

Understanding Patterns of Emergency Services Use
and Hospital Admissions for Patients of the NHS Case
Management Programme



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“It is a capital mistake to theorise before one has data. Insensibly one begins to trust facts to suit theories, instead of theories to suit facts”

Sherlock Holmes

“Remember to look at the stars and not down at your feet”

Professor Stephen Hawking

Declaration

The candidate confirms that the work submitted is her own and that appropriate credit has been given where reference has been made to the work of others.

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Glossary of terms and abbreviations

Acute Secondary Care is defined as a service provided by medical specialists who generally do not have first contact with patients. Secondary care is usually delivered in hospitals or clinics and patients are customarily referred to secondary care by their primary care provider (usually GP) or emergency services (999).

Advanced Nursing Practice A registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competence for expanded practice, the characteristics of which are shaped by the context and/or country which he/she is credentialed to practice. A master's degree is recommended for entry level (International Council of Nurses, 2001).

Care Coordination is the deliberate organisation of patient care activities between 2 or more participants in patients care to facilitate the appropriate delivery of health care services. Organising care involves the marshalling of personal or other resources needed to carry out all the required activities and is often managed by the exchange of information among parties responsible for different aspects of care (Schultz and McDonald, 2014).

Case Manager or Community Matron (CM) is a nurse who provides advanced clinical nursing care in relation to case management to an identified group of very high intensity with long-term conditions (Department of Health, 2005c) . Job title of case manager and community matron varies around the country but is a synonymous term.

District Nurse (DN) is frequently used as umbrella term and is often loosely applied to describe many types of nurses working in the community. A district nurse relates to a registered nurse who works as part of a community/district nursing team.

Case Management Service (CMS) is defined as the process of planning, coordinating, managing and reviewing the care of an individual with complex, multiple long-term conditions in community care through education, self-care and

personalised care. Targeted patients are high intensity users of healthcare services (Hutt, Rosen and McCauley, 2004) .

Chronic Diseases can be defined as diseases of long duration that generally progress very slowly. Chronic diseases, such as heart disease, diabetes, stroke, cancer and chronic respiratory diseases, are by far the leading cause of mortality in the world representing 63% of all deaths (WHO, 2002) .

Clinical Commissioning Groups (CCGs) Clinical commissioning groups are groups of GPs that were formed in 2013 and are responsible for designing local health services in England. They buy and commission health and care services. Clinical commissioning groups work with patients and healthcare professionals and in partnership with local communities and authorities. On their governing bodies CCGs have, in addition to GPs at least one registered nurse and a doctor who is a secondary care specialist.

Community Care comprises help available to persons living in their own homes, rather than services provided in residential institutions or secondary care hospitals. It can refer to social services care and care provided by NHS case managers and district nurses.

Do Not Attempt Cardiopulmonary Resuscitation (DNACPR) the purpose of a DNACPR decision is to provide immediate guidance to those present on the best action to take (or not to take) should a person suffer cardiac arrest or dies suddenly (Resuscitation Council UK, 2018).

Emergency Services provide medical care at the scene of an incident and during patient transport to hospital. 999 is the provider in the UK.

General Practitioner (GP) A registered medical practitioner who works in primary care and is usually the first point of contact for patients who are seen either in surgery or less frequently at home. They have a broad knowledge base in physical and psychological illness and make referrals to specialist services based on patient need.

Healthcare Professional (HCP) is a generic term for professionals who work in the healthcare sector and include nurses, doctors, allied health professionals and pharmacists.

Key Stakeholder is a person with an interest in something, particularly in its success. They may include patients, carers and staff groups.

Long-term Condition (LTC) A condition of prolonged duration that may affect many aspects of a person's life. Symptoms may come and go. Usually there is no cure but there are often things that can be done to maintain a person's quality of life (Wilson, et al., 2010) .

Multidisciplinary Teams (MDT) is a service that takes a person-centred approach in seeking to meet a person's medical, physical, social and emotional needs. A new approach to delivering accessible, responsive integrated community healthcare (Masterson, 2007) .

Multimorbidity is defined as the presence of two or more chronic long-term conditions in an individual. Multimorbidity can present many challenges in care due to co-existing conditions and related polypharmacy (Wallace et al., 2015)

Out-of-hours (OOH) is the period before or after stated hours during which a clinic or hospital is fully operational. The out-of-hours period is usually defined from 1800 hours to 0800 hours on weekdays and all day at weekends and on bank holidays. The time when GPs and most community services are closed.

Patient-Centred Care is providing care that is respectful of individual patient preferences, needs and values.

Primary Care refers to services provided by GP practices, dental practices, community pharmacist, and high street optometrists. About 90% of peoples contact with the NHS is here.

Self-care refers to an individual's ability to manage symptoms, treatment, physical and psychological consequences and life style changes inherent in living with a long-term condition to maintain a satisfactory quality of life (Woodend, 2006) .

Sequential, Explanatory Mixed Methods Design is a research methodology in which quantitative study is conducted first followed by a qualitative study.

Shared Decision Making (SDM) is the key component of patient centred care. The process by which clinicians and patients/carers work together to make decision.

Unplanned Emergency Hospital Admission (EHA) to hospital is one that is not predicted and happens at short notice because of perceived clinical need (Purdy et al., 2012) .

Unscheduled care is the term used to describe any unplanned use of healthcare services. The range includes 999 emergency ambulance services, A&E and more recently walk in centres and out-of-hours GP provisions.

Virtual Wards (VW) use the system of staffing of a hospital ward, but without the physical building; they provide preventative care for people in their own homes. A case manager is always part of the team (Lewis, 2007) .

Additional abbreviations

A&E Accident and Emergency Department

CCG Clinical Commissioning Group

CHCT Community Healthcare Trust

COPD Chronic Obstructive Pulmonary Disease

DOH Department of Health

HES Hospital Episode Statistics

HF Heart Failure

IT Information Technology

NHS National Health Service

NICE National Institute for Health and Clinical Evidence

NSF National Service Framework

PCT Primary Care Trust

QNI Queens Nursing Institute

QOF Quality and Outcomes Framework

UK United Kingdom

USA United States of America

WHO World Healthcare Organisation

Abstract

As a result of perceived insufficient non-acute care provision, the Government is making efforts to extend primary care hours to reduce the inappropriate utilisation of 999 and A&E services (NHS England, 2013c, 2014b; Kings Fund, 2017). The case management programme was implemented to reduce acute care use in the ageing and multimorbid demographic who are high-intensity service users (DOH, 2005a). However, case management typically has restricted hours of service delivery, which could place unnecessary burden on emergency and acute services during the out-of-hours period. The aim of this study was to understand the patterns of case-managed patients' use of 999 emergency services and presentations at A&E, and hospital admissions, as well as to explore what factors were perceived as influencing patterns of service interaction.

Within a pragmatic paradigm, a sequential explanatory mixed methods study was deployed, delivered in five studies. Two cross-sectional observational studies analysed 999 callout (n=2,930, study one) and A&E attendance and hospital admission data (n=16,495, study two). Descriptive statistics were applied, and inferential statistics conducted according to data type. Key stakeholders were interviewed (patients n=19, study three, carers n=19, study four) and three focus groups conducted (case managers n=18, study five). Transcripts were analysed via an analysis spiral using both deductive and inductive approaches (Creswell, 2007).

Using a pluralistic framework and previously unexploited flagged patient-level quantitative datasets produced a novel understanding of when, why and how case-managed patients interact with services. Despite no out-of-hours emergency service burden within studies one and two, twenty-four-hour case management service provision may be required to align with acute services. Quantitative data highlighted that integration and digital interoperability across systems are required to aid admission avoidance and to improve patient experience. Qualitative investigation revealed service contact was seen in places where several parts of the system were seen to be under strain. Person-centred care and shared decision making may also need to be improved when conveyance and admission decisions are made. Case management as a model for admission prevention to manage the ageing and multimorbid population was valued in studies three to five. The inclusion of elderly and housebound participants brought the lived experience of older people to the forefront, highlighting the negative impact of the media in delaying service interactions. This research could be used to inform policy and service-level decisions at the macro- and meso-levels of healthcare. A conceptual model of the factors that contribute to service interaction presents a holistic infographic guide for case management admission prevention.

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Chapter 1: Introduction

1.1 Introduction

The use of emergency and acute care has grown exponentially in the past few years with 999 calls reaching 9.4 million and A&E attendances 23.7 million in 2016, an increase of 5.2% since 2015 in England (NAO, 2017a; NHS England, 2017a). In 2012-13, there were 5.3 million unplanned emergency admissions to hospital (NAO, 2013) which increased by 9.7% to 5.8 million in 2016-17 (Mahase, 2018). Preventing people from being admitted to hospital is a priority to the NHS given the pressure on A&E departments, long waits, the high cost of care and the disruption to elective waiting lists (Hofmarcher et al., 2007; House of Commons, 2017). Therefore, the government seeks to avoid unplanned admissions and keep care in the community via the NHS Five Year Forward View plan (NHS England, 2014b). Increases in unplanned emergency admissions may be the result of an ageing population with complex medical needs as well as cuts to social care budgets and a lack of out-of-hours provision and capacity in community services (Mahase, 2018). An NHS system-wide macro-level approach and community meso-service level provision is required in order to better manage patients at the micro-level of healthcare structures (WHO, 2002). The premise behind such framing is that admission prevention has implications across all healthcare strata (WHO, 2002; Pope et al., 2006).

The NHS community and primary care has traditionally been provided from Monday to Friday 08:00 to 18:00, with emergency and acute services provided outside these hours. Many unplanned admissions occur within the out-of-hours period (Calnan et al., 2007), which occupies 70% of the week (24 hours x7 = 168 hours in a week, 08:00-18:00 = 10 hours, 10 hours per day x5 days a week =50 hours, $168/50 = 0.296$, rounds up to 0.30, 30% of the week in hours, which leaves 70% of the week as out-of-hours). The government's pledge to deliver equitable twenty-four-hour seven-day care (NHS England, 2013c) has catalysed the debate of out-of-hours provision within community and primary care services as a means of reducing the burden on acute services. Inference is also made that this form of care is more cost

effective than emergency and acute care (NICE, 2015; Edwards, 2014; Marie Curie, 2014). Additional demand on services is arising from the ageing demographic and those with complex medical problems, long-term conditions and multimorbidity (Mahase, 2018). Long-term conditions are disease that cannot be cured but can be managed by medication such as diabetes and cancer (DOH, 2012b). Over the last decade, the number people experiencing long-term conditions has increased exponentially; 50% of those over 65 years of age in England have been diagnosed with two or more long-term conditions (Bennett et al., 2012; Salive, 2013). Multimorbidity is classified as those with two or more long-term conditions (Wallace et al., 2015; The Academy of Medical Sciences, 2018). The 85 years and older age group is also set to double over the next two decades (Collerton et al., 2009; ONS, 2015).

In the next 20 years, the number of people with four or more long-term conditions is also expected to double, with predictions estimating 17% of over 65 years will fall into this category by 2035, compared to 9.8% in 2015 (ONS, 2015; Kingston et al., 2018). Multimorbidity increases the likelihood of unplanned hospital admission, increased length of stay, re-admission, raised healthcare costs, reduced quality of life, increased dependency, increased polypharmacy and increased mortality (Marengoni et al., 2011; Salive, 2013). Questions have therefore been raised regarding the current structure of healthcare in England and its potential to manage the increase in multimorbidity in the future within acute, primary and community care.

The NHS case management programme was introduced in England to manage the long-term conditions and multimorbidity trajectories postulated around the turn of the 20th century (WHO, 2002; DOH, 2004a; DOH, 2005a). The aim of the case management programme was to target those with two or more long-term conditions who were high-intensity service users (DOH, 2005d). High intensity users of healthcare services are defined as those who are likely to be users of multiple services and have frequent attendances and admission to hospital because they have long-term conditions (DOH, 2005c). Highly skilled case managers were to work with a caseload of around 50-80 patients holistically within the community to plan, co-ordinate, manage and review the care of an individual (DOH, 2005c). The purpose was to prevent unplanned hospital admission and reduce the strain on acute care, focusing

long-term conditions and multimorbidity management back into the community and primary care (DOH, 2004a; DOH, 2005d). For this thesis, *case manager*, *patient* and *carer* will be utilised to describe the key stakeholders.

Pilot sites were introduced around 2004-05 and the model of care became widespread across the NHS in England thereafter. While initial evaluations of the pilot sites demonstrated a negligible effect on overall hospital admission rates (Hutt et al., 2004; Singh, 2005; Gravelle, 2007; Williams et al., 2007), service users always evaluated case management well (Schaeffer and Davis, 2004; Schein et al. 2005; Armour, 2007; Gravelle et al., 2007; Sargent et al., 2007; Lyndon, 2007; Clegg and Bee, 2008; Leighton et al., 2008; Banning, 2009). In 2015, 1,287 case managers were still in post (Health and Social Care Information Centre (HSCIC), 2015). Variable models evolved since service inception, with virtual wards and case managers' placement within community multidisciplinary teams (MDT) being the predominant methods of service delivery. However, case management is not a twenty-four-hour service provision despite research and evaluations proposing the need for improved out-of-hours provision (Gravelle et al., 2007; Purdy, 2010; Calkin, 2011).

1.2 Research Problem

Long-term conditions management and multimorbidity management continues to be a challenge to health care systems. A&E attendance and use of acute care facilities has increased in England and strains on the systems are widely published (NAO, 2017a; NHS England, 2017a). The ageing population will only add to the problem, as long-term conditions will place heavy demands on emergency care. The NHS case management programme aims to reduce this burden and assist in the avoidance of unplanned attendances and admissions. However, provision within primary and community care services is not twenty-four-hours, seven-days-a-week, and this may be placing additional pressures on an already strained acute system (Calnan et al., 2007). Thus, there is need to explore the distribution and pattern of case management service use outside of normal operating hours.

Initial examinations of the inception of the model of care showed an insignificant impact upon admission rates (Hutt et al., 2004; Singh, 2005b; Gravelle et al., 2007; Williams et al., 2007). However, these studies demonstrated methodological issues. Historically, methods of quantifying hospital attendance and admission figures for case-managed patients have been problematic. Lack of integrated working at the meso-level of healthcare and across the community, primary and acute care interface hinder evaluative processes (Hurst et al., 2017). The development of IT infrastructures and technology over the past 13 years may have improved and could now allow for service use, attendances and admissions to be investigated. The drive towards digitalisation in the NHS by 2020 (National Advisory Group on Health Information Technology in England, 2016) could provide researchers with the potential to track the ways case management patients utilise and interact with emergency and acute services. Providing a longitudinal picture of the current status of patients' service utilisation with long-term conditions could allow for future planning of service establishment as the ageing and multimorbidity demographic increases.

1.3 Research Aim

In order to address the gaps in the literature, the primary aim of the research is to understand the patterns of 999 ambulance callouts, A&E attendances and hospital admissions for patients of the NHS case management programme. The objectives are to:

- Measure and examine the patterns of 999 ambulance callouts for a defined case management population.
- Measure and examine the patterns of A&E attendances and hospital admissions for a defined case management population.
- Explore the factors key stakeholders perceive as influencing the patterns of 999 ambulance callouts, A&E attendances and hospital admissions for a defined case management population.

1.4 Research Design

The overarching aim of this research was to understand the patterns of emergency services use, A&E attendances and hospital admissions for patients of the case management programme. To achieve this, the researcher adopted a pragmatic philosophy to facilitate the application of research in the NHS to world of healthcare.

A sequential explanatory mixed-methods design was employed to complement the ontological stance of the nurse researcher and meet the objectives of the research project. The first phase of the design was an observational data study examining 999 callout data, A&E attendance data and hospital admission data for a defined case management population. Study one analysed 2,930, 999 callouts and study two 16,495 A&E attendances and hospital admissions. Phase two explored key stakeholders' perspectives via interviews and focus groups. Study three involved interviews with 19 case management patients, and study four consisted of 19 interviews with carers of case management patients. Study five comprised three focus groups with 18 case managers in total (n=8, n=5, n=5).

1.5 Thesis Outline

This chapter has specified the context of the research and presented the research problem and its aims and objectives. Chapter two reviews the literature and critical arguments outlining the necessity for the research. Chapter three presents the research design and the methodology. Protocols are given in chapter four which detail the research processes undertaken. Chapters five and six present the findings of the quantitative and qualitative studies respectively. Chapter seven offers a critical discussion of the findings, including challenges and limitations. A conceptual model of the factors contributing to 999 callouts, A&E attendances and hospital admissions of case-managed patients is then presented. Finally, Chapter eight presents conclusions as well as the contributions to knowledge and proposals for future work. Pictorial representation of the outline of the thesis is presented in Figure 1.

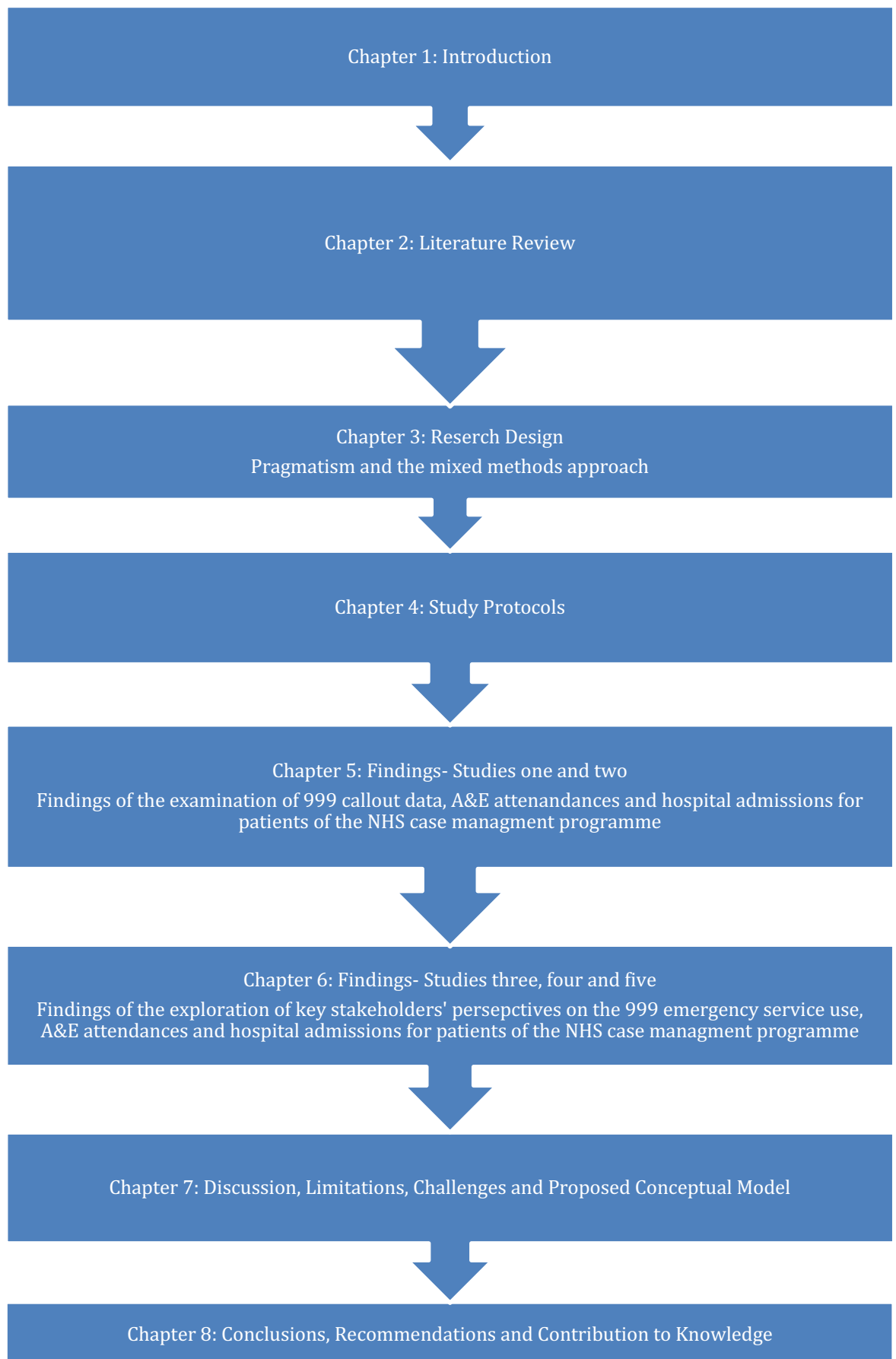


Figure 1. Thesis outline.

Chapter 2: Literature Review

2.1 Introduction

A&E and admission avoidance has become an important government priority with the intention to redistribute care to community settings (DOH, 2005b; Steventon et al., 2011; Ham et al., 2016) across the twenty-four-hour period (NHS England, 2013c). The increasing demand on acute services has seen an impact upon quality of care, evidenced by an increase in A&E waiting times (House of Commons, 2017) as well as disruption of elective care (Hofmarcher et al., 2007), placing an unsustainable burden on acute services. Additional impacts come from the ageing population and those with multimorbidity (DOH, 2005a; Kings Fund, 2018). The case management service was purposely established to reduce hospital admissions for patients with complex multimorbidity; however, it is not a twenty-four-hour service.

The literature review seeks to place the admission prevention agenda, hours of NHS service operation and the role of the NHS case management programme as a means of admission prevention in context. Firstly, the current position of emergency service use and unplanned admissions in the NHS in England will be examined. Service provision across the twenty-four-hour period in relation to primary care, community care and acute care provision will then be considered. The ageing demographic, long-term condition and multimorbidity demographic will be contextualised and the role of the case management service as a means managing this demographic considered. Finally, the impact and service availability of case management programme will be examined. The ability to track and measure service use will be considered in the light of the NHS digitalisation agenda and integrated IT systems, and the methods to examine patterns of emergency service use and hospital admissions for case-managed patients discussed.

