hours in A&E, Heartbreak, 23:05 30/11/2018, More4, 65 mins.  
<https://learningonscreen.ac.uk/ondemand/index.php/prog/0C2D9B9D?bcast=128033319>  
(Accessed 2 Jan 2019)

#### Handover clip 103

24 Hours in A&E, 02:15 08/09/2018, More4, 60 mins.  
<https://learningonscreen.ac.uk/ondemand/index.php/prog/05931A56?bcast=127448856>  
(Accessed 5 Jan 2019)

Handover clip 106

24 Hours in A&E, Free Fall, 22:10 25/10/2018, More4, 60 mins.

<https://learningonscreen.ac.uk/ondemand/index.php/prog/08C4124F?bcast=127765297>

(Accessed 7 Jan 2019)

Handover clip 108

24 Hours in A&E, Lean on Me, 01:10 03/11/2018, More4, 60 mins.

<https://learningonscreen.ac.uk/ondemand/index.php/prog/0A425BAE?bcast=127819541>

(Accessed 8 Jan 2019)

## Appendix B PPI Information Sheet



**City Hospitals Sunderland**  
NHS Foundation Trust

### The Clinical Handovers in Paediatrics Study (CHiPS)

#### Introduction

Hello my name is Ethan Shapiro. I am a PhD researcher working at Northumbria University. Thank you for taking the time to read this information leaflet. I would like to get your views and opinions on a research study I am planning to carry out in the Children's Emergency Department at Sunderland Royal Hospital.

#### What is this project about?

When an ambulance brings an injured or unwell child to the Emergency Department a very important conversation called the Clinical Handover takes place. This is where the ambulance team tells the hospital team what has happened to the child, what their vital signs are, and what treatments they have been given. Although getting this handover right is crucial for good patient care it is an area that has rarely been studied.

I am planning to conduct a study looking at clinical handovers here in the Children's Emergency Department at Sunderland Royal Hospital. In particular I will examine the discussions between paramedics and emergency care staff to identify what works well and areas for improvement. I currently am looking at getting the views of potential participants by explaining my research and seeing if their child came in to hospital by ambulance whether they would be willing to taking part.

#### What will my study involve?

We will take video footage of the clinical handovers so that we can examine them closely. We will position the camera to get footage of the discussion between the staff members and paramedics. We are focused on only getting footage of staff and not the patient.

#### Will people have access to my videos?

At the end of each recording session while at the Trust I will edit the footage to make sure that no one in the video can be identified either by their image or their voice. I will be using a white-out effect on the video so that any facial features will be indistinguishable and I will also alter the voice pitch. For example, if personal information is captured, such as your child's name, that part of the recording would be deleted.

Please see the example below what the video will look like.

Why should you take part?

The purpose of this research is to improve patient safety. The results will be fed back to healthcare providers where they can see where improvements can be made to handovers. The NHS has identified that handovers are a crucial point in the care of patients and this research could help with quality of care.



## Appendix C PPI Survey



City Hospitals Sunderland

NHS Foundation Trust

### Clinical Handovers in Paediatrics Study (CHiPS) - survey

Thank you for taking the time to complete this survey. Your views will be really helpful in making our study a success.

It is entirely anonymous and we won't be asking for your personal details.

This survey will take less than 5 minutes to complete.

Please read the information about the study prior to answering the following questions.

1. If your child came into hospital by ambulance would you be willing to let us use footage of the clinical handover for the CHiPS study?
  - a. Yes
  - b. No
  - c. Maybe

If no or maybe, what are your main concerns?

If yes what would be your main reasons for wanting to take part?

### Anonymizing the data

If you are unsure as to how the anonymization will work please ask the researcher

2. Do you think enough has been done to protect personal and identifiable information?
  - a. Yes
  - b. No
3. If not, what else would you like to be added to ensure patients' and relatives' privacy has been protected?
4. What factors do you feel are the most important to ensure anonymity of personal information? (e.g. the blurring of faces, or the distortion of voices)
5. If you took part in the study, would you like to be updated with the results?