2.2 Attendance and Admission Prevention

Internationally, health services are facing growing demands due to ageing populations, new technologies and treatments, and increased patient expectations (WHO, 2017). The fundamental challenge for healthcare is to provide continued improvement in innovative ways with limited resources. A well-functioning primary and community care sector should play a central role in a country's health system: keeping people well, offering diagnosis and treatment, managing long-term conditions, and ensuring those who need specialist care are correctly directed. An estimated 90% of all NHS contacts take place in primary care, and, with a declining number of GPs, there is concern that patients unable to get a GP appointment put strain on other parts of the system (Rosen et al., 2015). The number of A&E attendances and admissions to hospital is also rising steeply (House of Commons, 2017) and the inability of community care services to meet the growing demand at discharge acknowledged (Ham et al., 2016). Globally, public and private healthcare providers have been facing pressures with the demand in the USA reaching similar levels to England due to the ageing demographic (Pallin et al., 2014). Admission prevention has become a common agenda within the developed world in both public and private healthcare systems.

2.2.1 The Demand on Emergency and Acute Care

In 2015-16, the ambulance service received 9.4 million urgent or emergency calls and 1.3 million transfers from NHS 111, a total of 6.6 million face-to-face attendances (National Audit Office (NAO), 2017a). An unprecedented growth of 5.2% in demand from 999 calls has seen the 10 NHS Ambulance Trusts in England under extreme pressure (NAO, 2017a, b). A NAO report highlights that 52% of patients taken to hospital by ambulance were then admitted, compared to 48% in 2007-08 (NAO, 2017a). Ambulance services have reported the same pressures as A&E departments in the past few years. To reduce demand on both ambulance services and A&E, NHS ambulance service trusts have been playing a pivotal role in utilising new models of care to avoid taking patients to hospital. The category of 'hear and treat' was added, whereby patients receive advice from a clinician over the phone, and 'see and treat',

entailing the dispensing of treatment in the home (NAO, 2011). There have, however, been no studies to assess if improvements have been realised, and in 2016, 500,000 hours were still lost by ambulance awaiting turnaround at A&E (NAO, 2017a). No quantitative evaluative work has been conducted to determine if the introduction of the 'hear and treat' and 'see and treat' categories have affected conversions, response times and waiting times.

During 2014-15 in England, 48.5% of calls to 999 were classified as category A (most urgent): of these category A calls, 5.2% were classed as Red1 (most serious, i.e. cardiac arrest) and 94.8% Red2 (serious but less urgent) (NHS Digital, 2015). The rest of the calls to the system, 51.5%, were category B, deemed non-life threatening (NHS Digital, 2015). The reasons people call 999 ambulances is difficult to ascertain because publicly available data only delineates the category of call and response time to the incident. An audit from one ambulance trust in 1999 (Victor et al., 1999) documented that accidents were the commonest type of incident (24%) that required 999 ambulance callouts. The remainder comprised various medical conditions such as respiratory, cardiac, and obstetric problems (Victor et al., 1999). In 1.5% of calls, there was no illness, injury, or assistance required, and 5% were for "general assistance" (Victor et al., 1999). Daytime population levels and the deprivation status of an area were found to be the most important variables in predicting the volume of ambulance calls in an area according to a recent study by Noulas et al. (2018). Revealing predictive modelling as a new perspective on predicting ambulance service use and indicating higher population density and higher deprivation may be positively correlated with an increase in 999 ambulance calls.

Qualitative studies conducted on why patients call 999 are also limited in number. Retrospective cohort studies conducted in Australia (Eastwood et al., 2017) and Finland (Hoikka et al., 2017) and a systematic review by Coster et al. (2017) observed that limited access to primary care, limited confidence in primary care, perceived patient urgency, convenience, views of family, friends or other health professionals, and a belief that their condition required the resources of 999 were the main themes. Coster et al. (2017) also noted that patient anxiety was strongly related to healthcare-seeking behaviour, linked closely with the reassurance that patients obtained from

ambulance services. Those with high anxiety were more likely to be satisfied with the reassurance the ambulance service gave (Coster et al., 2017). Booker et al. (2014) also noted that callers who have care responsibilities are known to default to the most immediate response available when seeking help for those they are caring for. Perceived urgency was related to the idea that patients believed their condition required treatment with resources only offered by an ambulance or hospital., e.g. oxygen, further tests or medication (Coster et al., 2017). Likewise, Hoikka et al. (2017) reported that 80% of this cohort study felt they were too ill to be seen in primary care.

According to Coster et al. (2017) different population groups held diverse views and used services differently and for dissimilar reasons. For example, older people were distrustful of telephone services and preferred to see a familiar clinician rather than ambulances or out-of-hours services (Coster et al., 2017). Conversely, Kirby and Roberts (2011) noted that those who were female, over 50 years old and single were more likely to call 999 inappropriately. Bengner and Jones (2008) asserted that younger people tended to choose emergency care over general practice out of convenience. Therefore, conclusions on age and 999 callouts appear contradictory.

Fundamental misconceptions about the types of treatment other urgent care avenues could provide as an alternative to 999 was suggested by Booker et al. (2014) and reiterated by Coster et al. (2017) who noted the lack of primary care availability as exacerbating patient misunderstanding. In a U.S. study, Tooler et al. (2012) highlighted transportation as another factor for calling emergency services by younger people. However, Coster et al. (2017) noted that, in particular, older people were sometimes reluctant to access emergency care without first seeking the views of other people.

As with the reported pressures on NHS ambulance services, large volumes of patients attending A&E are frequently reported in the media (Johnson, 2015; Trigg, 2015; Donnelly, 2017b; Colvile, 2018). The effect of this volume of people is noted as affecting care quality with regard to waiting times (BMA, 2016; Kings Fund, 2017). Moreover, quality of care is frequently reported in the media with incidents such as patients dying in corridors (Morris et al., 2017). A&E attendances in England reached

23.57 million in 2016, an increase of 5.2% from 2015, and arrivals by ambulance increased from 4.5 million in 2014-15 to 4.6 million in 2015-16 (House of Commons, 2017). In 2016, 1,477 attenders waited more than four hours to be seen; five years previously, this was 270, and people over 80 years were amongst the highest attenders at A&E (House of Commons, 2017). The elderly and those with long-term conditions remain the most vulnerable within the A&E environment (NHS Confederation, 2015). In 2014-15, 1,239 patients waited more than 12 hours for a bed following the decision to admit (NHS England, 2015a). The Foundation Trust Network (2013) estimated that, in 2013, 25% of patients attending A&E could be treated elsewhere, a figure which has possibly risen further in the past few years with the growing demand.

Preventing people from being admitted to hospital is a priority for the NHS for several reasons including the high and increasing cost, as well as disrupting elective care by increasing waiting lists (DOH, 2005a; National Health Priority Action Council, 2006; Hofmarcher et al., 2007; Audit Commission, 2009; House of Commons, 2017). Year on year, there has been a rise in unplanned emergency admissions with each short stay admission in the UK costing an average of £470, at least double that of an outpatient's appointment (Woodhams et al., 2012). In 2012-13, there were 5.3 million unplanned emergency admissions to hospital (NAO, 2013) which increased by 9.7% to 5.8 million in 2016-17 (Mahase, 2018). Speculation exists that increases in unplanned emergency admissions are partly as a result of an ageing population as well as cuts to social care budgets and a lack of capacity in community services (Mahase, 2018). Difficulties in accessing GP services especially out-of-hours (Le Calle and Rabin, 2010) and a total decrease in the overall bed base (McCardle, 2013) have also been highlighted. Reducing the avoidable use of expensive secondary care services, especially high-cost admissions where no procedure is carried out, has become a focus for stakeholders.

Unplanned emergency admissions are unpredictable and happen at short notice due to a perceived clinical need (Purdy et al., 2012). Most short stays are fewer than three days, and, in many cases, no procedure is carried out (Purdy et al., 2012). The media and policy makers often deem these as avoidable or inappropriate because they could be managed via less-expensive care pathways in the community (Campbell, 2012).

These non-elective admissions are often classified as unplanned, but variations in language mean that different authors use different terminology for the same event, for example ‘avoidable’ (Littlechild and Glasby, 2000; Mytton et al., 2012; Glasby and Littlechild, 2013), ‘unnecessary’ (Beringer and Flanagan, 1999) or ‘inappropriate’ (Coast et al., 1995; Houghton et al., 1996; Tsang and Severs, 1996; Menon et al., 2000; McDonagh et al., 2000). The term *inappropriate admission* was a difficult perception to conceptualise for Thwaites et al. (2015) who concluded that patient perspective of the appropriateness of the admission was rarely included in research regarding unplanned or inappropriate admissions. Glasby et al. (2016) offered the only study to include key stakeholder perspectives when examining the appropriateness of admission, meaning a key perspective on the way patients ended up in hospital was a gap missing within the literature. Glasby et al. (2016) found that most older people felt they were admitted to hospital appropriately in a large multi-stakeholder interview study. Nevertheless, there is a need to explore differing perspectives on the appropriateness of admissions. The term *inappropriate*, due to its negative connotations, will not be utilised within this thesis; instead, *unplanned emergency admission* will be cited, giving credence to the fact not all unplanned emergency admissions may be inappropriate for those with long-term conditions.

Avoiding readmission to hospital within 30 days of discharge is a target for NHS resource and a key quality indicator as outlined in the Five Year Forward View (NHS England, 2014b; Barnet and Blagburn, 2016). The average risk-adjusted, 30-day readmission rate increased from 6.56% in 2006-07 to 6.76% ($P < 0.01$) in 2012-13, followed by a small decrease to 6.64% ($P < 0.01$) in 2015-16 (Friebel et al., 2018). The demand on the NHS from readmissions has been fairly stable over the past decade (Friebel et al., 2018); however, of note is the quality issue and the need to address those groups most at risk. Older people have a significantly higher readmission rate than younger people, a combination of complex medical conditions and social vulnerability (Healthwatch, 2015). Poor discharges are often blamed for readmissions (BBC, 2015) and links made with poor community care (Phillips et al., 2004). Nevertheless, Friebel et al. (2018) noted a decrease in readmissions for those with long-term conditions over the past decade which may be a result of improved community care and national initiatives. The demand, however, stable is still pertinent

to the NHS as over £2 billion is spent on readmission costs per year for over one million patients (McGuire, 2015), providing an opportunity to decrease demand on the system by at-risk populations.

2.2.2 Populations at Risk of Unplanned Attendance and Admission

A number of risk factors and their interaction have been addressed by the literature via analyses of those most at risk of unplanned admission to hospital, including demographic, sociological and organisational variables. The elderly, those experiencing social deprivation, those experiencing multimorbidity, ethnic minorities and those living close to services are important populations to consider (Purdy, 2010). Further studies have highlighted continuity and access in primary care as additional concepts (Hull et al., 1997; Reid et al., 1999; Gunter et al., 2013; Barker et al., 2017; Tammes et al., 2017; Hull et al., 2018), and each variable will be addressed in turn.

The increasing pressure from the ageing population and those with complex needs are at a higher risk of A&E attendance and unplanned admission compared to the general population (Purdy, 2010; BMA, 2016). In 2016, 4.4 million over-65-year-olds attended A&E compared to 2.6 million in 2015, an increase of 66% (NHS Digital, 2017). In terms of NHS resources, an individual aged over 85 is fourteen times more likely to be admitted to hospital than a 15–39-year-old (DOH, 2008; Kings Fund, 2018). Every year, the NHS experiences more than two million unplanned emergency admissions for people aged over 65 years, accounting for 68% of hospital emergency bed days and the use of more than 51, 0000 acute bed days at any one time (Poteliakhoff and Thompson, 2011; Imison et al., 2012; Thwaites et al., 2015). Bankart et al. (2015) correlated increasing age with increasing risk of unplanned admission in a cross-sectional cohort study within general practices in a large city in England. Carers UK (2016) found that there were not enough alternative services and that carers often had no other option than to take elderly relatives to A&E because services were not available in the community. Likewise, the BMA (2016) observed the fragmented systems and lack of coordination between health and social care, contributing to unplanned emergency admissions of older people (BMA, 2016). Additionally, the scaling back of social care budgets was considered by the BMJ (2015) as leaving

vulnerable elderly people fending for themselves due to a 25% cut in council spending on care between 2010-15 (BMJ, 2015). These reports suggest a growing crisis and lack of quality of care, putting older people at greater risk of A&E attendance and unplanned emergency admission.

Behind the media and policy reports is an underlying assumption that potentially large numbers of elderly people are being admitted to hospital when there is scope to care for them in alternative settings. Trigg (2015) reported that 2.3 million overnight stays could be prevented were there better organisation between urgent care, GPs and other healthcare providers. This is furthered by Wright et al. (2013) who proposed that half a million older adults could avoid hospital per year if appropriate community services were available. Therefore, scarce resources could be used more effectively if the number of unplanned attendances and admissions could be reduced among the elderly.

Chronic illness and long-term conditions have been correlated with a rise in unplanned admission rates (Majeed et al., 2000; Purdy, 2010). Donald and Ambery (2000) demonstrated that high levels of morbidity within a population increased unplanned admission rates; likewise, Bottle et al. (2008) noted that higher rates of disease prevalence increased unplanned hospital usage. A retrospective cohort study by Hull et al. (2018) recently identified a progressive rise in A&E attendance and unplanned admission with an increasing number of long-term conditions, with nearly a six-fold increase in those with four or more long-term conditions. Being housebound and increasing age, along with the burden of multimorbidity represented the strongest prediction for A&E attendance and admission (Hull et al., 2018). This recent data from Hull et al. (2018) did not examine patient perspective or experiences; however, by linking primary and secondary care data at the patient level, the authors identified predictors for attendance, concluding that multimorbidity (OR 2.55(95% CI = 2.44 to 2.66) was the strongest clinical predictor of A&E attendance and admission, independently associated with deprivation (Hull et al., 2018).

Purdey and Huntley (2013) suggested that deprivation is most positively linked to risk of unplanned admission via a detailed systematic review investigating preventable hospital admissions. According to a GP cohort study by Bankart et al. (2015), people

who live in deprivation (utilising the Index of Multiple Deprivation [IMD-2010]) were more likely to experience an unplanned emergency admission, with general practices serving the most deprived populations having a 60–90% higher rate of admissions than those in areas of affluence. Scantelbury et al. (2015) demonstrated in a multi-linear regression analysis of GP records (IMD-2010) that social deprivation was also the highest predictor of A&E attendance and admission ($\beta = 0.3$, $B = 1.4$ [95% CI = 1.3 to 1.6]). However, Hull et al. (2018) noted there was an independent relationship between A&E attendance/unplanned admission and social deprivation (IMD-2010). The relationship between deprivation and service use may be a reflection of higher levels of illness amongst these communities, poorer access to healthcare resource, and public health factors as Hull et al. (2018) noted, smoking, which was a predictor of A&E attendance and unplanned admission (OR 1.30, 95% CI = 1.28 to 1.32). Demand for A&E services and risk of unplanned emergency admission appears to be concentrated in areas of high deprivation, so initiatives aimed to reduce admissions may need to be different for deprived and affluent populations.

Data on the ethnicity and the link to unplanned admissions within England is limited. Generally, belonging to an ethnic minority places a patient at higher risk of admission (Gunther et al., 2013; Bottle et al., 2006), which may be due to differing ways of coping. Conversely, Bankart et al. (2015) noted an increase in admission rates within the White ethnicity category, postulating that the existence of stronger family networks and the persistence of barriers in trying to access care reduces admission rates for other minority ethnic groups. Methodologically, Bankart et al. (2015) was a strong study utilising hospital records to statistically model for predictors of admission; however, the study involved only one county in the East Midlands, and the findings may not necessarily be directly applicable to other settings, a limitation shared by Gunther et al. (2013) who utilised GP records in one county in England. Further complications also arise in analysing ethnicity due to the frequent misclassification errors in NHS records as noted by Saunders et al. (2013). Therefore, no further conclusion can be drawn without further research and improved recording of ethnicity within NHS records.

Living closer to A&E and residing in an urban area were associated with higher unplanned admission rates (Purdy et al., 2010; Purdy and Huntley, 2013). Cecil et al. (2016) noted that parents living in urban areas closer to A&E departments utilised A&E out of convenience, despite extended GP opening hours in the evening, a 'default' behaviour perhaps due to the close proximity. Distance was noted as a potential deterrent in attending hospital by Bankart et al. (2015). Possibly, for older adults, distance may be a deterrent if it entails substantial travelling, which is further complicated by housebound status (Gunther et al., 2013). In contrast, Hull et al. (1997) described a negative association between distance from the nearest hospital and attendance rates. This study was, however, limited by being conducted in inner city London which is geographically compact; therefore, the findings may not be applicable to other locations. Of interest would be the link between age and distance from hospital and the relationship with admission rates, as these factors may be associated.

Good continuity of care and better access in general practice has been linked to a decrease in unplanned admissions (Bankart et al., 2015; Barker et al., 2017). Gunther et al. (2013) demonstrated that being able to consult with a particular GP was shown to increase continuity. Likewise, Tammes et al. (2017) highlighted that, as the proportion of patients who reported being able to consult a particular GP increased, the unplanned admission rates decreased. Barker et al. (2017) noted a higher association amongst patients who were heavy users of primary care. In a prospective cohort analysis by Tammes et al. (2017), of those 65 years and older, marked discontinuity of care contributed to an increase in unplanned admissions. The effect of continuity therefore appears to be important for those who are heavy users of care and the older population, and being able to consult a preferred clinician apparently gives patients confidence to avoid unplanned emergency admission. Hence, a primary care system that does not provide continuity wherein neither patients nor staff feel connected provides the opportunity for patients to choose to attend an A&E department.

In a small cohort study, Cowling et al. (2013) found that 26% of people attended A&E because they could not get a GP appointment. Nelson (2011) also noted that a lack of

availability of GP appointments led to A&E attendance. Likewise, limited access to general practice was an explanation given for A&E attendance in a qualitative study by Agrawal et al. (2012). However, unlike other studies, Hull et al. (2018) found that patient experiences of GP access did not predict A&E use. Methodological differences in studies may account for the variations in results; for instance, Hull et al. (2018) utilised GP Patient Survey (GPPS) data which included patient-reported scores. Moreover, previous studies (e.g. Nelson, 2011; Cowling et al., 2013) mainly used GP records and Hospital Episode Statistics (HES) data in order to calculate the Brice and Boxerman index to quantify patient and GP continuity and GP access. Hence, including patient level opinion data may reveal if patient experience and GP access affected A&E attendance and unplanned admission rates.

2.2.3 Initiatives Aimed at Reducing Unplanned Attendance and Admission

Many initiatives and interventions have been aimed at reducing unplanned admissions within health and social care in England to address the pressures on acute care. However, the cost effectiveness and success for at-risk populations remains unclear. There is evidence for the value of education, self-care and rehabilitation (Purdy, 2010), but findings remain equivocal surrounding telehealth, which has only proved worthy in respiratory and cardiovascular patients (Purdy et al., 2011a; Purdy et al., 2011b). Interventions such as hospital at home, care pathways, medication reviews (Purdy, 2010) and case management (Hutt et al., 2004; Singh, 2005; Gravelle, 2007; Williams et al., 2007) do not appear to reduce unplanned admissions. Case management will be examined in section 2.5. The NHS 111 service and meso-level primary care initiatives such as the NHS Avoidable Unplanned Admission, Directed Enhances Service Specification (DES) and Next Step on the Five Year Forward view will also be considered.

For adults, a benefit was seen from an educational programme for asthma patients attending A&E with an acute exacerbation, with a 50% reduction in admission rates post intervention; however, the small sample size was noted as limiting the effect size, and the sample had varied age ranges with no conclusions drawn on the impact for the elderly (Tapp et al., 2007). There is evidence however that education aimed at children

with asthma can reduce A&E and admission rates (Boyd et al., 2009). In considering such self-care, Bodenheimer et al. (2002) concluded that the use of an action plan demonstrated a reduction in admissions for asthma in six studies. Self-care and education for COPD patients improved their psychological and practical management skills, showing significant reduction in the probability of at least one unplanned admission (Effing et al., 2007). Nevertheless, the study noted the limitation of being unable to define the actual ingredients of what constitutes good self-care.

The Kings Fund (2013) also questioned the capability of the general elderly populace to self-care, whereby age, social support, severity of disease and level of education are influencing factors. Corben and Rosen (2005) noted that older age groups often struggle to monitor signs and symptoms, and, in a small qualitative study, Rogers et al. (2005) noted a threshold in the ability to self-care within the general population who required medical assistance. There was however no correlation drawn to the impact on attendance and admission rates within these studies. Purdy (2010) considered education and self-care as beneficial in reducing unplanned emergency admissions, suggesting that policy makers and providers increase its use, especially among those with long-term conditions. The ability of the elderly to self-care and what constitutes the threshold of education has not yet been established, nor has how these factors affect attendance and admissions rates.

Telehealth is the use of telecommunication to provide healthcare at a distance. It uses equipment in the patient's home for monitoring of vital signs and sends the data to a clinician to interpret (Barlow et al., 2007). Evidence from the USA is the most compelling, establishing a reduction in unplanned admissions (Mclean et al., 2013), but cost analyses have not established its cost effectiveness. Telehealth could save the NHS £1.2 million, reduce unplanned emergency admissions by 20%, reduce A&E attendances by 15% and allow people to live more independently and stay in control of their care (Burstow, 2012). However, within the UK, no positive effect on unplanned admissions with telehealth was seen after a cluster randomised controlled trial in 2012 by Steventon et al. While some effects were seen within the fields of heart failure and diabetes (Barlow et al., 2007; Deshpande et al., 2008; Purdy, 2010), issues with slow uptake and healthcare professionals' confidence using the systems hindered

positive effects. To date, telehealth has been widely discontinued within the NHS in England (Price, 2013; NHS England, 2014a) since Henderson et al. (2013) concluded telehealth did not seem to be a cost-effective addition to usual patient support in reducing unplanned emergency admissions. However, in ‘Nursing in the Digital Age’, the Queens Nursing Institute (QNI) (2018) highlighted that 41% of NHS Trusts were not using telehealth systems, indicating that 59% of NHS Trust were still using such systems despite no evidence of impact upon unplanned emergency admissions or with regard to cost effectiveness.

The NHS Avoidable Unplanned Admission, Directed Enhances Service Specification (DES) (NHS England, 2015b) aimed to provide care plans for the most vulnerable patients with the highest rates of unplanned admissions at the general practice level. Initial aims of relieving pressure on A&E departments and hospitals was not demonstrated in a study by Roland et al. (2016) that established an increase in bureaucracy and admissions as a result of the DES. The DES was discontinued in 2017, after £156.7 million was spent.

Subsequently, in 2017, the Next Steps on the NHS Five Year Forward View (NHS England, 2017b) furthered the aspirations to take the strains off A&E and expand community services to free up of 2,000-3,000 more hospital beds. ‘Vanguard’ areas are reportedly showing slower growth in unplanned admissions through better integration of services (NHS England, 2017b). Integration of services at the health system, disease management and individual patient level are effective in admission prevention (Curry and Ham, 2010). However, no impact is known for those with multimorbidity, as previous studies focused on single conditions. Evaluation of the integration of primary and secondary care through the Vanguard sites will come in due course. Nevertheless, the increase in primary care and community staff needed to deliver this integration model has also been the subject of much debate and is a crucial facet in providing more care in the community (Watson et al., 2017). Age UK (2015) actually reported a 27.5% reduction in district nurses and a 17.1% decrease in case managers in England, which could also affect the ability of community services to reduce unplanned hospital admissions while also expanding hours of service provision and adapting to new models of working (NHS England, 2017b). There is need for a

systems-based approach to admission prevention and the need for greater integration of services and schemes at the macro-level of healthcare.

2.3 The Twenty-Four-Hour, Seven-day-a-Week Agenda Within the NHS in England

The NHS England report (2013b) 'Improving A&E Performances' reported a lack of availability of primary care and community services, especially out-of-hours, to prevent admission/aid discharge and improve continuity for patients in over-stretched A&Es and hospitals. The out-of-hours period, generally considered 18:00 to 08:00 Monday to Friday and weekends, occupies 70% of the week. A&E attendance and hospital admission patterns in England across the time spectrum attributes three-fifths of all attendances occurring between the hours of 09:00 and 18:00 (House of Commons, 2017). Only 9% of attendances occur for the general population between 00:00 and 07:00 hours; however, the early hours of Sunday mornings were noted as the busiest time periods in A&E departments in England in 2016 (NHS Digital, 2017).

Despite the majority of attendances and admissions remaining during service operational hours, reduced staffing levels and limited access to social, community and primary care services mean that A&E departments and acute care are still struggling with the demand within the out-of-hours periods (NHS England, 2013c, 2015a; Freemantle et al., 2015). Patient safety, particularly poorer outcomes for people admitted over weekends with excess deaths after weekend admission is believed to be a result of the continued pressures within acute care (Lazou, 2015). McKee (2016) noted that the weekend effect was a data artefact; hence, a macro-system-wide approach to a twenty-four-hour seven-day a week NHS was suggested (NHS England, 2013c, 2015a). Commissioners and providers have consequently been challenged to consider improving anticipatory care in hours and out-of-hours primary and community care arrangements if unplanned A&E attendances and emergency admissions are to be reduced.

A factor cited in the rise of unplanned A&E attendances rates is the limited opening hours of primary care facilities (Le Calle and Rabin, 2010; Triggles, 2013). Most GPs

have historically operated Monday to Friday 08:00 to 18:00, with out-of-hours services provided by external contractors. In England, 26.5% of unplanned A&E attendances follow unsuccessful attempts to access primary care and the fact patients may fail to access primary care due to the hours of availability (Cowling et al., 2013). The use of other types of urgent care out-of-hours also arise out of similar issues (Amiel et al., 2014; Monitor, 2015). However, it may also be possible that what is needed is more bookable appointments in hours. The feasibility of which has been further questioned by the decreasing number of GPs in England (BMA, 2014).

Evidence in England indicates that the rise in A&E attendance and unplanned emergency admissions may also have been due to the changes in GP out-of-hours contracts that occurred in 2004 (Thompson et al., 2013), as well as inadequate out-of-hours support (Milton et al., 2012; O'Brian and Jack, 2009). The targets and incentives placed on GPs devolved out-of-hours care at practice level and removed the personal responsibility of GPs for patients on their lists (Thompson et al., 2013). These changes effected the elderly and vulnerable the most by removing continuity of care (Milton et al., 2012). Albeit it is questionable that the solution to reduce unplanned A&E attendances is to put GPs back in charge of all their patients at all hours and if this would be feasible. Nonetheless, many attendances at A&E out-of-hours may be appropriate, as 1% of patients seeking out-of-hours GP care require emergency admission to hospital (Hayward et al., 2016). Older patients and those presenting at less busy times, for example during the night, were most at risk of admission (Hayward et al., 2016).

The elderly generation are generally not a twenty-four-hour society like the younger population of England (25–44yrs) who have been documented as utilising A&E as an alternative to their GP when they wish to be seen (Agarwal et al., 2012). Benger and Jones (2008) likewise noted that younger patients often attended A&E from incomplete knowledge of out-of-hours services, albeit in a small sample, limiting generalisability. Scantlebury et al. (2016) suggested that knowledge of how to contact out-of-hours service was inadequate ($\beta = -0.2$, $B = -128.7$ [95% CI = 149.3 to -108.2]) via a multivariate linear regression analysis predicting A&E attendance, although no association was made for age groups of participants. Patient perceptions of poor

integration between in-hours and out-of-hours care was also noted in an ethnographic case by MacKikkan et al. (2017). However, there was no indication if these studies led to out-of-hours or in-hours admissions after A&E attendance.

Within primary care, a voluntary contract was offered to GPs (NHS England, 2014b, 2016) to give patients the opportunity to access seven-day services by 2020 (NHS England, 2013c), and it was implemented in 2014 with pilot sites trialling the flagship idea in phase one. To date, NHS England has spent over £175 million on two waves of pilots, revealing that it had to prop up some which had run out of money (Lind, 2016), despite the projections that the pilots would become self-funding with the reductions made in A&E attendances. Results demonstrated a 15% reduction in A&E attendances for minor ailments with the GP Access Fund scheme pilots which offered evening and weekend GP appointments in 57 areas, covering 18 million patients or a third of England's population (NHS England, 2015b). Despite projected success, many areas reduced opening hours due to a lack of patient demand (Lind, 2016).

The GP Forward View (NHS England, 2016) furthered the drive for extended access to primary care to relieve the pressures on the acute care sector and pledged £500 million towards the rollout of seven-day GP access (8am-8pm). However, forecasts have suggested that over £1 billion will be required to roll out seven-day access to GPs across England by 2018-19 (Lind, 2016). Evidence from the GP Access Fund pilots have shown that patients were not very enthusiastic about seeing their doctor on a Sunday and that extended hours have made little difference to patients (Whittaker et al., 2016). Issues such as IT interoperability and information governance were also noted as procedural barriers, which delayed inception and increased costs (NHS England, 2015b). Although the pilot schemes did reduce A&E attendances by 26%, the costs have been shown to outweigh the savings by as much as 15% (Whittaker et al., 2016). Questions have since been raised regarding the cost effectiveness and sustainability of extending access to primary care across England and raises the question that what patients want may not reflect what is cost effective or feasible within the NHS. No correlations have yet been drawn per unplanned admissions.

An observational study by Cowling et al. (2018) revealed no correlation between satisfaction with extended GP opening hours and the number of A&E attendances and admissions. Likewise, a National Audit Office (NAO) report (2017b) noted the complexity of the relationship between GP awareness and satisfaction and A&E attendance. Higher awareness of GP services both in- and out-of-hours may not necessarily reduce attendance and admissions, suggesting some out-of-hours attendances and admissions were not avoided but rather delayed (Cowling et al., 2018). Simply extending the hours of primary care may not be enough, and resources on raising awareness as to how to access services out-of-hours may be more ideally focused on reducing the patient-initiated use of acute services. Deeny et al. (2017) suggested that reducing fragmentation and complexity of services out-of-hours may assist in reducing the number of unplanned attendances and admissions.

Community and social services are traditionally provided in-hours Monday to Friday 0800 to 1800 hours in England with scaled back on-call or duty services available otherwise (Oliver, 2016). Fragmentation of services and a lack of community service provisions lead to demand on unplanned attendances and admissions and an inability to discharge out-of-hours (NHS England, 2013). The NHS Confederation report 'Growing Old Together' (2016) highlighted that many older people were being directed to A&E due to inadequate alternatives to hospital care. In a qualitative study by Hammond et al. (2009), clinicians viewed communication difficulties between community and secondary care as an influencing factor in the decision to admit and delayed discharge. Such findings may be due to the lack of ability to communicate with community services over the twenty-four-hour period if they are not available and not aligned to acute services.

A quantification of patients attending A&E and admitted because of a lack of community services across the twenty-four-hour spectrum is absent in the literature. However, extending the hours of community service provision is one of the key aims of the Five Year Forward View (NHS England, 2014b). Nonetheless, the reality is that more than 11,000 new staff would be needed at a cost of £900 million per year for community services to be fully operational and cope with extra discharges at the weekend, an unrealistic target and unfeasible according to Torjesen (2016). Oliver

(2016) noted that the elderly and those with long-term conditions are disproportionately affected by the lack of twenty-four-hour community services.

The staged programme of delivery to extending services over four years is still currently under review. Future research and evaluation of the impact of extended services within primary and community care will be needed to ascertain cost effectiveness, feasibility, patient satisfaction, whether service usage patterns change and the impact on the ageing long-term conditions populace. Notably, most studies assessing impact and patient satisfaction are focused upon younger cohorts of patients, and no studies have assessed if increasing primary care service hours have affected the older adult population and those with multi-morbid long-term conditions who are frequent users of A&E departments and GP services both in and out-of-hours (Kaisera et al., 2006; The Academy of Medical Sciences, 2018).

2.4 Long-Term Conditions, Multimorbidity and the Increasing Demand on Services

Long-term conditions are disease that cannot be cured but can be managed by medication (DOH, 2012b). Multi-morbidity refers to the existence of multiple medical conditions in a single individual (The Academy of Medical Sciences, 2018) and is usually defined as the coexistence of two or more long-term conditions (Wallace et al., 2015). The growing ageing demographic, those with long-term conditions and multi-morbidity, and poor lifestyle factors are adding to the global burden on healthcare services. The background to the long-term conditions agenda and the rise in multi-morbidity will be contextualised within the current position of demand for services within the NHS in England. Definitions, the current scale of the problem, determinants and the impact of long-term conditions and multimorbidity will be addressed.

By the middle of the 20th century, ill health and death as a result of infectious diseases were overtaken in the Western world by chronic diseases (Fitzpatrick, 1991). Worldwide, similar trends were reported by the World Health Organisation (WHO) (World Health Organisation, 2002). In 2015, WHO predicted a decline of 5% in deaths

between 2015 and 2030 from infectious diseases, maternal and perinatal death and those associated with nutritional deficiencies. Over the same period, deaths from chronic disease or non-communicable diseases were projected to rise by 17% (WHO, 2015). These projections suggest that, of the 64 million deaths in 2018, 41 million worldwide will be as a result of chronic diseases (WHO, 2015). As such, WHO (2015) considered that the management of chronic diseases would be the greatest challenge facing healthcare systems in the 21st century.

Traditional use of the term *chronic disease* (Holman and Lorig, 2002; WHO, 2002; Armstrong, 2005) now appears to have been superseded by the term *long-term condition* within policy and research (DOH, 2005d). This may be attributable to the growing understanding that *long-term conditions* constitutes a more generic, person-centred concept, acknowledging that the impact of the condition is influenced not only by health-related characteristics but also by socioeconomic, cultural and environmental factors and patient behaviours (Valderas et al., 2009). For many people, understanding their condition as it affects them as individuals and being concordant with medications and treatments means they are able to live a full life (DOH, 2005a, 2005b, 2012b).

Multimorbidity has not been uniformly defined in the literature with comorbidity, as polymorbidity, multipathology and multicondition are often utilised (Valderas et al., 2009; Almirall and Fortin, 2013; Le Resre et al., 2013; Willasden et al., 2016; The Academy of Medical Sciences, 2018). The Academy of Medical Sciences (2018) recommends the standardisation of the definition in order to allow for comparability for data, and to provide consistency for policymakers, healthcare providers and patients. For the purposes of this thesis, the term *multimorbidity* will be utilised, considered the coexistence of two or more long-term conditions; moreover, the term *long-term condition* will refer to the presence of one medical condition (DOH, 2005d; Wallace et al., 2015; The Academy of Medical Sciences, 2018).

In England, there are reported to be 15.4 million people living with one long-term condition (DOH, 2008; Kings Fund, 2018). Despite this number being relatively stable, over the last decade, the number of people experiencing multimorbidity has

increased exponentially: 50% of those over 65 years of age in England have been diagnosed with two or more long-term conditions (Barnett et al., 2012; Salive, 2013). In the next 20 years, the number of people with four or more long-term conditions is also expected to double, with predictions estimating 17% of over 65 years will fall into this category by 2035, compared to 9.8% in 2015 (ONS, 2015; Kingston et al., 2018). Predictions suggest that multimorbidity is expected to rise from 1.9 million to 2.9 million by 2019, linked to the ageing demographic (Barnett et al., 2012). In 2008, the number of people over 75 stood at 4.7 million, but this figure will almost double to 8.2 million by 2031 (DOH, 2008, Kings Fund, 2018). The 85 years and older age group is also set to double over the next two decades (Collerton et al., 2009; ONS, 2015); moreover, multimorbidity will become the norm within this cohort of the population. However, it must be noted that, despite ageing being closely associated with long-term conditions, multimorbidity can occur in younger people, and 17% of those aged under 40 years old experience more than two long-term conditions (Kings Fund, 2018).

In addition to age, potential determinants of multimorbidity include gender, ethnicity and social deprivation (Fortin, 2005), requiring further exploration in order to clarify those populations most at risk of multimorbidity. A systematic review of observational studies reported that multimorbidity was more prevalent in women in nine studies, but no association was made in five studies (Violan et al., 2014). The explanation for the differences is uncertain, and it is unclear whether gender directly influences multimorbidity or whether differing findings reflect a failure of some of the studies to adjust for age or other confounding factors or an inadequate statistical power to identify differences. As suggested by the Academy of Medical Sciences (2018), higher rates of health-seeking behaviour may also be seen in women in certain countries, leading to higher diagnostic rates to men. Alternatively, in some settings, adverse effects of poverty on women may lead to higher levels of multimorbidity (The Academy of Health Sciences, 2018). The association of gender and multimorbidity remains unestablished.

Ethnicity and multimorbidity is also a complex association, as several epidemiological studies have noted association (Quinones et al., 2011; Mathur, 2011). However,

several studies have shown none (Lochne & Cox, 2013; Rocca et al., 2014; Sauver et al., 2015). Some studies reporting an association only investigated different ethnic groups within one county or geographically defined populations, thereby context specific. Differences in study methodology and in terminology of ethnic groups were also noted by Shiwaku (2004) and Johnson-Lawrence et al, (2017). Limitations on the association between ethnicity and multimorbidity are thus due to the inability to establish reproducible differences between ethnic groups.

Multimorbidity and deprivation are closely linked. People living in the most deprived areas have double the rate of multimorbidity in middle age than those living in the most affluent areas (Bramley and Moody, 2016). Hence, the most deprived populations may develop multimorbidity 10-15 years before their more affluent peers (Boutayeb et al., 2013; Violan et al., 2014). While rates of multimorbidity in older people are largely due to higher rates of physical conditions (Bramley and Moody, 2016), among the less affluent, multimorbidity due to combinations of physical and mental health conditions is common (Barnett et al., 2012). Studies examining multimorbidity within the literature are generally cross sectional and limited in their generalisability (The Academy of Medical Sciences, 2018). Longitudinal studies are therefore required to further assess the association between multimorbidity and social deprivation and examine the way in which deprivation mediates a risk of multimorbidity.

In addition to determinants, increased prevalence of multimorbidity is also associated with increased exposure to health-related behaviours such as smoking, alcohol, lack of physical activity and poor nutrition (The Academy of Medical Sciences, 2018). The causal relationship between smoking and multimorbidity has been firmly established (Taylor et al., 2010; Arokiasmy et al., 2014; Booth et al., 2014; Fortin et al., 2014; Wikstrum et al., 2015; Mini and Thanakappan, 2017). A similar scenario has been documented with alcohol consumption (Arokiasmy et al., 2017; Fortin et al., 2014; Wikstrum et al., 2017) obesity (Agborsangaya et al., 2013; De Souza et al., 2013; Booth et al., 2014; Fortin et al., 2014; Jvic et al., 2016) and sedentary behaviour (Kadam, 2007; Hudon et al., 2008; Autknrieth et al., 2013; Cimarras-Otal., 2014; Fortin et al., 204). However, the predominantly cross-sectional studies may only

reflect the different study populations, and the paucity of longitudinal data means that the direction of the relationship may be obscured. Nonetheless, the causal relationships established have directed focus to the modification of lifestyle factors in order to reduce levels of negative health-related behaviours and reduce the burden on healthcare systems from multimorbidity. This is reinforced by WHO (2017) and the Richmond Report (2016), in that adopting the '25 by 25' goals which include reducing smoking rates, reducing alcohol intake, increasing exercise levels and improving nutrition to prevent obesity could affect the levels of multimorbidity. If the 25 goals set by WHO (2017) are achieved, 25% fewer deaths in men and 22% fewer deaths in women could be achieved by 2025.

The impact of multimorbidity on patients with regards to quality of life (QoL) and the impact of multimorbidity upon care givers has been considered in the literature. People with multimorbidity are documented as having a lower quality of life in terms of years of life lost and years lost due to disability (Hilderink, 2016). The coexistence of multiple long-term conditions has also been associated with an increase in disability (Bayliss, 2004; Marengoni et al., 2009; Marengoni et al., 2011), functional decline (Marengoni et al., 2009; Ryan et al., 2015) and reduced self-reported wellbeing (Lawson, 2013; Mavaddat et al., 2014; Tyack et al., 2016; Walker et al., 2016; Kanesarajah et al., 2018). Some studies, however, only investigated a narrow range of conditions, some only did pair-wise comparisons and some grouped conditions. Therefore, due to methodological differences, the ability to make comparisons is limited, and uncertainties remain as to how strong the association is between multimorbidity and QoL and which combination of conditions may play the greatest role in impacting QoL.

Caregivers are documented as being affected by caring for patients with long-term conditions; however, the literature with regards to multimorbidity is sparse. Caring for someone with a long-term condition is often associated with increased rates of both mental and physical conditions (Schultz and Sherwood, 2008; Adelman et al., 2014; Mori, 2017) and with increased mortality (Schultz and Beach, 1999). The risk of burn-out and crises amongst carers was directly correlated with the number of hours caring and the number of diagnoses in a case study by Annersteadt et al. (2000). In a UK

qualitative serial interview study, Mason et al. (2014) reported that, in the last year of life for patients with multimorbidity, caregivers struggled with multiple medications, and also noted that a lack of coordination and continuity of care increased stress levels. These findings are consistent with those by Gill et al. (2014) who also found that carers frequently expressed frustration due to a lack of coordination of care among health services in caring for patients with multimorbidity. Further work in exploring the experiences of carers within the multimorbidity population is required.

The effects of caring for patients with multimorbidity are also seen in healthcare professionals. Challenges and difficulties have been documented for clinicians in trying to apply multiple guidelines to one individual, adjust treatments and understand the effects of polypharmacy (Smith et al., 2010; Bower et al., 2011; O'Brien et al., 2011; Sondergaard et al., 2015). Sinnott et al. (2013) also found that challenges in managing those with multimorbidity included healthcare system-related issues such as fragmented services and the challenges of delivering person-centred care and shared decision making. Sinnott et al. (2013) also highlighted the professional isolation felt by GPs in managing those with multimorbidity. Likewise, Zulman et al. (2014) suggested that this can lead to reduced quality of care; however, of the ten cases studied, four were set in the same healthcare provider, so an element of bias and lack of ability to generalise should be considered. However, healthcare professionals felt fragmentation, which is common with experiences of patients with multimorbidity (Mason et al., 2014) and could suggest the current structure of the NHS is not designed for meeting the needs of those with multimorbidity.

Patients with long-term conditions and multimorbidity account for a disproportionality high share of healthcare utilisation, and the impact is well documented. In 2017, the population living with long-term conditions made up 70% of hospital bed usage in England and utilised over 50% of outpatient appointments; moreover, 64% of GP appointments were taken by individuals with long-term conditions (NHS England, 2013a; Campbell, 2014; Kings Fund, 2018). The top 1% of healthcare users in England account for more than 30% of healthcare utilisation and include those high-intensity users with multimorbidity (House of Commons, 2017). Increased primary care visits have been demonstrated in those with multimorbidity (Glynn et al., 2011; Sailsbury et

al., 2011; Van Oostrum et al., 2014; Cassell et al., 2018) and an increased likelihood of unplanned hospital admission established (Lehnert et al., 2011; Bahler et al., 2015; Hull et al., 2018). Pallandio et al. (2016) noted similar trends in Europe and Mondor et al. (2017) noted increases in unplanned admissions in Canada among those with multimorbidity. There is also evidence that, with increasing numbers of long-term conditions, the utilisation of both primary care and risk of unplanned admission increases (Pati et al., 2014; Pati et al., 2015). Multimorbidity is also associated with an increased length of stay (Marengoni et al., 2011) and risk of readmission (Salive, 2013). Questions have therefore been raised regarding the current structure of healthcare in England and its ability to manage the increase in service demand from the ageing demographic and patients with long-term conditions and multimorbidity. Consequently acute, primary and community care need to target those most at risk and provide further means of A&E and admission prevention across the twenty-four-hour, seven-day a week time spectrum.

2.5 The NHS Case Management Service as a Means of Attendance and Admission Prevention

Case management was introduced to reduce the burden on acute services and better manage those with two or more long-term conditions (DOH, 2004a, 2005c, 2005d). Case management was defined by the Department of Health (DOH) as the process of planning, co-ordinating, managing and reviewing the care of an individual, taking a holistic approach to admission prevention (DOH, 2005b). The origins and establishment of case management in England will be considered and its impact upon use of emergency services, unplanned hospital admissions, length of hospital stay, healthcare costs and quality of life examined. The ability of the service to integrate with other NHS services and its hours of service provision will be critiqued with regard to the impact upon the patterns of acute care attendances and admission for the case management populace.

At the turn of the century, the United States of America's (USA) healthcare system recognised a growing population of patients with multiple long-term conditions that were placing additional demands on services (Metcalf, 2005). This led to three of the

major healthcare management organisations exploring more effective means of managing individuals and containing rising costs (Metcalf, 2005). Three companies, Pfizer Health Solutions, Evercare and Kaiser Permanente (Evercare, 2004; Webb and Howson, 2005; Singh and Ham, 2006; Corben and Rosen et al., 2007) developed models of care based on the broad theoretical framework of the Chronic Disease Model (Wagner, 1998). The principal aim of the Chronic Disease Model was to provide a link between informed, active individuals who have long-term conditions and proactive teams of professionals, as a large proportion of long-term condition care took place outside of formal healthcare settings. One means of managing individuals with long-term conditions was case management for those with co-morbidities who were at greatest risk of hospitalisation (Ham, 2005). Pfizer Health Solutions and Evercare concentrated specifically on case management (Evercare, 2004; Singh, 2005) whereas Kaiser (Freachem et al., 2002; Wallace, 2005) formulated a model which integrated care at all levels and included health promotion among the well population. The approaches were not mutually exclusive, and all focused on a proactive approach to managing those with long-term conditions. The Kaiser model is represented diagrammatically as a triangle and can be seen in Figure 2. Case managers work at the apex of the triangle with individuals who have co-morbid long-term conditions.

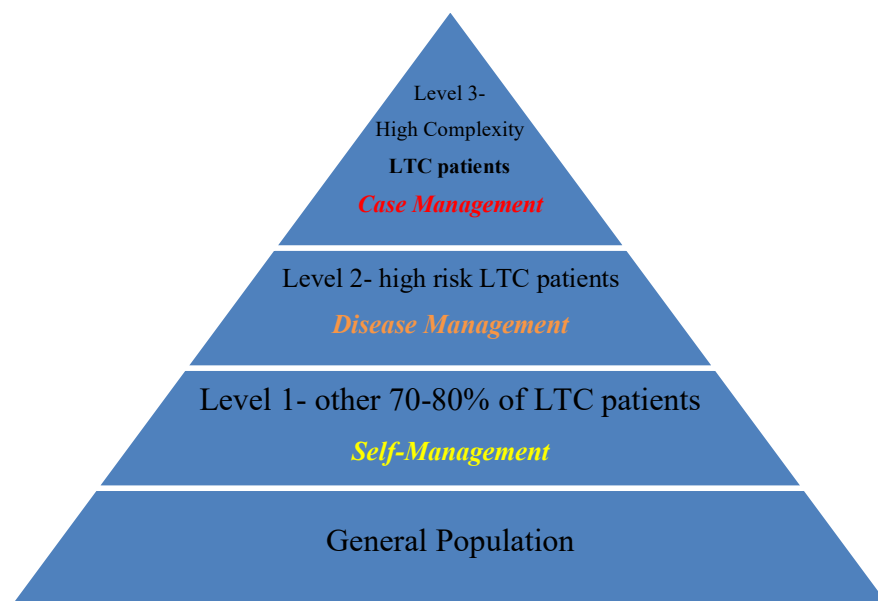


Figure 2. Kaiser Permanente Triangle (adapted from Freachem et al., 2002)

In the USA, programmes run by Kaiser and Pfizer reduced hospital admissions and improved co-ordination of care (Kane et al., 2002; Ham, 2003; Sobel, 2003). The Evercare model was a primary care team model in which nurse practitioners provided intensive primary and preventative care to individuals over the age of 50 with long-term conditions or disabilities (Smith, 2003). Evercare demonstrated a 50% reduction in admissions to acute facilities, without detriment to health when evaluated (Kane et al., 2003; Smith, 2003). Further evidence from the USA reported reductions in A&E department visits and unplanned admissions as a result of community-based case management in all three models of care (Kodner and Kyria, 2000; Boult and Nieland, 2010). In part, because of reported positive results of these models and, in part, because of the similar demographics, adaptations of the Kaiser, Evercare, and Pfizer service delivery models were all trialled in England (Hutt et al., 2004; Ham, 2006).

From 2004-05, a number of pilot projects were conducted within the NHS in England to assess the impact of USA service delivery models. Nine primary care trusts worked with United Healthcare to implement the Evercare programme, focussing on proactive care for the most vulnerable (Patrick et al., 2006). This programme aimed to avoid hospital admissions for older people by providing an integrated primary care service with advanced nurses working collaboratively with GPs (Evercare, 2004). A national evaluation found that this model effectively identified vulnerable older people, helped to provide preventive health care, and had the potential to organise care around people's needs (Boaden et al., 2005). However, Gravelle et al. (2007) noted no significant impact upon unplanned emergency admissions within the pilots. Nonetheless, they did acknowledge that patients and carers valued the role (Gravelle et al., 2007). It must be noted that a significant number of people enrolled in Evercare programmes may have been vulnerable older people but were not frequent healthcare service users (Ham, 2006), resulting in no reductions in admissions within a group that may not have been most at risk of unplanned admission. Moreover, any effect on a reduction in admissions may not have been seen as the comparison of GP practice-level data and the identification of those who were case-managed was problematic. The effect on admissions may therefore have been diluted as it was unlikely they were able to follow and track individual patient-level data. The evaluators concluded that

Evercare may identify unmet needs and increase demand on health services (Boaden et al., 2005). They also suggested that the tools designed by Evercare were not the only ones available, and that other identification and risk stratification tools may be just as effective (Boaden et al., 2005).

Nine other primary care trusts applied the Kaiser model, focussing on reducing hospital admissions by integrating services (Ham, 2006). Case studies suggested some positive benefits with regards to care integration and leadership (Ham, 2003). Many of the sites were able to demonstrate a reduction in unplanned emergency admissions (Ham, 2006); however, little information regarding how the data was retrieved was included in the evaluative report. In Castlefields, in the north of England, a social worker based in a GP surgery and working proactively with a district nurse to introduce an integrated case management approach for patients found, after two years of the pilot, a 15% reduction in admissions and length of stay was reduced by 31% (Lyon et al., 2006). However, the social worker left in the third year of the pilot, and the statistically significant effect was lost. Lyon et al. (2006) utilised hospital admission data and compared the Castlefields practice with the rest of the practices in the town, limitations included the fact that the study included the whole practice emergency admissions for all over 65-year-olds and not just those who had seen the integrated case management team.

Another primary care Trust worked with Pfizer to implement their InformaCare® model via a telephone support system (Ham, 2006). Evidence-based clinical guidelines were utilised to encourage people to engage with the most appropriate health services and become better informed about how to deal with their condition (Harrington, 2006). The pilot demonstrated positive patient outcomes with regards to health-related behaviours but noted no improvement in appropriate utilisation of services and did not quantify what *appropriate* was (Harrington, 2006). Further evaluation of the impact on service of the pilots, along with continued service provision is considered in sections 2.5.2.1- 2.5.2.2.

Exploring ideas from the USA and exporting them to England presented challenges due to the vastly different health systems. In England, there is so-called ‘socialised

medicine' whereby the state plays a significant role in both funding and management (Ham, 2005). This was in stark contrast to the USA system, which has multiple funding streams and a market-driven system (Ham, 2005). Developments in the USA were likely to be driven by the interaction of local influences (e.g. funders of care increasing costs, or by physician-led and consumer-led initiatives) as by government policy which is the predominant catalyst within English healthcare systems (Dixon et al., 2004). Changes in the dominant political ideologies in both countries may have also shifted emphasis, with the Obama administration favouring a socialised approach (i.e. the Affordable Care Act, 2010) and the coalition government in the UK seemingly favouring a more market-based approach (DOH, 2010). These factors may have contributed to the difficulty in replicating the positive reductions in unplanned admissions and hospital use seen in the USA.

After the pilot schemes finished, a variety of long-term condition service delivery models arose within the NHS, often based on the approach already in place from the pilot schemes, adapting the pilot models to local circumstances or by service providers choosing the model that produced the largest number of bed days reductions from the evaluations (Ham, 2006). In order to provide some policy guidance, in 2005 the Department of Health encompassed elements of the Kaiser service model delivery model (Freachem et al., 2002) and the theoretical framework of the Chronic Disease model (Wagner, 1998) to produce the Health and Social Care Model (DOH, 2005a). This became influential in conceptualising the needs of those with long-term conditions and the idea of admission prevention in England (DOH, 2005b). Rather than thinking and working in terms of primary and secondary care as separate entities, individuals with long-term conditions were to be seen as the most important and major factor, and care was to be integrated accordingly (Ham, 2005). Similarly, the role of the case manager sat at the top tier of the delivery system within the Health and Social Care Model in England (Figure 3).

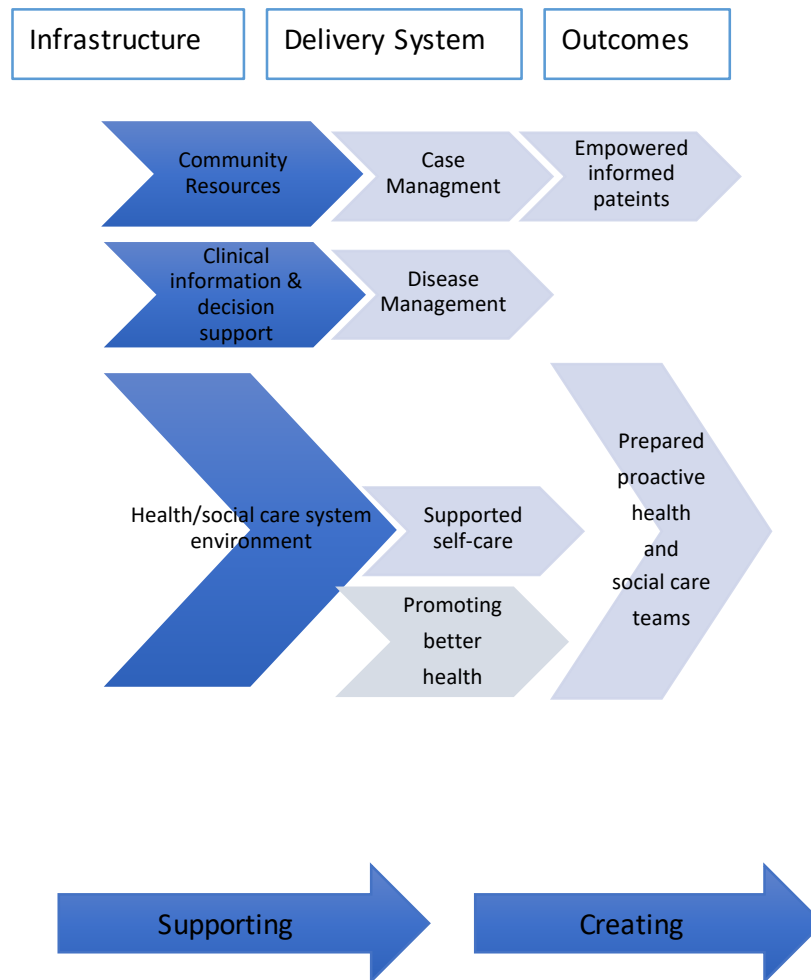


Figure 3. Health and Social Care Model (adapted from DOH, 2005b)

The role of the case manager was first mentioned in the NHS Improvement Plan (DOH, 2004a), which recognised the need for effective management of the growing numbers of individuals with long-term conditions (DOH, 2005a). In order to improve patient self-care and improve disease management for individuals with highly complex health needs, a case management model was seen as the way forward (DOH, 2005c). Highly skilled and experienced practitioners would deliver case management, thus known as case managers or community matrons (DOH, 2004c). The terms are often used interchangeably, but, for the purpose of this thesis, the title *case manager* shall be utilised.

A Public Service Agreement (PSA) (HM Treasury, 2004) stated that a reduction of 5% of emergency bed days would be achieved by 2008 for people with long-term

conditions, and, in 2005, the Department of Health (2005e) heralded case managers as being central in the delivery of the PSA target. Case managers would utilise the case management model with patients living with multiple long-term conditions who were the highest users of A&E services and emergency unplanned hospital admissions (DOH, 2004a). The aim was for each case manager to proactively engage and manage around 50-80 patients each (DOH, 2005c). Elaboration of the role came from two documents: ‘The Case Management Competencies Framework for the Care of People with Long-Term Conditions’ (DOH, 2005c) and ‘Caring for People with Long-Term Conditions: an Educational Framework for Community Matrons and Case Managers’ (DOH, 2006a).

A competency framework (NHS Modernisation Agency & Skills for Health, 2005) was established listing nine domains of case management pertinent to the role of the case manager (Table 1). Domain A distinguished the role, implying other health care professionals may also take the title (e.g. social worker). The advanced clinical nursing skills noted in domain A included health assessment, such as differential diagnosis and clinical decision making as well as non-medical prescribing (Bowler, 2009) and, as such, set the criteria for undertaking the role to higher than that of a registered nurse or social worker. Additionally, Bowler (2009) noted the need for the case manager to have skills in co-ordination and effective communication.

Table 1 *Domains-Case Management Competencies Framework (NHS Modernisation Agency & Skills for Health, 2005)*

Domains	
A	Advanced Clinical Practice
B	Leading Complex Care Co-ordination
C	Proactively Manage Complex Long-Term Conditions
D	Managing Cognitive Impairment and Mental Wellbeing
E	Supporting Self-care, Self-management and Enabling Independence
F	Professional Practice and Leadership
G	Identifying High Risk Patients, Promoting Health and Preventing Ill Health
H	Managing Care at the End of Life
I	Interagency and Partnership Working

Further clarity was presented by the introduction of four principles applied to each domain. The principles are introduced in Table 2.

Table 2 *Principles-Case Management Competencies Framework (NHS Modernisation Agency & Skills for Health, 2005)*

Principles	Principles That Should Be Applied When Using the Competencies Relevant to the Chosen Role
1	Additional Competencies Relevant to Post
2	Acquired through work-based learning
3	Accommodate Varied Levels of Practice
4	Leadership Across Health and Social Care

Despite the establishment of a framework around the domains of practice, different models of working by case management services continued to develop (Gage et al., 2012). Gage et al. (2012) found a wide variation in interpretations of the NHS Health and Social Care model (DOH, 2005b) and service delivery models in existence in England. Drennan et al. (2011) contended that this allowed wide variation in service development and roles, leading to confusion and inequitable service across England (Gage et al., 2013).

Case managers developed as an autonomous role and often worked aligned with a number of local GPs, based in multidisciplinary teams (MDT) and employed by community NHS Trusts (DOH, 2005a; Drennan et al., 2011). While remaining a predominantly case management arrangement, a plethora of models developed across England. In addition to the NHS Health and Social Care model (DOH, 2005a) and the Kaiser (Freachem et al., 2002) and Evercare (Evercare, 2004) models, the neighbourhood model grew in deprived and rural areas where a team approach delivered case management (Downes and Pemberton, 2009). In Croydon, issues were noted in relation to capacity of caseloads, which became full and the difficulties of not having a formal system in which to co-ordinate (Lewis, 2010). From this, Croydon developed another model: the Virtual Ward (VW). Virtual ward models used the systems, staffing and daily routine of a hospital ward to deliver preventative care to patients in their own homes (Lewis, 2010; Lewis et al., 2011), commonly led by a case

manager who worked as part of a team. Further integrated models of care including social services and some secondary care clinicians also arose out of frustrations with the lack of communication between services (Purdy and Huntley, 2013; RAND Europe, Ernest and Young LLP, 2012). Drennan et al. (2011) noted that the dearth of evidence related to the allocation of funds to the case management role may be why so many different models of case management service developed within the NHS. Gage et al. (2012) concluded that further research on the cost effectiveness of case management models in England was required, noting a significant variation between sites. Due to the variety of organisational arrangements, evaluation of services both locally and nationally has remained problematic.

As early as 2004, during the pilot schemes, the practicability of recruiting was questioned (Murphy, 2004). The target set by the government was to have 3,000 case managers in place by 2007, later pushed to 2008 (DOH, 2004a). The NHS Informatics Centre for Health and Social Care (2009, 2013, 2015) demonstrated a slow increase in numbers, but still at least half the anticipated figure in 2012 (Table 3). Whether the drop in case manager numbers in 2014 signified a future trend remained to be seen with current data on staffing numbers unavailable. To date, monitoring has discontinued with the move to NHS Digital and information was not publicly available from 2015-17; therefore, conclusions on current numbers cannot be inferred. Drennan et al. (2011) also noted the absence of the case management role in policy documents between 2008 and 2011 and the role is only briefly mentioned in government documents (DOH, NHS Commissioning Board and QNI, 2013). The House of Care Model (NHS England, 2013d) and recent Five Year Forward View policy (NHS England, 2014b) also makes few suggestions to the case management model.

Table 3 *Numbers of Case Managers 2006-2017 (NHS Information Centre for Health and Social Care 2009 and 2013 and 2015*

Case Managers	2006	2008	2011	2012	2013	2014	2015	2016	2017
Number in post	366	1,521	1,586	1,469	1,454	1,413	1,287	Unable to source data	Unable to source data
Full time equivalents	351	1,422	1,468	1,362	1,340	1,301	Unable to source data	Unable to source data	Unable to source data

2.5.1 The Impact of Case Management on Reducing the Burden on 999, A&E and Acute Services

The influence of the case management programme within the literature will be critiqued, focusing on the documented impact on emergency facilities use, hospital admission, length of stay and healthcare costs. Quality of life effects of the service will also be established.

2.5.1.1 Use of Emergency Facilities

The use of emergency facilities has been broadly considered as comprising A&E attendances, GP contacts, and home visits by GPs. Therefore, the heterogeneity of definitions of emergency services use limits the ability to make comparisons and inferences of the service in reducing the use of emergency facilities directly related to 999 ambulance callouts and A&E attendance only.

Gaffney (2009) found reductions in A&E attendances, GP contacts and GP home visit as a result of case management. However, the findings of this study are limited by the small sample size and lack of robust statistical analysis. Downes and Pemberton (2009) conducted a UK-wide survey of case-managed patients, reporting that patients were less likely to go to A&E or contact their GP as they felt they could contact their

case manager instead. The qualitative survey, however, is limited by patient self-reporting, and no clear numbers of participants and analyses of the findings were reported in the paper. By conducting focus groups with GPs, Chapman et al. (2009) reported a reduction in visits to the GP surgery and requests for GP home visits as a result of minimal case management input. GPs in this study felt there had been a positive impact in reducing their workload through the introduction of case management (Chapman, 2009). Of note, the sample was self-selected from one small Trust in the south of England, and the sample size was small, limiting interpretation and generalisability.

On the same theme, but showing slightly different results, Fletcher and Mant (2009) reported a reduction in home visit requests to GPs but an increase in surgery appointments, which the author of the paper proposes was due to an increase in the ability of this patient group to self-care. Wright et al. (2007) asked patients whom they had contacted on feeling unwell before and after they had a case manager. In response, 86% reported ringing their GP whilst the remaining 14% had resorted to dialling 999, and the authors reported a change in service utilisation with the case manager being the first contact of choice post-service inception (Wright et al., 2007). Similar to other studies, the sample size of participants was small, and the study was qualitative in nature. Drawing conclusions from mainly qualitative studies limits the ability to make further inferences on the impact of case management. Additional quantitative evidence regarding the impact of case management on 999 callouts, out-of-hours contacts and A&E attendances for this patient group was absent in the literature.

2.5.1.2 Hospital Admissions

The majority of the literature found a negligible impact on the significant reduction in unplanned hospital admissions (Hutt et al., 2004; Singh and Ham, 2006; Boaden et al., 2006; Gravelle et al., 2007; Fletcher and Mant, 2009; Purdy, 2010; Reilly et al., 2011; Huntley et al., 2013). As noted by Hutt et al. (2004), the use of different methodologies within studies make it difficult to assess effectiveness. Fireman (2004) also highlighted the lack of rigorous evaluation. Difficulty in ascribing any tangible impact

is also limited by the fact many other factors may also be attributable in the complex case management population of patients.

Gravelle et al. (2007), evaluating the Evercare pilots in England, found a negligible impact of case management on the significant reduction in unplanned hospital admissions as a result of the initiative. This was very different from the findings of Kane et al. (2003) whose original work in the USA on Evercare had found a dramatic reduction on hospital admissions as a result of case management. In the USA, case management focus on referral to a primary care physician or Medicaid, which makes comparisons problematic. Boden et al. (2006) also attributed the lack of effect to not adopting the Evercare model successfully within England. A significant number of people enrolled into Evercare programmes in England may have been vulnerable older people but were not frequent healthcare service users (Ham, 2006). Gravelle et al.'s (2007) criterion for defining the high-risk group was based on data from hospital Episode Statistics (HES) and did not correspond exactly with the criteria used to select Evercare case-managed patients.

Methodological issues regarding the Gravelle et al. (2007) analysis were also noted in the way admissions were tracked and recorded (Winters, 2009; Grange, 2011). The study could not identify and track individual case-managed patients in hospital episode statistics (HES) and therefore measured outcomes at the practice level for those GPs with a case manager and those without (all patients 65 years and older). The effect of case management on reducing admissions may therefore have been further diluted due to including all unplanned emergency admissions for practices within the study. A small number of intervention practices also meant that the study had relatively low power to detect changes in outcomes. Consequently, there was difficulty in obtaining accurate case management-level data for quantifying admissions and evaluating the complex service intervention of case management.

The most recent systematic review and meta-analysis conducted by Huntley et al. (2014) concluded no statistically significant reduction in unplanned hospital admissions with case management in nine out of the eleven RCTs examined. Methodological issues of previous studies, the appropriateness of caseloads, case

finding tools and the overall effectiveness of case management were called into question within this review. However, although the selected RCTS were all from outside the UK and eight were published before 2004, conclusions were still drawn to the England-wide case management programme.

Fletcher and Mant (2009) examined 418 participants for whom there was no significant reduction in hospital admissions. Univariable analysis was conducted before and after study with limitations notable in the inclusion of those 75 years and older only; consequently, many younger case management patients were excluded. A minimal effect was also demonstrated in a retrospective cohort analysis of longitudinal routinely collected admission data for case management patients across ten PCTs by Reilly et al. (2011). Within this study, variation in the mean number of unplanned emergency admissions after the introduction of case management was dependent upon the number of admissions prior to case management intervention. Those who had a history of unplanned emergency admissions demonstrated a decline in admissions, but those with little or no history actually had an increase in unplanned emergency admissions post-case management intervention. However, conclusions were drawn for a gradual shift towards fewer admissions (Reilly et al., 2011). Notably, findings per case management were initially targeted at high-intensity users of services and those with multiple admission; therefore, this study had obvious limitations if patients with no admissions were included on case managers' caseloads.

Roland et al. (2005) used HES data to explore admissions and found the admission rates in case-managed patients fell over a five-year period. However, the authors then explained their results as counter-intuitive because there was an expectation that, with increasing age and frailty, hospital admissions would increase in this group and that the reason for the fall could not only be associated with case management (Roland et al., 2005). As this study did not include mortality rate as an outcome, death may have been a contributing factor for the reduction in admission rates seen over five years, and no definitive conclusion can be drawn that case management reduced the admissions. In agreement, Gage et al. (2012) also found that unplanned admission rates were affected by patients with co-morbidities and increasing age and that patients on a case manager caseload were just as likely to have an unplanned admission as

those not being actively case-managed in the community. The study utilised self-reported admission data from patients and noted the difficulties of contacting patients and missing data which deterred the robustness and reliability of the analysis. In contrast, a multi-morbidity sub-group analysis of a case management population in 2017 by Stokes et al. (2017) sought to identify sub-groups of case-managed patients who may be most at risk of admission. The results indicated no subgroup to be the best target for case management and appeared to show only a slight increase in the trend of admission among the most complex high-risk patients, revealing some patients may legitimately require hospitalisation (Stokes et al., 2017).

Large caseloads were also postulated as jeopardising the effectiveness of case management in reducing unplanned admissions in the USA (Yarmo-Roberts, 2002). Sargent et al. (2008) found that more hospital admissions occurred as the size of case managers' caseloads grew in a small-scale cohort study in the north of England. Grange (2011) found a similar outcome in a larger study covering three PCTs. However, the extent to which lower caseloads reduced hospitalisations has not been fully established (Sargent et al., 2008; Williams and Cooper 2008; Grange, 2011).

Certain areas in England claim to have reduced their admission rates through the introduction of case management; however, such claims have not been substantiated through rigorous research and the evidence remains anecdotal. Gaffney (2009) used descriptive statistics in a before-and-after study to show a reduction from eighteen admissions to one per case management service when comparing six months prior to the introduction of a case management and six months afterwards. Lyndon (2007) also demonstrated a 59% reduction in acute admissions one-year post-case manager introduction in a service in southern England. However, both these studies included small sample sizes and were focused on a single case management service and hospital. In the Castlefields pilot (Lyon et al., 2006), not all the 15% decrease observed could be attributed directly to case management, due to including all over 65 years in the analysis and not just those exposed to case management. Parish (2005) and Agnew (2005) also reported a reduction in unplanned admissions; however, they speculated that the reduction could have been done without the implementation of case management. Positive impacts were furthered by Burns et al. (2007) who

reported that high baseline hospital usage or similar high usage in a control group made it more likely that case management would reduce hospital admissions, but this assumption was not borne out in other literature or the further systematic review by Huntley et al. (2016).

The impact of the virtual ward on hospital use was studied by Lewis et al. (2013), who noted no impact upon the unplanned emergency admissions of patients at six months. However, a decline in elective admissions and outpatient attendance was statistically significant (Lewis, 2013). The review included a study conducted by Roland et al. (2012) who also concluded no reduction in unplanned admissions at the sites investigated. Within this study, individual level data and matched controls were confounded by methodological error. Imbalance between cases and matched controls could have biased estimates, and adaptations of the sites from virtual wards to MDT model case management services during the pilot call into question the reliability of the study. Moreover, the changing healthcare environment undoubtedly confounded the study outcomes.

The 'There's No Place Like Home' review of four virtual wards in England by Healthcare at Home (2016) also demonstrated no significant reduction in unplanned admissions. Nevertheless, the evaluation, conducted by a private healthcare company, sought to demonstrate how they could save the NHS money and commission services and may not be considered robust impartial research. In contrast, Jones and Carroll (2014) investigated a 10% decline in overall emergency admission rates utilising the virtual ward model; however, the limitation of the small-scale evaluation within one Trust was noted as restricting its generalisability. No further published studies quantifying unplanned admissions or examining admission patterns across the time spectrum of case-managed patients were available to date.

Leighton et al. (2008) reported the qualitative elements of a mixed methodology study, which evaluated case managers in a large metropolitan city in England. Patients and carers reported that they and their relatives had fewer hospital admissions post-case management inception. In addition, GPs interviewed by telephone also considered that hospital admissions for their patients had been reduced as a result of the introduction

of the case management programme (Leighton et al., 2008). The authors note that the self-selecting nature of participants may have represented a bias in opinion; however, for these participants, their view of the reduction in hospital admission was clear. Further papers explored the theme of hospital admissions from a qualitative patient (Wright et al., 2007) and case manager perspectives (Elwyn et al., 2008). Wright et al. (2007) asked patients about their experiences, and 50% reported that they had not been admitted to hospital since being on a case management caseload. It was noted that thirteen patients were admitted to hospital three or more times during their time on a case manager caseload by Wright et al. (2007). However, the advanced skills of case managers may have been a reason as to why admissions increased. Elwyn et al. (2008) asked case managers to review admissions to hospital in a service evaluation and reported a 22% reduction in case-managed patients experiencing unplanned admissions. Nonetheless the context for this figure is poor, and, as such, it is difficult to draw conclusions from one small-scale evaluation.

2.5.1.3 Length of Stay

Some studies identified length of stay in hospital as an outcome measure of the effectiveness of case management in reducing the burden on acute care. Gaffney (2009) reported a saving of £45,402 when comparing bed days pre- and post-introduction of a case manager. However, the study had a small sample size and focused on a single case management service. In another small-scale evaluation of a pilot scheme, Lyons et al. (2006) demonstrated a 31% reduction in length of stay for case-managed patients in comparison to those without case management. However, the decrease observed could not be attributed directly to case management due to including all those over 65 years in the analysis and not just those exposed to case management.

Difficulties in obtaining complete data sets was noted by Fletcher and Mant (2009) who had hoped to explore data on length of stay, which proved difficult because so much of the data was incomplete. In exploring Evercare pilot sites, Gravelle et al. (2007) did not find an impact on emergency bed days. This study made strenuous attempts to allow for baseline differences in both the control and intervention groups;

however, the methodological limitations with regard to the identification of case-managed patients was a limitation. Evidence that the case management service reduced length of stay is limited, weak and lacking in robustness.

2.5.1.4 Healthcare Costs

A review of the literature revealed that quantifying the cost savings of case management to the NHS has been historically difficult. Savings are hinted at and are therefore more implicit than explicit in many of the studies. Gaffney (2009) indicated savings, but before-and-after studies used to explore cost effectiveness have problems. Similarly, Wright et al. (2007) implied savings but did not include this as an outcome measure in the qualitative questionnaire study. Lyndon (2007) attempted to quantify the cost of admission for a case-management patient, highlighting that admissions costs vary greatly from £600-£10,000 per non-elective spell as well as that admissions are not always accurately costed on NHS IT systems and are thus difficult to extract, interpret and analyse (Lyndon, 2007). Studies rely on assumptions of average costs, which could be erroneous and therefore limit the accuracy of analyses and evaluations. Further robust research quantifying the cost effectiveness of case management in reducing the burden on emergency and acute services is required.

Making comparisons that community and primary care is a cheaper alternative to acute hospital admission in addition to proving that case management is a more cost-effective form of care, has also been problematic. It is often reported that community and primary care are cheaper alternatives to hospital care (NICE, 2015; Edwards, 2014; The Kings Fund, 2014), however estimating these savings at a local and national level has been stated as being challenging (NICE, 2015). And indeed, challenging as to whom these cost savings effect and benefit.

Currently, the main financial incentives to reduce unplanned emergency admissions sit with the acute secondary care. All parts of the system have a role to play in reducing emergency admissions however commissioners (clinical commissioning groups and NHS England) and GPs only have some financial incentives to reduce avoidable emergency admissions, but community and social care providers are not financially

incentivised to reduce emergency admissions to hospital (NAO, 2013). If hospital care is avoided it is postulated commissioners could make savings (NICE, 2015). These could come from reduced admission tariff payments and bed days avoided (NICE, 2015). The non-elective tariff for a hospital admission depends on the diagnosis and Healthcare Resource Group (HRG) code used. Common reasons for non-elective unplanned admission for people over 65 include: pneumonia (£3050, HRG DZ11A) and cardiac conditions (£537, HRG EB01Z). The average cost per bed day is £222 (2015/16 Enhanced Tariff Option) (NICE, 2015).

In comparison, the cost of community and primary care were estimated by the King Fund (Edwards, 2014) as being a cheaper alternative to acute care. In London, for high intensity users of services, the average cost of acute care was £7,631 per capita compared to £3,356 per capita for out-of-hospital care (Edwards, 2014). In the high-risk category, 83% had more than one long-term condition and experienced seven times more unplanned emergency admissions than those in lower risk categories. This category being similar to that of case managed patients with multiple long-term conditions who are high intensity users of services.

In end-of-life care, Marie Curie (2014) estimated £280 per patient, per day, could be saved switching a specialist in-patient bed day for community care. Figures used by the Marie Curie analysis, estimated that a district nursing visit was £39 and one hour of a specialist nurse service £77 (Marie Curie, 2014). Correlations could be drawn to cost of a case manager per hour and highlight that the cost of case management community care could be more cost effective than attending A&E or using 999 services. A single visit to A&E can cost £124 just to be seen (DOH, 2012a) and the cost per call-out across ambulance services within England varies between £144 and £216, and the cost per incident varies between £176 and £251 (NAO, 2011). Added to the cost of hospital admission, community service care provision appears to be documented as less expensive within the limited literature and reports available. Further cost effectiveness studies are required.

2.5.1.5 *Quality of Life*

Apart from measure of admissions and cost, other factors were seen as important in evaluating the value of the case management service. The literature highlighted positive aspects of the role, which was dynamic and could change according to the needs of the service, patients and fellow professionals (Armour, 2007; Sargent et al., 2007; Banning, 2009). A large amount of anecdotal evidence exists which shows the popularity of the role of the case manager amongst patients and their carers (Evercare, 2004; Hutt et al., 2004; Schaefer and Davis, 2004; Boaden et al., 2005a; Armour, 2007; Sargent et al., 2007; Lyndon, 2007; Masterson, 2007; Bowler, 2009; Clegg and Bee, 2008; Leighton et al., 2008; Banning, 2009). Nonetheless, it must be noted that the majority of studies examining quality impact were case study approaches, interviews or questionnaires, and generally all on a small local scale, thus limiting the ability to extrapolate the findings. Moreover, only generic quality of life outcomes were present in the literature.

Themes emerging on case management improving the quality of life of patients and carers included service satisfaction, advocacy, medication management, and support for learning self-care skills (Armour, 2007; Masterson, 2007; Clegg and Bee, 2008; Bowler, 2009). No negative reports from patient or carer stakeholders were evident within the published research. The Evercare pilots (Evercare, 2004) noted improved shared decision making, a patient-centred approach and the availability of time to discuss problems for patients and carers. Likewise, Hutt et al. (2004) found that the strongest evidence for the impact of case management was related to improved patient satisfaction and user experience of healthcare due to the person-centred approach. Respondents highlighted reliability and confidence in the service as specific areas of impact (Clegg and Bee, 2008). Evaluation of Evercare in England found that the case management model had the potential to organise care around people's needs and improved care coordination (Boaden et al., 2005a; Goodman et al., 2010; Ross et al., 2011).

The theme of psychological support provided by case managers was additionally noted as crucial in improving patients' quality of life (Schaefer and Davies, 2004; Sargent

et al., 2007; Leighton et al., 2008; Banning, 2009; Williams et al., 2011). Sargent et al. (2007) found that patients and carers considered psychological care to be equally as important as clinical care and worked to improve quality of life and overall management of long-term conditions. Hence, quality of life aspects of care are just as important to patients as the main objective of the case management programme in reducing unplanned hospital admissions.

The role of the case manager was also highly valued by patients in helping them to understand medical terminology and the role the case manager played as an advocate in their care (Ross et al., 2011; Williams et al., 2011). Improved skills in medication management was an outcome of the qualitative interviews conducted with case-managed patients by Sargent et al. (2007). In relation to medication management, Challis et al. (2011) noted that case managers spent a substantial amount of time ensuring individuals' medication regimens were appropriate and up to date, that patients were concordant, and that no adverse effects were experienced (Challis et al., 2011). The interview study by Challis et al. (2011) had a small sample size; however, it added a new exploratory perspective and highlighted the important impact of medication management, as it is estimated that around 7% of unplanned hospital admissions in the general population are associated with adverse drug reactions, many of which are preventable (Pirmohamed et al., 2004). An estimated one-third to one-half of medications for long-term conditions are not taken as recommended (Nunes et al., 2009). Therefore, case managers may be assisting in admission prevention by reducing the risk of adverse drug reaction and saving NHS resources by improving medication management skills. Thus, Williams et al. (2011) suggested that patient experience must also be taken into account when evaluating the impact of the case manager role, and further studies must also take into account the perceptions of all key stakeholders.

2.5.1.6 Integrated Working

Integrated working refers to professionals working across the primary, community, secondary and social care divide to coordinate and improve patient care (DOH, 2005e). Integration at the wider macro level of the NHS and at the community meso

level is important in the provision of care for patients (Curry and Ham, 2010; Guthrie et al., 2010). As a result of increasing need for integration, further models of case management developed within England that included social workers and secondary care staff in an attempt to further affect the reduction in unplanned admissions (Guthrie et al., 2010). An evaluation of integrated care pilots which included case managers found little evidence of a reduction in unplanned admissions (Purdy and Huntley, 2013; RAND Europe, Ernest and Young LLP, 2012). Only a few integrated care pilots were established in England; therefore, the sample sizes were notably small, so no positive correlations were found.

Woodhams et al. (2012) evaluated and compared the impact of virtual wards, case managers aligned to GPs and MDTs, the guided care model, the program of all-inclusive care for the elderly (PACE) and the geriatric resources for assessments and care of elders (GRACE), concluding many individual projects claimed success. However, in aggregate, they failed to demonstrate a significant reduction in unplanned admissions to hospital.

A more integrated systems-based approach at all stages of the care pathway for long-term conditions patients has been cited as required in order to improve unplanned admission results (Purdy and Huntley, 2013). Rarely, if ever, do structural and economic reforms take into account the whole journey that a patient travels through and the many stages that integration is required.

Integrated working and links with secondary care were emphasised as a necessity for case management to be effective (Challis and Hughes, 2011; Lillyman et al., 2009, Russell et al., 2009; Nancarrow et al., 2013; Smith et al., 2013). Without such links to secondary care and social services, it was deemed that case management would have little impact upon unplanned admissions (Lillyman et al., 2009; Abell et al., 2010). Delivering person-centred care for case-managed patients relies on teamwork and interagency partnership (DOH, 2005e). Qualitative evaluation of the impact of integration by case management again demonstrated the wide variation in links established within local areas and the need for a consistent wider network across Trusts (Smith et al., 2013; Abell et al., 2010; Masterson, 2007). However, patients and

carers who responded to surveys of case management highlighted improved links with other services as a result of case manager intervention (Clegg and Bee, 2008) and the improved coordination of care (Armour, 2007; Banning, 2009). Additionally, although anecdotal, positive collaborations were reported with other health and social care professionals working to prevent unplanned admissions and, where unavoidable admissions occurred, working with secondary care staff to facilitate speedy discharge (Leighton et al., 2008; Armour, 2007; Chapman et al., 2009). The latter had been enhanced in some areas through the use of key fobs alerting A&E staff and ward staff to the fact that a patient had a case manager (Downes and Pemberton, 2009). Conversely, poor communication between case managers and hospital staff was reported as a barrier to the coordination of patient care by Schaefer and Davies (2004). Studies evaluating integrated work came to no firm conclusions due to the wide variations in practices and no widespread recommendations for formulating good integrated care and interprofessional working. However, a strengthened primary secondary care interface, according to Masterson (2007), should be the target for information sharing and collaboration for case management.

A notable barrier to integrated working within case management was documentation practices. Reilly et al. (2011) noted that the different record and information systems used by services were incompatible and suggested compatibility was required in order to enhance practice and prevent admissions. Abell et al. (2010) also noted no formal processes for sharing information within some case management services when investigating the role of networks within case management. In 2013, Smith et al. (2013) established the need for common information sharing and the technology to deliver integrated care services within case management, especially electronic health records. A measure of case management success could be the extent to which it is embedded within its network of partnering organisations. However, if communication between primary and secondary care is insufficient, there will be a lack of data on the impact of case management on unplanned admission prevention and thus hinder integrated working.

The NHS Five Year Forward View (NHS England, 2014b) focused on the provision of community services and new ways of integrated working as a vital source for

reducing A&E attendances. The integration of GP, community and secondary care resources promised the right care, in the right place to ensure hospitals and A&Es were only used when necessary and appropriate, especially for the elderly and those with long-term conditions. However, there was little note of case management within the integration of services recommended in the Five Year Forward View (NHS England, 2014b); moreover, its impact upon case management is yet to be established. The need for integrated working must also span across the twenty-four-hour, seven-day-a-week time period to ensure that primary, community and secondary care services are aligned and can interact and engage regardless of time of day.

2.5.2 Twenty-Four-Hour, Seven-day a Week Agenda within NHS Case Management in England

Case management was introduced as a service specifically aimed at reducing burden on A&E and acute care systems; however, it is not available across the twenty-four-hour, seven-day-a-week time period. In most case management programmes in England, coverage is available only during conventional working hours: Monday to Friday 08:00 to 18:00, in line with most other primary and community services. Although case managers who work in teams are able to make arrangements with colleagues for annual leave, it is particularly difficult to arrange out-of-hours coverage for a vulnerable cohort of patients, especially if the case management model placed the case manager in the MDT (Goodman et al., 2010; Ross et al; 2011). During this time, case managers tend not to be on call, and care is switched to the out-of-hours GP service; alternatively, emergency services and A&E may be utilised. There is a paucity of data to establish how current out-of-hours service provision arrangements function within case management services in England.

The Evercare experience highlighted the importance of making arrangements for continuity of case management out-of-hours (Boaden et al., 2005). This was the only quantitative study to look at admissions out-of-hours. The National Primary Care Research and Development Centre (NPCRDC) analysed nine case management pilot sites between 2003 and 2006. The qualitative NPCRDC evaluation found that out-of-hours services were not focused on keeping patients out of hospital and concluded that

case managers should be available twenty-four-hours a day seven-days a week (Boden et al., 2006; Curry and Boaden, 2008).

Further qualitative studies focusing on the shortcomings of case management in England drew attention to the need for an integrated approach with a case management service being available out-of-hours (Singh, 2005; Patrick et al., 2006; Sledge, 2006; Waddell, 2007; Cotton, 2007; Downes and Pemberton, 2009; Randall et al., 2011a). However, these were generally recommendations and conclusions of wide-ranging evaluations and not based on admission figures within the out-of-hours examined as part of the studies. Grange (2011) postulated the need for a twenty-four-hour service with Downes and Pemberton (2009) elaborating further that there is a need for a skilled nursing assessment twenty-four-hours to reduce unplanned emergency admissions. In a qualitative phenomenological interview study of six case managers, Grange (2011) noted that they believed many more patients were admitted at the weekend or at night when the case manager was not available. Ross et al. (2011) observed that many unplanned admissions occur out-of-hours, and most are via A&E. However, this conclusion appears to be based solely on the Evercare review by Boaden et al. (2005). Calnan et al. (2007) further suggested that admissions out-of-hours for case-managed patients may be due to a lack of awareness of alternatives to admission by out-of-hours staff.

Virtual ward models have learnt to be the most efficient in arranging local out-of-hours coverage to assure skilled provision over the twenty-four-hour period for case-managed patients, with full electronic record access (Lewis, 2010). This was possible due to the infrastructure of the virtual ward with greater integration of acute services in comparison to the lone working case manager within a community MDT. Some virtual wards also ensure the out-of-hours GP services had up-to-date lists every night of patients on the virtual ward (Lewis, 2007; Downes and Pemberton, 2009; Marriot, 2011). Thomas et al. (2010) highlighted inter-organisational communication between out-of-hours services and case managers, revealing the need for a shared approach to communication problems within systems of care. Twenty-four-hour services within the community are still currently cited as working in silos, isolation and in an unintegrated manner (Nyatanga, 2012; Cotton, 2007). Different nurses, GPs and

locums all taking part in the out-of-hours system have affected patient continuity and trust in the services. No quantitative evaluation of virtual wards has examined if this improved service covering out-of-hours affected emergency service use, unplanned admissions rates and patterns across the twenty-four-hour period.

A paucity of qualitative information was available regarding patient and carer experience of case management service availability out-of-hours and its impact. However, correlations can be drawn to the population with long-term conditions. Fergus et al. (2010) identified that patients and their families faced considerable difficulties in the out-of-hours period, including inadequate support and variation in service provision. Worth et al. (2006) also highlighted the challenges that patients face in this period when they are not known to an out-of-hours service provider, often experiencing a lack of clarity and personal knowledge about their condition. Additionally, a qualitative study by Gallagher et al. (2012) exploring continuity of care in the out-of-hours for patients with long-term conditions concluded that shared record systems and better communication were required to improve confidence in out-of-hours services. The delegation of care to out-of-hours service providers for case-managed patients could produce similar challenges for patients and carers.

2.6 Tracking and Measuring Service Use

Tracking and measuring attendance and admissions has been problematic within previous studies due to an inability to identify case-managed patients through NHS IT systems. Current data integration and data interoperability issues at the meso and macro levels will be assessed in relation to the NHS digital agenda by 2020 (Hunt, 2013; NHS England and HSCIC, 2015; Dunhill, 2016). The position of case management within the digital age and its ability to utilise data for service-level analysis to establish patterns and usage of services for its populace will be examined.

2.6.1 Digitalisation and Current Data Issues

In 2013, the then-Secretary of State for Health challenged the NHS to make better use of technology and stated the NHS should go paperless by 2018, to save billions, improve services and help meet the challenges of the ageing population (Hunt, 2013; Intellect, 2013). It was proposed that patients should have compatible digital records, so their health information followed them around the health and social care system, available to any healthcare professional involved in patient care. Currently, acute care, primary care, community care and ambulance services all utilise different IT systems (Intellect, 2013). Safe electronic linking of systems to enable GPs and hospitals to share records and paramedics to access a full medical history on the scene of a 999 callout was planned (NHS England, 2015b). In 2016, a government review into NHS IT (National Advisory Group on Health Information Technology in England, 2016) revealed that interoperability and data sharing were more complex than anticipated, and a paperless NHS should be achieved by the now-delayed date of 2020. The Care Quality Commission (CQC) report ‘Safe Data, Safe Care’ (CQC, 2016) concluded that improvements must be made in order to ease the safe sharing of patient data between all services and Trusts.

In order to obtain public trust around data security of health records, the ‘Review of Data Security, Consent and Opt-outs’ was commissioned in 2016 (National Data Guardian, 2016) which established that much further work was needed and public consultation was vital. Qualitative exploration established that patients want access to their healthcare records (Ross et al., 2005; White et al., 2016). In a large scale national survey of service users, White et al. (2016) reported that individuals believed they would feel an increased sense of control over their own health and gain a greater understanding if given access to their healthcare records. Likewise, Ross et al. (2005) also noted such patients demonstrated an improved adherence to care and medication, albeit in a small survey of renal service users. Security, privacy and losing control of their private data were concerns stated by patients (White et al., 2016), inaugurated by the data breaches often published within the media (Wakefield et al., 2012; BBC, 2014; Murphy, 2015; Donnelly, 2017a).

Many influential experts believe that clinician buy-in for digitalisation is essential (Wickware, 2016). Clinicians themselves have been cited as being ambivalent and resistant due to concerns over privacy, security and legalities (Thick, 2015). Apprehensions were also noted in the need of clinical staff within the NHS to improve skills and literacy in computing and data management in order to operate and take full advantage of the systems (Thick, 2015). Technology cannot be used to force a change in behaviour, and, according to Steventon and Billings (2017), clinicians and patients must collaborate for any quality improvement to be successful.

It must be remembered that being paperless is not the sole purpose of digitalisation; rather, it is a way to improve patient quality, safety, efficiency and experience. There can be serious cost to patients when the NHS doesn't share medical records between the professionals treating them, including medication and treatment errors and near misses (Boseley, 2016; Dunhill, 2017). For those with multimorbidity and long-term conditions, poor communication can mean poor care, and, for those accessing multiple services, it can mean patients are asked the same questions many times, impeding quality and safe care (Ashbridge and Davies, 2017).

Case managers, at the interface between services, often experience inadequate communication of basic patient information between acute care and primary care and health and social care (Romagnoli et al., 2013). A lack of integration between the various services is mirrored by the lack of joined-up data, which may undermine efforts to improve care and prevent admissions. Attempts at the national level to integrate data have not been successful thus far (Boseley, 2016; Hurst et al., 2017). Local integration has been slow because of digital maturity within a locality as many community systems are not designed for clinical input or data sharing (Dunhill, 2017). In addition, the quality of community services datasets is often inaccurate, and the technology infrastructure is not as advanced as that of acute secondary care or primary care general practitioners (Foot et al., 2013). Currently, many community services still use a paper-based note system hindering integration (QNI, 2018). The Richmond report (2017) asserts that the present-day healthcare systems at the macro and meso levels are not currently set up to share data; likewise, Hurst et al. (2017) suggested that governance structures across organisations, data-protection regulations and

transformational leadership are often lacking within some community settings. Legal issues of data sharing were also highlighted and attributed to the lack of interoperability in reviews undertaken by the Care Quality Commission (CQC) and National Data Guardian (CQC, 2016; National Data Guardian, 2016).

2.6.2 Tracking and Measuring Service Use in the Case Management Programme

Thus far, this review has revealed that the case management programme has struggled to accurately track and measure hospital attendance and admission rates. Multiple methodological errors and limitations were noted in previous quantitative studies, and, despite concluding no reduction in unplanned admissions, questions could be raised regarding their robustness. Only one study, by Boaden et al. (2005), was able to conduct an investigation exploring the attendance and admission patterns of the out-of-hours period, concluding more than half of emergency admissions occurred during this period. No further breakdown or specific patterns of admission times were given. Previous studies all focused on the total number of attendances for a specified locality of case-managed patients over a given time and used practice-level GP data or HES data, and some attempted to link GP and acute care records. Nonetheless, all studies identified the difficulty of recognising case-managed patients within NHS data. However, HES and GP level data would not include times of attendance or admission, therefore, utilizing this data type would hinder inferences on the patterns of admissions. Acute care data contain information regarding admission times; however, most often systems cannot identify community case-managed patients.

In order to account for attendances and admissions of case-managed patients, acute hospital Trusts and ambulance services must be aware of who the patients are via their IT systems. The virtual ward model in Croydon utilised a system to send a list of current patients to out-of-hours providers, ambulance services and local hospitals. A flag was then entered on the various IT systems to alert staff of the patients' virtual ward case-managed status (Lewis, 2010; Ross et al., 2011; Jones and Carroll, 2014). However, reviews of the service did not appear to use data from flagging of systems for their evaluations and accessed HES data for analysis akin to most studies (Lewis,

2013; Healthcare at Home, 2016). No further research is available for critiques regarding the ease, effectiveness or accuracy of the method of data collection for case management research. Only small pockets throughout England embraced the virtual ward method of case management provision, with the majority favouring the placement of the case manager within the wider MDT. In the latter circumstances, this form of data sharing did not exist due to issues of data protection, so data were not flagged in this way at local hospitals or by ambulance services for patients served by an MDT case management service. The identification and tracking of case-managed patients within current systems remains problematic. IT integration and interoperability are required to establish if the distribution and patterns of service use per operational hours is different.

2.7 Chapter Summary

Presented within this review are key themes which this thesis builds upon to contribute to the underlying research problem and address the gap in the knowledge base. The key themes identified are:

- Emergency and acute services are currently under strain with an NHS-wide drive to avoid and reduce attendances and unplanned admissions
- The lack of a twenty-four-hour community provision could be contributing to the burden on acute services
- The growth in the ageing demographic, rise in long-term condition and multimorbidity and poor lifestyle choices are placing further demand on acute services
- Case management within NHS community services was introduced as a service to assist in the reduction of pressure on acute care and manage more patients within the community; however, the service is not provided across the twenty-four-hour time period
- There have been no recent studies scrutinising the 999 callouts, A&E attendance and hospital admissions for the case management population despite service recommissioning and continuation within the NHS in England

- A paucity of research has been identified examining 999 callouts, A&E attendance and hospital admission patterns over the twenty-four-hour period for case-managed patients
- No qualitative studies to date are available exploring key stakeholders' views on why, when and how case-managed patients utilise emergency and hospital services
- Service integration and data interoperability issues have been identified within the current NHS and case management services; moreover, methods of tracking case-managed patients' attendances and admissions have been problematic

Hence, there is a need to explore the distribution and pattern of case management service use outside normal operating hours being different to in-hours and exploring potentially why.

Chapter 3: Research Design Pragmatism and the Mixed Methods Approach

3.1 Introduction

The aim of this chapter is to present the underpinning philosophical and methodological arguments for the research aim, objectives and design. A coherent explanation for the philosophical position of the researcher will be offered, followed by the methodology and methods chosen to address the central research aim: ‘To understand the patterns of 999 ambulance callouts, A&E attendances and hospital admissions for patients of the NHS case management programme’.

At the inauguration of any research endeavour, researchers must place themselves with regard to their philosophical insight. A paradigm, a term commonly used in research, was first attributed as being used by Kuhn (1970) and has been the subject of much debate. Kuhn (1970) established the idea of paradigms which compete against each other in periods of revolutionary science. Guba and Lincoln (1989) described paradigms as worldviews. Depending on a researcher’s world view or knowledge claim (Creswell, 2003), certain assumptions are made. These assumptions can be considered in the following context: ontology, epistemology, axiology, rhetoric and methodology. Creswell (2009) offered meanings for each term (see Table 4).

Table 4 *Terminology of Worldviews*

Term	Meaning
Ontology	The nature of being/reality/knowledge
Epistemology	How we know about knowledge—the relationship between researcher and subject being studied
Axiology	The values which go into the study
Rhetoric	How it is written about
Methodology	Process for studying it

Note: adapted from Creswell (2009)

The researcher presents a pragmatist philosophy that agrees with a personal view of reality and enables the research aim and objectives to be met. The research design framework of a mixed method approach, using an explanatory sequential mixed methods design, is then proposed. Successively, the methodology is offered which extrapolates the strategy and plan for data collection and analysis (methods). Alternative techniques are discussed along with the validity issues pertinent to both quantitative and qualitative approaches. Two quantitative studies (study one and two) were employed to objectively understand 999 emergency service use, A&E attendance and hospital admission data followed by qualitative exploration of key stakeholders' perspectives (studies three, four and five). From this, a deeper and broader understanding of complex human phenomena was sought. A framework of the research design is presented in Figure 4.

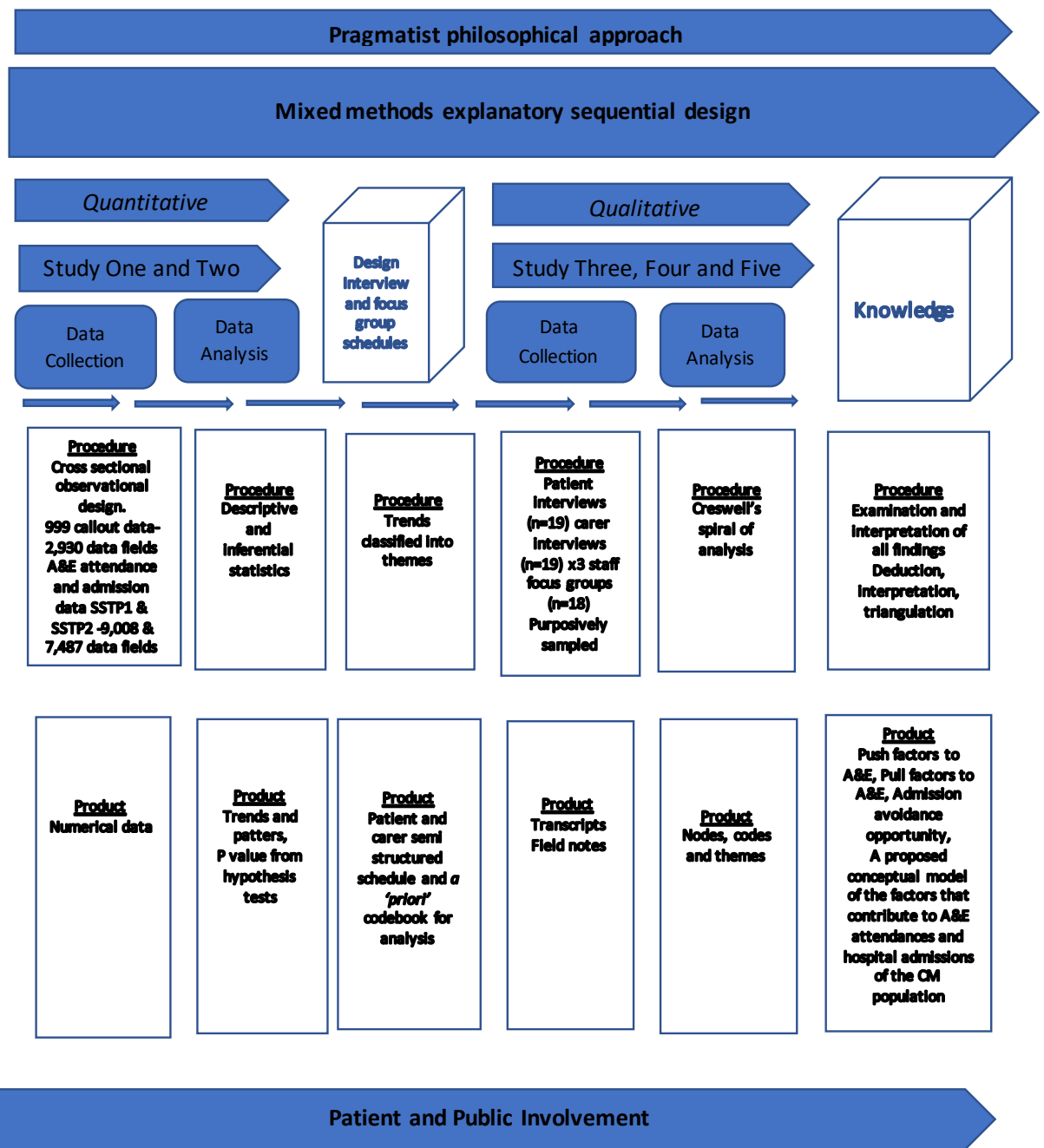


Figure 4. Research design framework (adapted from Creswell and Plano Clark, 2011)

3.2 Philosophy

3.2.1 Ontology and Epistemology

Positivism was the dominant paradigm of the 19th and much of the 20th century and serves as the foundation of quantitative research. Polit and Beck (2004) described positivism as, 'The traditional paradigm underlying the scientific approach, which assumes that there is a fixed orderly reality that can be objectively studied'. (p.728)

Science has been characterised by empirical research with the dominant view that all phenomena may be reduced to empirical indicators which represent the truth. Ontologically, there is only one truth: an objective reality that exists independently of human influence. Epistemologically, in seeking knowledge, positivists aim to be objective. In so doing, they hold their own beliefs and values back, so as not to contaminate the process, measuring and analysing causal relationship within a value-free framework (Guba and Lincoln, 1994; Polit and Beck, 2004). Clinical trials, and notably randomised controlled trials, are the most common form of quantitative research in the field of health (Sibbald and Roland, 1998) to determine whether a causal relationship exists between a treatment and an outcome. Techniques to ensure rigour include randomisation, blinding, structured protocols, large representative sample sizes and statistical methods (Carey, 1995).

In the early 20th century, there was a shift from positivism to post-positivism with a realisation that the idea of reality, which took no account of the experience of people, was naive (Parahoo, 2006). The idea that social phenomena could be explained by universal laws was put aside, because social events could not be explained in the same way and with the same certainty as physical events (Parahoo, 2006). This subtle, yet important shift opened up an opportunity to study self-reports. However, an important distinction remained within post-positivism, in that self-reports had to be considered objectively by valid and reliable tools (Phillips and Burbules, 2000).

The non-positivist (naturalist) qualitative paradigm is based on interpretivism (Kuzel and Like, 1991; Altheide and Johnson, 1994) and constructivism (Guba and Lincoln,

1994), whereby a phenomenon is typically investigated in-depth by collecting rich narrative data, with a flexible study design (Polit and Beck, 2004). Ontologically, there are many truths or realities based on the researcher's reality, which are socially constructed and constantly changing (Berger and Luckman, 1996). According to epistemology, there is no access to reality independent of minds, and no external terms by which to compare claims of truth (Smith, 1983). The researcher and object of study are believed to be inextricably linked and findings are mutually created within the context of the research situation (Guba and Lincoln, 1994). The emphasis of qualitative research is on focus and meanings, utilising techniques of in-depth interviews, focus groups, observation and small purposeful samples not representative of a larger population (Reid, 1996). Under the umbrella term of qualitative research, there are many methodologies, including ethnography, phenomenology and grounded theory.

The underlying assumptions of the quantitative and qualitative paradigms have resulted in much debate with regard to philosophies, methodologies and practical issues beyond these central tenets. In acknowledging the different philosophies of both positivist and naturalist schools, Lincoln and Guba (1985) noted that it was not possible to join the two. Likewise, Smith (1983) argued that researchers who try to amalgamate the two are doomed to failure, because of the major philosophical differences. Such discourse became known as the Incompatibility Thesis, which resulted in further dialogue and discussion in research.

The Incompatibility Thesis posed a challenge: how could researchers mix methods when the paradigms on which they were based had very different ontological, epistemological and methodological assumptions? For some, adopting a dialectical approach which advocated using two or more paradigms together provided a solution to this issue (Shannon-Baker, 2015). However, for most, the answer was to adopt an alternative paradigm, which embraced a multiplicity of assumptions and methods (Greene, 2007). Critical realism was one such alternative paradigm that supported the belief that quantitative and qualitative research could work together to address the other's limitations and offered researchers an opportunity to better understand the context of what they were studying (Maxwell and Mittapalli, 2010; Shannon-Baker,

2015). Another alternative paradigm was introduced by Howe in 1988, who wrote about a third paradigm: pragmatism; his work became known as the Compatibility Thesis. The advantage of pragmatism was that it sought a middle ground between philosophical inflexibilities (Johnson and Onwegbuzie, 2004). On a philosophical level, pragmatism supported the view that, while quantitative and qualitative methods were distinct, they were commensurate as both advanced knowledge production and shared meaning making.

According to Cherryholmes (1992), in ontological terms, pragmatists agree with positivists on the existence of a reality which exists outside of the human mind, but dispute that truth regarding reality could actually be determined. Cherryholmes (1994) defined the beliefs of pragmatists in relation to reality, causality and objectivity in that they were context-dependant and could change, but not always in predictable ways. Johnson and Onwuegbuzie (2004) considered some characteristics of pragmatism and concluded that the reality of influence of human experience as felt and actioned by individuals was held in the highest regard; as such, knowledge was based on both individual constructions as well as on the reality of the world in which they were a part.

For the researcher, the pragmatist philosophical position offered the ability to encompass both world views, allowing the quantitative use of 999, A&E and hospital admission data to be objectively considered in examining the case management population, while also incorporating the key stakeholders' perspective and experiences of when, why and how they utilise services qualitatively. Offering the combination of diverse viewpoints allows for the flexibility needed to address the research question proposed (Strikland, 1993; Teddlie and Tashakkori, 2009). The assumptions associated with pragmatism are presented in Table 5.

Table 5 *Pragmatism's Assumptions*

Assumption	Pragmatism
Ontology	Diverse viewpoints regarding social realities Important that researcher's own view points are clear
Epistemology	Both objective and subjective views are used depending on the stage of the research
Axiology	Values are important in interpretation.
Methodology	Associated with qualitative and quantitative, both are acceptable in pragmatic approach Both inductive and hypothetico-deductive approaches Values important in interpreting results. Both internal validity and credibility are important

Note: adapted from Teddlie and Tashakkori (2009)

Having presented the philosophical position of pragmatism as an alternative or third paradigm, allowing the combining of both quantitative and qualitative ontologies and epistemologies, the researcher must consider its application to research and its methodologies. On a practical level, pragmatism offers health researchers the freedom to choose the best methods to answer the question at hand (Bishop, 2015; Shannon-Baker, 2015). The problem should drive the research; therefore, pragmatism offers a greater ability for this approach to take place (Patton, 1990). Many authors consider pragmatism a good fit as a paradigm, underpinning the mixed-methods approach to research (Howe, 1988; Teddlie and Tashakkori, 1998; Johnson and Onwuegbuzie, 2004; Morgan, 2007). For the researcher, the flexibility of pragmatism opened doors to different world views, different assumptions and multiple methods, as well as to different forms of data collection and analysis. Not viewing the world as an absolute unity allowed the researcher the ability to draw liberally from both qualitative and quantitative assumptions to engage in investigating the emergency service use and hospital admission patterns for patients of the case-management programme from a combination of perspectives. Having considered the philosophical position of pragmatism as an underpinning, the focus of this chapter now explores the

methodology of the mixed-methods research design and its application to the research aim and objectives of the thesis.

3.2.2 Methodology- Mixed Methods Design

The landscape of mixed methods research has advanced significantly and its popularity as a research design has grown, especially in the field of nursing and healthcare (Doyle et al., 2009). However, significant debate remains regarding what constitutes mixed methods research (Hesse-Biber, 2015). Creswell (2015) suggested that 'Mixed methods is an approach in which the researcher collects, analyses and interprets both quantitative and qualitative data, integrates the two approaches in various ways and frames the study within a specific design' (p.2).

It is crucial in the justification for mixed-methods research that the research question lends itself to a mixed-methods design (Sandelowski, 2014), wherein using a quantitative or qualitative method alone would be insufficient. However, the assumption is that a mixed method is better than a singular method approach has been challenged within the literature (Sandelowski, 2014), thus strengthening the need for mixed methods researchers to be explicit about the additional value and justification for the design utilised (Bryman, 2008; Creswell, 2015). The justification of mixed methods designs has been considered by Green et al. (1989) and Bryman (2006) who identified five main purposes for mixing methods (triangulation, complementarity, development, initiation, expansion) (see Table 6).

Table 6 *The Most Commonly Presented Rationales for Mixed-Methods Studies*

Rationale	Explanation
Triangulation (convergence)	<ul style="list-style-type: none"> • Using qualitative and quantitative methods so that findings may be mutually corroborated • Unanticipated outcome of a study where a mixed-methods study was undertaken for another reason, but convergence was evident
Expansion	<ul style="list-style-type: none"> • First phase findings requiring explanation qualitatively • Unexpected findings requiring explanation
Exploration	<ul style="list-style-type: none"> • Initial phase required to develop instrument or intervention or variables to study
Completeness	<ul style="list-style-type: none"> • Provides a comprehensive account of phenomena under study
Offset weakness	<ul style="list-style-type: none"> • Ensures weaknesses of each method minimised (Creswell, 2015)
Different research questions	<ul style="list-style-type: none"> • Quantitative and qualitative questions can be posed at the beginning of the study as well as mixed methods questions (Creswell, 2015)
Illustration	<ul style="list-style-type: none"> • Qualitative data to illuminate quantitative findings

Note: adapted from Bryman (2006)

Understanding the strengths and weaknesses of mixed-methods research is key to mixing strategies according to Johnson and Turner (2003), who call this a fundamental principle of mixed-methods research. Weaknesses and criticisms within the literature include a lack of critical approach (Giddings, 2006), insufficient justification (Bryman, 2006; O’Cathain, 2010), lack of theoretical underpinning (Morgan, 1998; Miller and Fredericks, 2006) and misconceptions surrounding one method legitimising another method (Morse, 1996; Sale et al., 2002). However, despite these concerns, many advantages of using mixed methods can also be demonstrated within the literature, including being flexible and holistic (Andrew and Halcomb, 2007); addressing practical problems (Patton, 1990); seeking a more comprehensive picture (Clarke, 2009); giving accounts which are more complete (Bryman, 1988); allows flexibility (Sandelowski, 2000) and contributing more than using a single approach (Johnstone, 1994; Giddings, 2006). The strengths of the mixed-methods methodology outweigh the weaknesses highlighted and has immense benefits for the healthcare

researcher. However, assurances must be considered to ensure that a sound theoretical underpinning is considered and that the research question lends itself to a mixed-methods design.

In exploring mixed methods in healthcare, several authors are positive about the contribution that the mixed-methods research design allows. Johnstone (2004) contended that the depth of knowledge uncovered by using mixed methods is advantageous in healthcare research. Shaw et al. (2010) saw mixed methods as useful in considering healthcare practice because it is outcome orientated and considers the importance of context as well as assessment in a variety of settings. For health care professionals, Schifferdecker and Reed (2009) stated that using mixed methods is common everyday practice, in that history-taking is qualitative in nature, whilst physical examination and diagnostic testing lends itself to quantitative research; hence, mixed methods are familiar. In addition to methodological reasons, there has also been an increase in funding explicitly requiring mixed-methods designs within healthcare (Doyle et al., 2016) as well as a desire for greater interdisciplinary collaboration within healthcare research (Hesse-Biber, 2015).

The design of a mixed-methods study needs to be clearly set out due to the plethora of designs and typologies that can cause confusion for both the novice and experienced mixed-methods researcher (Doyle et al., 2016). Two main factors that help researchers to design and conduct a mixed-methods study are the implementation of data collection and priority (Morse, 1991; Morgan, 1998; Tashakkori and Teddlie, 1998; Creswell, 2003). Implementation of data collection refers to the sequence that the researcher uses to collect both qualitative and quantitative data. The options consist of gathering the information at the same time, being concurrent, or introducing the information in phases, being sequential. By concurrently gathering both forms of data, the researcher seeks to compare them with the search for congruent findings (Creswell, 2003). When the data are introduced in phases or sequentially, the sequence refers to the objectives being sought, quantitative data precedes the qualitative data, and the intent is often to test variables with a large sample and then carry out in-depth exploration of a few cases qualitatively (Creswell, 2003). Regarding priority, mixed-methods researchers can give equal priority to both quantitative and qualitative

elements or give emphasis to one part of the study (Creswell, 2003), often dictated by the research question, practicalities and/or the need to understand one form of data before moving on to the other.

The two dimensions of sequence and priority give rise to many different combinations of mixed-methods research design. A convention has been set up over time with key authors such as Morse (1991), Morgan (1998), Teddlie and Tashakkori (1998) and Creswell (2003), who introduced the concept of using capital letters to denote the combination and priority of the method used. If the priority method were qualitative, this would be written as QUAL and the less dominant methods, such as quantitative, would be written as *quan*. If this were followed by a plus sign the design would be depicting a concurrent design for data collection and an arrow would represent a sequential approach in which one set of data would be collected first and then followed by the other. Creswell (2003) discusses priority and sequence further and presents six designs, three sequential (explanatory sequential, exploratory sequential, transformative sequential), and three concurrent designs (concurrent triangulation strategy, concurrent nested strategy, concurrent transformative strategy).

Utilising a concurrent design for the proposed research question would have entailed the researcher collecting both quantitative 999, emergency and hospital data at the same time as collecting qualitative stakeholders' experiences. Practical issues of man power and time of the sole researcher could have made this difficult to achieve, and, methodologically, the primary objectives were not to compare qualitative and quantitative data. The sequential exploratory design implies qualitative data are collected first to explore the problem under study and then to follow this up with quantitative data amenable to a larger sample so that results might be inferred to a population. This sequence of data collection would have meant exploring perceptions with stakeholders and then looking at attendance and admission data and therefore may not have enabled the rich data to be gathered in the first qualitative phase when the issues to be explored were not known. It is also noted that this design can take a long time to execute, particularly if both methods are given equal priority (Andrews and Halcombe, 2006).

The sequential explanatory design consists of a larger quantitative phase followed by a smaller qualitative phase, the aim of which is to explain and follow up the results. Data collection and analysis occur sequentially, as the results of the quantitative phase guide the development of the qualitative phase. Morgan (1998) and Creswell (2003) consider the sequential explanatory design to be the most straightforward, easiest to implement, more likely to provide a productive combination and, as such, produce greater impact. The distinct sequential phases also make it possible for the lone researcher to complete (Creswell et al., 2011). Morse (1991) also considers this a useful design, allowing explanation to be considered for unusual results. Within this study, the research question and problem at the centre of the study required the need to examine the data patterns of case-managed patients and then explore qualitatively, meaning and reasons for trends identified. Therefore, the concurrent and sequential exploratory designs were rejected, and the sequential explanatory design proposed by Creswell (2003) was deemed most appropriate, presented in Figure 5.

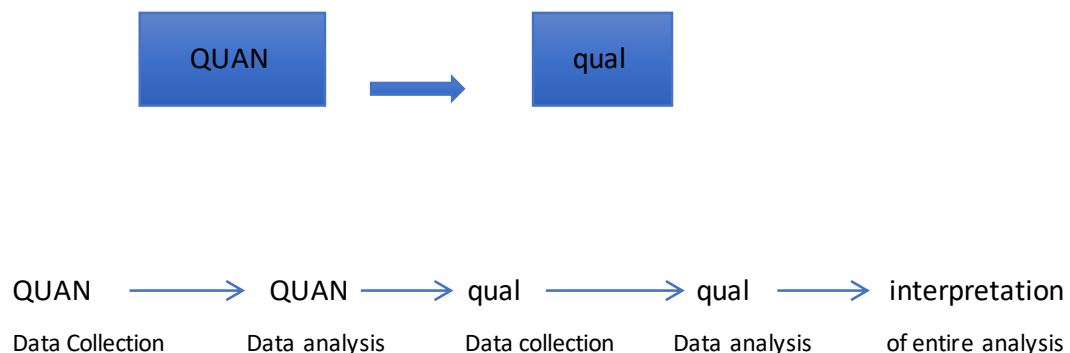


Figure 5. Sequential Explanatory Design (adapted from Creswell, 2003).

3.3 Method

The chosen mixed methods sequential explanatory design encompasses multiple modes of data collection and analysis which contribute to the central aim of the research. Each quantitative and qualitative element has its own research questions and objectives; therefore, the methods are presented as two sections: the quantitative cross-

sectional observational design (study one and two) and the qualitative interviews and focus groups (studies three, four and five). Details of the procedure for the studies are described further in Chapter four. Triangulation methods are proposed in section 3.7.

3.3.1 Studies One and Two-Quantitative Data Collection and Analysis

Traditional methods of primary data collection within quantitative healthcare research often focus on randomised controlled trials (RCTs), where new data are collected from an intervention or experiment carried out on subjects (Craig et al., 2012). Subjects are assigned by statistically randomised methods to a group, and, in doing so, it is assumed all variables other than the proposed intervention are evenly distributed between groups, and bias is minimised (Bainaves and Caputi, 2001). However, RCTs may not always be practical, cost effective or ethical for addressing many research problems (Depoy and Gitlin, 2016). Observational or non-experimental studies, which include cohort, case control and cross-sectional studies, are methods of quantitative study in which no intervention is carried out; rather, the investigator simply observes (Rosenbaum, 2010). Often, these studies are the only practicable method of studying some problems that are rare or that measure prevalence, incidence or prognosis.

Cohort studies are the best method for determining the incidence and causes of a condition and can be prospective or retrospective in design, enabling the calculation of relative risk (Sedgwick, 2010a). Prospective refers to data gathered over a period of time and retrospective refers to data already collected; however, the methodology is the same (Mann, 2003). Groups chosen for investigation do not have the outcome of interest, and the investigator measures a variety of variables over a time period to establish a sequence of events (Mann, 2003). Prospective studies are noted for being high in cost, and loss of follow up can be a significant problem for bias. Retrospective cohort studies, albeit lower in cost and quicker (Sedgwick, 2010b), can also be the subject of bias and confounding variables (Rosenbaum, 2010). Hence, a cohort study design did not fit with proposed studies that aim to examine the 999 emergency services use and A&E attendance and hospital admissions of case-managed patients.

Case control studies are usually retrospective and compare two groups to identify predictors of an outcome and calculation of an odds ratio (Schlesselman, 1982). When an outcome is rare, a case control study may be the only feasible approach and can be simple to organise (Schlesselman, 1982). Bias (sampling and retrospective) and only being able to look at one outcome are noted as some of the limitations of case control studies. Again, for the above reasons, a case control study design could not be utilised as a method for the proposed study. While consideration was given to collecting prospective data within an NHS case management service, for practical reasons and time constraints and the possible lack of objectivity with data collected by case managers, this was deemed impractical. Therefore, both cohort and case control studies were rejected as plausible quantitative methods for the studies.

The third observational method, a cross-sectional design, is mainly used to infer causation or determine prevalence (Olsen and St George, 2004). As only one group is used, data are collected only once, and multiple outcomes may be studied which can be relatively quick and cheap (Lavrakas, 2008). Odds ratios may be produced but predicting causality can be weak and is noted as a limitation (Schmidt and Kohlmann, 2008). Pre-existing databases providing secondary data are an excellent and convenient source of data for cross-sectional studies, whereby a vast number of people can be entered into a study retrospectively to produce a sample for a cross-sectional design (Olsen and St George, 2004). The purpose of the quantitative study was to determine the patterns of 999 emergency service use, A&E attendance and hospital admission for case management patients, for which secondary data could be retrieved from specified NHS systems. The use of a single group and a single data collection point was the appropriate methodological underpinning required to determine the number and patterns of case-managed patients accessing NHS services. The cross-sectional observational design was therefore most applicable and selected as a design for the quantitative studies.

In running the cross-sectional observational studies, the research questions were chosen and the sample population identified from NHS IT systems. Variables of the research population relevant to the research question were then decided upon, and the researcher applied to obtain the data. On receipt, data were exposed to statistical

analyses and testing whereby the researcher was able to describe, summarise and identify prevalence and causative factors, and to make predictions within the data. Key themes and an *a priori* codebook for qualitative exploration of the key stakeholders' perspectives in studies three, four and five were produced.

3.3.2 Studies Three, Four and Five- Qualitative Data Collection and Analysis

The second stage of the mixed-methods explanatory sequential design utilised the key findings of the quantitative data from studies one and two to drive the issues for exploration in studies three, four and five. The qualitative studies aimed to explore and understand the perspectives of key stakeholders with regard to case management patients' utilisation of 999 emergency services, their A&E attendance and their hospital admissions.

Pragmatism and the mixed-methods design offered the researcher the opportunity and freedom to choose the best methods to answer the research question (Bishop, 2015). As in the quantitative phase, it was important for the researcher to select the qualitative approach and design that would best answer the research question. The most common approaches adopted are ethnography, grounded theory, phenomenology and narrative enquiry (Tesch, 1990). Regardless of the approach, the commonalities of qualitative research include an inductive, holistic approach, which aims to understand complex relationships, gain the knowledge and insight of participants, or to describe an event within its context (Polit and Hungler, 1995; Denscombe, 2002). The basis of qualitative research lies in the interpretive approach for exploring social reality (Holloway and Wheeler, 2002), and, when qualitative researchers speak of subjectivity, they are referring to ways in which people make sense of their experiences and lives (Denzin and Lincoln, 2005).

The ethnographic approach, interpreted through the observation of behaviour, enables the researcher to 'get inside' a culture and see how participants see the world, aiming to describe culture, values and beliefs of the group being studied (Spradley, 1979). The process is often characterised by in-depth interviews, observation and immersion into the culture as the researcher learns about meanings that participants attach to

knowledge, behaviours and activities (Hammersley, 1992; Germain, 2001). The use of *a priori* data is not employed within ethnography, as the researcher explores the culture with little prior knowledge or assumptions. The research in question was concerned with understanding the perspectives of stakeholders of the case management programme from how they described and understood it, not through observation or by the researcher immersing herself within the culture of case-managed patients.

Grounded theory offers a stratagem to develop an understanding of a phenomenon that is entirely derived from the data collected (Glaser and Strauss, 1965). As with ethnography, grounded theory strongly advises against using predetermined theories. Distinct features include theoretical sampling and constant comparison in data analysis, which entails sampling decisions being made throughout the entire research process as participants are selected based on emergent findings and constant comparison of incidents and categories in the analysis phases (Chenitz and Swanson, 1986). The symbolic interactionism concept, theoretical sampling and inability to use earlier data findings did not fit with the research question, aims or objectives of this study.

Narrative enquiry as a process of telling a story over time through research interpretation also rejects the use of *a priori* data (Clandinin and Connelly, 2000). This research approach, in which participants tell their life experiences throughout the life course, was not compatible with the need to explore specific incidents of service experience and utilisation of case-managed patients. Phenomenological approaches aim to accurately describe the lived experiences of people and interpret the meaning these have for participants (Sokolowski, 1999). The essence of an experience was not the facet under investigation within this research.

The data collection methods of observation and in-depth interviews utilised in ethnography, grounded theory and phenomenology were rejected as unsuitable for case-managed population under investigation. Data analysis methods that did not permit the use of *a priori* data, ethnography, narrative enquiry and phenomenology were rejected due to their inability to apply data trends identified from studies one and

two, examining the patterns of case-managed patients' use of 999, A&E and patterns of being admitted to hospital. Therefore ethnography, phenomenology, grounded theory and narrative enquiry were not suitable for the explanatory sequential mixed-methods study in question and were rejected. The mixed-methods approach described in 3.3 sanctions the selection of the most appropriate method to fit the research question (Creswell, 2003). Semi-structured interviews of patients and carers and focus groups conducted with case management nurses comprised the qualitative methods selected for the second phase of the study.

Semi-structured interviews with patients and carers were used as the data collection method for studies three and four. These were appropriate to use in qualitative research exploring the experiences, emotions, feelings and perceptions of complex and potentially sensitive issues from relatively small numbers of participants (Barriball and While, 1994; Denscombe, 2003). The qualitative research interview is a conversation with structure, the purpose being to obtain descriptions of the 'life world' of the interviewee with respect to interpreting the described phenomena (Kvale 1996). Fully structured interviews were rejected due to the inability to explore and probe the topic in more detail (Polit and Beck, 2004) and unstructured interviews due to the fact some knowledge was known on the topic from studies one and two (Ryan et al., 2009). Semi-structured interviews allowed participants to share information that was significant to their 999 call, A&E attendance and/or admission to hospital. Semi-structured interviews enabled the researcher to remain relatively focused, whilst still allowing freedom of expression so participants could explore issues they felt were relevant to them (Morse and Field, 1996). Additionally, the interview schedules helped to ensure that data were relevant to the research topic, addressing the research aim.

The decision to undertake face-to-face interviews rather than telephone interviews was the opportunity to build rapport with participants, as non-verbal communication is lost in a telephone interview. In semi-structured interviews, all participants are asked the same questions within a flexible framework (Dearnley 2005). The interview schedules were developed from themes emerging from the literature and the findings of studies one and two, and were mainly structured as open-ended questions, which, as Dearnley

(2005) suggests, encourages participants to share information with depth and vitality, and allows new concepts to develop. The interviews were audio recorded and notes taken to pick up on non-verbal behaviour and emergent themes.

A number of issues can affect sample size in qualitative research such as the number of variables and given incidence within a population (Guest et al., 2006); however, the guiding principle should be the concept of saturation. Sample size is driven by the desire to learn about the experiences of individuals and therefore the final sample size may be based on data-saturation (Patton 2002) as well as practical issues, such as the time-frame available (Coyne 1997). Bertaux (1981) stated that fifteen is the smallest acceptable sample. Other researchers have tried to suggest guidelines for qualitative sample sizes. Charmaz (2006), for example, suggested that 25 participants are adequate for smaller projects; according to Ritchie et al. (2003), qualitative samples often lie under 50, while Green and Thorogood (2009) stated that, in interview studies, little new emerges after you have interviewed 20 or so people.

Qualitative research utilises non-probability sampling techniques with small sample sizes as the purpose of qualitative research is not to establish a random and representative sample as in quantitative research (Mays and Pope, 1995; Murphy et al., 1998), but to contribute to an understanding of the phenomenon being researched (Parahoo, 2006). This means that the findings will not be directly transferable to the general population but apply to the specific population, in this case the community case management programme populace (Murphy et al., 1998; Higginbottom, 2004). Morse and Field (1996) identified the importance of the sample in qualitative research as being appropriate and adequate, fitting the aims of the research and generating adequate amounts of relevant data of sufficient quality. Therefore, for one Trust, 20 patients and 20 carer interviews were planned for in the research, an adequate number to predict for attrition and to avoid saturation.

Focus groups are a data-collection method whereby data are collected through a semi-structured group interview process. The advantage to the researcher is the ability to produce a large amount of data on a topic in a short time. The researcher can also ensure that data directly target the researcher's topic and will provide access to

comparisons that focus group participants make between their experiences. This was very valuable and provided access to consensus/diversity of experiences on the topic of 999 calls, A&E attendances and admissions in the case management populations. The groups were audio recorded and notes taken to pick up on nonverbal behaviour, group dynamics and emergent themes. The researcher acted as the facilitator and note taker (Twohig and Putman, 2002).

Focus groups with case manager participants were conducted in the community Trust partaking in the research. Morgan (1995) and Barbour (2005) advocated that the number of participants may vary according to the research undertaken; the researcher anticipated six to ten case managers would attend each focus group to ensure rich data were obtained as recommended in the literature (Morgan, 1995). Three focus groups were planned for to cover each locality within the Trust. Purposive sampling involved the researcher selecting participants on the basis of their suitability and their experience with the phenomenon under study (Holloway and Wheeler 2002; Parahoo, 2006) and involved the conscious selection by the researcher of subjects which would be included (Crookes and Davis 1998). The researcher purposefully invited all case managers in the partaking Trust to attend if desired.

The ability to analyse, interpret and draw conclusions from data is critical to the research process. The amount of textual data collected during interviews and focus groups can be extensive and can prove challenging to systematic analysis (Kodish and Gittlesohn, 2011). A variety of data analysis techniques were available to the researcher, and selection was dictated by the type of data collected, the purpose of the research and its underlying academic assumptions, and the philosophical position of the researcher. Discourse analysis, thematic analysis, framework analysis and Creswell's spiral of analysis were all suitable for the analysis of qualitative data collected and will be considered in turn.

Thematic analysis is associated with grounded theory research and analyses data by coding textual data in a systematic way to generate themes (Glaser et al., 1967). Themes are often drawn solely from the data, often iteratively in that analysis should be conducted continuously throughout the data-collection process. Given these two

facets, the researcher's knowledge and the analysis to be completed at the end, this method of analysis was deemed unsuitable with the sequential explanatory mixed-methods research design.

Careful consideration was given to the possible selection of framework analysis due to its adept suitability and flexibility for healthcare research (Guest et al., 2012). Processes of organising, managing, summarising and shaping themed matrices allow researchers to analyse data thematically and systematically to identify patterns within the data to produce illuminating descriptions of phenomena (Tesch, 1990). However, the matrix format and 'spreadsheet' look of framework analysis felt too rigid and linear for the researcher, and further methods were sought.

Creswell (2009) believes that the process of qualitative data analysis and interpretation could be best represented in a data analysis spiral, allowing the researcher to move between analytic circles rather than an undeviating approach. A form of building blocks from the bottom to the top in a process that is interactive and interrelated, six steps are proposed in the Creswell (2007) model as follows:

1. Organising and preparing the data for analysis
2. Reading through all the data
3. Coding of the data
4. Description of the categories for analysis
5. Presentation of the results
6. Interpretation of the results

An adapted version of Creswell's spiral of analysis (2007) is offered pictorially in Figure 6.

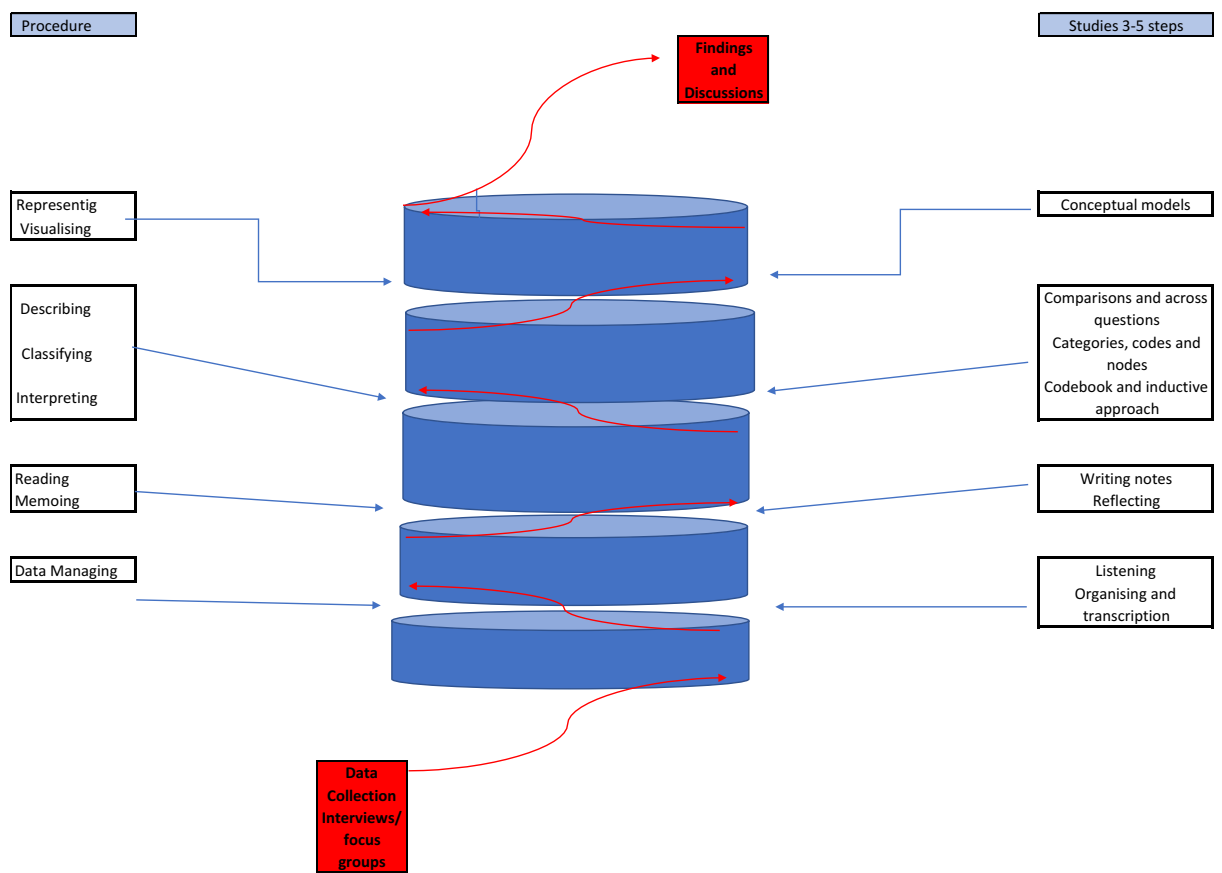


Figure 6. Adapted version of Creswell's Spiral of Analysis (adapted from Creswell, 2007).

The ability to use both inductive and deductive approaches to analysis enabled the application of the mixed-methods sequential explanatory approach to this method. The deductive logical inference of using *a priori* themes emerging from studies one and two were utilised initially and applied to the data in the first instance. Concurrent inductive approaches of generating new knowledge beyond the outcomes of studies one and two allowed for an exploratory approach and themes to emerge from the data.

Qualitative data are amorphous and often cumbersome and so are usually presented in large volumes of textual scripts. The advantage of using software in the data analysis process can save time, provide the ability to organise and analyse large amounts of data, simplify complex data analysis and add rigour, quality and trustworthiness to qualitative research (Richards and Richards, 1991). Software programmes such as Nvivo (QRS, 2015), MAXQDA (Verbi, 2017), ATLAS.ti (Scientific Software

Development GmbH, 2017) and QDA miner (Provalis, 2016), Dedoose (SocioCultural Research Consultants, 2017) offer alternatives to the traditional manual methods using charts, paper and the use of colour-coding systems (Welsh, 2002). However, a systematic approach to both manual and computer-assisted methods is required, and, as Smith and Hesse-Biber (1996) noted, software is often only used as an organising tool and to carry out administrative tasks, providing quicker and easier processes to code and cut and paste text than manually via paper, file and notebook (Thompson and Barrett, 1997).

The disadvantages of using software programmes can be the time needed for novice researchers to learn to use the programme, the expense of the programme and making sense of the codes and creating themes and maps (Welsh, 2002). The varying abilities of programmes to organise, annotate, search, explore and display data, as well as the abilities to import and export data are all additional considerations for the researcher in deciding to use and select a particular programme (Welsh, 2002). Frequently, both manual and electronic tools can be of value at different stages in data analysis and a mixed technique approach must also be considered (Welsh, 2002). NVivo (QRS, 2015) is stated as having more features and is more user friendly and advanced than ATLAS.Ti (Scientific Software Development GmbH, 2018), and MAXQDA (Verbi, 2018), less widely available and with less training available (Welsh, 2002; Schmieder, 2014). Despite Dedooes' (SocioCultural Research Consultants, 2017) applicability to mixed-methods research, NVivo (QRS, 2015) and training on the use of NVivo (QRS, 2015) was available free to the researcher. Therefore, competence was gained on the use of the software programme, and it clearly made more sense to use dedicated software than manual methods. During analysis, the researcher used a systematic grounding of Creswell's (2015) steps to create a structure and the use of NVivo (QRS, version 22, 2015) to enable the efficient management of data. Nvivo was exploited in stage three and four during the coding and memoing phase to index textual data. Following this, a visual representation software in NVivo (QRS, Version 22, 2015) was exploited to present textual data via tables and models from themes in stage four.

3.4 Ethical Considerations

Active public involvement in NHS, health and social care research has been advocated since the publication of the NHS plan in 2000 (DOH, 2000), which aimed to instigate more patient-centred care principles within the NHS. The principles of patient and public involvement (PPI) embrace the insight, expertise and experience of service users and is now considered an essential component by which research is identified, prioritised, designed, conducted and disseminated. Now widely established across the UK, the impact of public involvement upon the quality and delivery of healthcare research has been widely demonstrated and forms an essential component of healthcare ethical approval procedures in England (Telford et al., 2003; DOH, 2004b; Boote et al., 2011). Increases in participant recruitment (Staniszewska et al., 2007), improvements in the wording and timing of research instruments (Abma, 2005) and increases in validity and credibility with stakeholders have been some of the cited benefits (Dobbs and Moore, 2002; Brett et al., 2010). However, much more evaluation and research is required to improve the evidence concerning the impact of PPI (Brett et al., 2012). The benefits and importance of PPI were considered highly important by the researcher, and the inclusion of active PPI at the initial stages, in undertaking the research, during the analysis and write-up stage and at the dissemination phase was incorporated in this study; details of procedure are included in section 4.3.

The research was bound by the Research Governance Frameworks for Health and Social Care (DOH, 2005f). For the analysis of anonymised data in the quantitative work, no formal ethics process was deemed necessary. This was confirmed by the NHS ethics decision-making tool (HRA, 2016) and to the researcher directly by Birmingham City University Research Ethics Committee and review process (Appendix one). Research and Development (R&D) approval was obtained separately for each study site in line with governance and Caldicott review (Appendices two, three, six). The qualitative proposal was peer reviewed through university systems and was then submitted via the Integrated Research Application System (IRAS) for consideration by a Research Ethics Committee (REC), the Health Research Authority (HRA) and the relevant Research and Development departments. A favourable ethics

opinion and authorisations were gained in September 2016 (REC reference: 16/EM/0325, appendix five).

In gaining ethical approval, the following framework was administered. The four rights of participants in research as set out by the International Council of Nurses (ICN 2012) were paramount. The principle of beneficence, including freedom from harm, was addressed. The maintenance of confidentiality was fundamental, providing that no breaches of the Nursing and Midwifery Code of Conduct (2015) were observed. Similarly, for all participants, their ability to be recognised by other people in data reporting was avoided. Information on where to gain further support if the research was upsetting, was clearly laid out in the information sheets (Appendices nine, ten, eleven).

Principles of justice and right to privacy were considered, not least because studies three, four and five required some intrusion into the private thoughts and attitudes of those taking part. Similarly, the principles of respect for human dignity, including the right of self-determination were important. A participant's decision to be a part of the study must have been entirely his/her own and free of coercion, and recruiting patients and carers through their case management nurses required sensitive handling. Parahoo (2006) stated that there are a number of reasons why captive populations may wish to take part, including moral obligation, gratitude, fear of reprisals, fear of being labelled uncooperative and the need to conform. These ethical concerns were addressed by meeting the case managers to discuss recruitment and the pitfalls of coercion (RCN, 2009), so that there was uncoerced voluntary participation (Van Wisson and Siebers, 1993). For patients and carers, the information sheet was written in lay language (INVOLVE, 2012) clearly stating how their information would be used, by whom it would be seen and the right to withdraw at any point with no fear of reprisal. For the researcher, approaching potential participants in this way could be seen in terms of risk-benefit, whereby the approach by a trusted individual as the case manager to a vulnerable housebound individual was less frightening for the potential participant, than being approached by a stranger. Informed consent (Appendices twelve, thirteen, fourteen) was obtained by the researcher prior to interviewing participants, with clear guidelines that participants were free to withdraw at any point without penalty

(Parahoo, 2006). All data collected for the entire doctoral project complied with the Data Protection Act (Great Britain Parliament, 1998), ensuring the correct storage of data, access to data by the researcher, disposal and overall responsibility of the data.

3.5 Validity

The current debate surrounding quality and validity in mixed-methods research focuses on whether there should be separate quality appraisal criteria applied to the quantitative and qualitative elements, or whether there should be a bespoke mixed-methods criterion (Doyle et al., 2016). Some mixed-methods models have been produced and advocated (Teddlie and Tashakkori, 2009); however, as noted by Ivankova (2014), no agreed criteria have yet been established. Therefore, this doctoral study used the general principles appropriate to the selected methodology.

The theory of validity varies between quantitative and qualitative approaches but refers to the quality of the data collected, and the strength of the conclusions drawn from the results (Guba and Lincoln, 1985). The criteria utilised for examining validity within this thesis are presented in Figure 7.

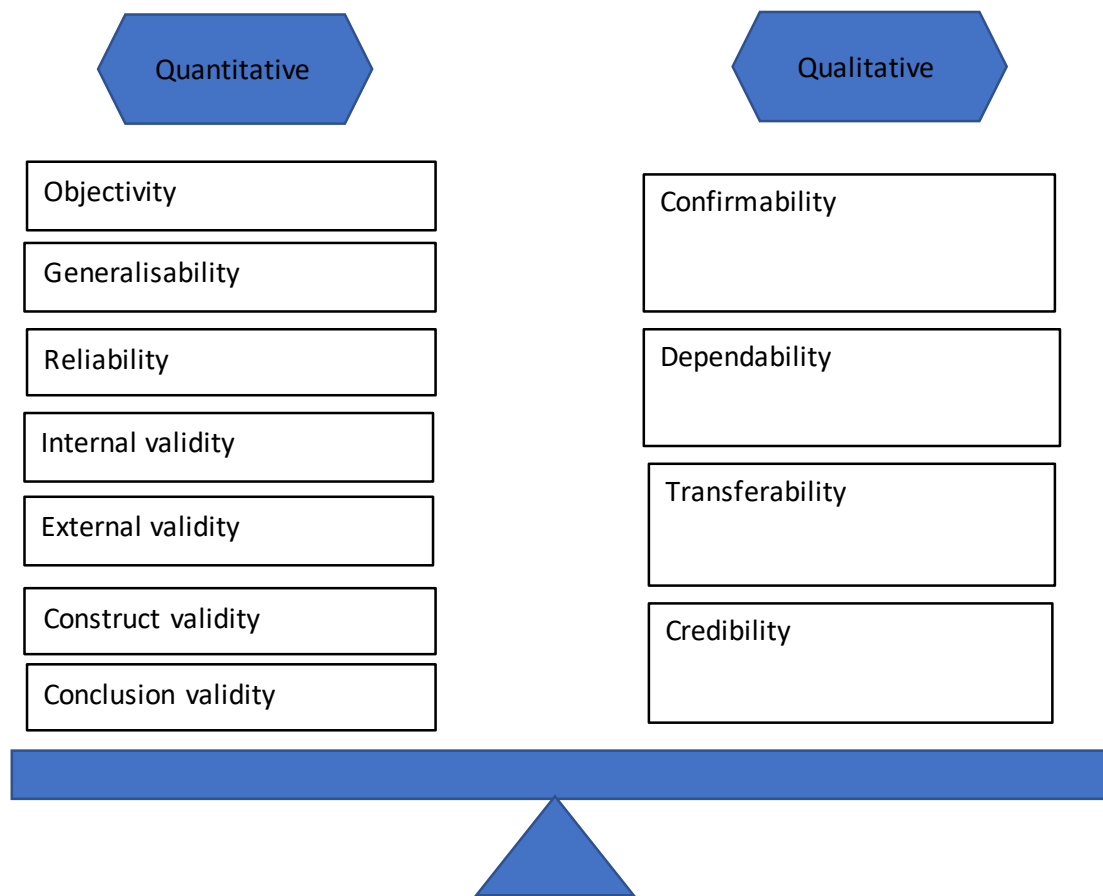


Figure 7. Validity of the doctoral thesis

3.5.1 Validity of Quantitative Approach

Aspects of quality within studies one and two, the quantitative work, must be examined in relation to reliability, validity, generalisability and objectivity (Polit and Beck, 2004). Reliability refers to the accuracy and consistency of the data obtained in the study and whether the results are replicable (Joppe, 2000). The 999 callout, A&E attendance and hospital admission data, although slightly different in format on receipt, were checked and cleansed in order to improve consistency and comparison of data sets. For quality control purposes, the methodology was rigorously adhered to. The utilisation of routinely collected data for the total population of case management patients indicates that the findings may be replicable, and there was no reason to suspect the findings were a one-off.

Validity refers to the ‘soundness’ of a study and the likelihood that findings are sound and convincing (Polit and Beck, 2004), assessing whether the means of instrument were accurate, and whether they were actually measuring what they were intended to measure. Joppe (2000) proposed several types of validity, presented in Table 7.

Table 7 *Types of Validity*

<i>Type of validity</i>	<i>Description of validity</i>
Internal validity	considers whether or not a relationship may be causal in nature.
External validity	is the ability to generalise the results to another setting.
Conclusion validity	looks at whether or not there is a relationship between the variable and the observed outcome.
Construct validity	refers to whether or not the operational definition of a variable actually reflects the meaning of the concept. In other words, it is an attempt to generalise the treatment and outcomes to a broader concept and whether it measures what it intended to measure (Wainer and Braun, 1998).

Note: adapted from Joppe (2000)

Conclusions were drawn out logically from the results and were produced from an appropriate methodology that was peer reviewed and regarded as valid by other investigators. The methodology was designed and executed with rigour, establishing further internal validity. By the studies showing they have demonstrated what they say they have, the rigour and reliability of the conclusions was improved. External validity refers to the value of the study results to other populations (Joppe, 2000), i.e., the generalisability of the results. The use of routinely collected data aids the ability to generalise the findings to other settings of the total population of case-managed patients and increases external validity. One important problem with cross-sectional observational designs is differentiating cause and effect from simple association

(O’Cathain et al., 2010). Conclusion validity was therefore assumed within studies one and two by the lack of confounding variables that may have influenced the results, as cross-sectional studies do not provide explanations for their findings (O’Cathain, 2010). Completing the appropriate analysis and statistical tests, and by measuring what was intended to be measured, construct validity was improved. No local alterations were made to the data sets affecting internal validity or inferences that could be made from the data or undeniably the generalisability or external validity (Creswell, 2009). The datasets retrieved were large and some issues around consistency and completeness must be noted which is discussed further in section 7.6.1. However, it is typical to have errors and omissions in these types of healthcare datasets and overall the large amount of data that was worked with improves the validity and reliability of what was found.

3.5.2 Validity of Qualitative Approach

To ensure rigour within the qualitative research, the four principles developed by Guba and Lincoln (1985) to enhance trustworthiness will be considered with regard to studies three, four and five. The domains are credibility, dependability, confirmability and transferability, the definitions of which can be found in Table 8. Quality in qualitative research refers to trustworthiness and authenticity rather than validity and reliability described in quantitative methods.

Table 8 *Domains of Rigour*

<i>Type of rigour</i>	<i>Description of rigour</i>
Credibility	Believability of results from participants perspective
Dependability	Stability of data over time and conditions
Confirmability	Objectivity or neutrality of data
Transferability	The ability of the findings to be applied to other contexts, external validity.

Note: adapted from Guba and Lincoln (1985).

Credibility, or knowing that the results of the studies are true and accurate, was enhanced by triangulation and member checking. Triangulation, which will be addressed in further detail in section 3.7, was conducted through triangulation of sources with multiple stakeholder participants and methods triangulation with two different data-collection methods. To augment credibility, the researcher invited the participants to read their interview transcript for clarification of meaning and accuracy, allowing for amendments (Guba and Lincoln, 1985). This was an important part of member checking. Confirmability and dependability were enhanced through recording field notes and journals (Tuckett, 2005). A journal was kept by the researcher throughout the process, which aided reflection, and developed a reflexive approach. Providing a clear audit trail of the data analysis steps also assisted in establishing that the research findings accurately portrayed participants' responses and enhanced confirmability (Morse et al., 2005). To support the criterion of transferability, the researcher ensured thick description (Guba and Lincoln, 1985) was used when the research was written up to enhance meaningfulness and applicability to other case management or long-term condition populations (Germain, 2001). Thick description refers to providing enough context so that a person outside a culture could make meaning of the findings (Geertz, 1973) and therefore aids applicability to other situations and transferability. In studies three, four and five, focus was placed on achieving auditability for key decisions concerning the theoretical, methodological and analytical choices made throughout the study thus improving dependability (Sandelowski, 1986).

3.6 Triangulation

When several research methods have been used within a study, triangulation facilitates the validation of data from two or more sources via cross verification (Bogdan and Biklen, 2006). Triangulation, as argued by Bryman (2006), mutually converges quantitative and qualitative findings and has the potential to reduce investigator bias and aid convergence. Achievement of triangulation can be via data, investigator, theory or methodological modes (Denzin, 1978; Yin, 2003). Investigator triangulation involves the use of multiple researchers which was not viable within the confines of a sole

researcher's doctoral study. Only one theoretical perspective was utilised in the interpretation of data; therefore, theoretical triangulation was not achieved. Data triangulation was attained through representing multiple stakeholders (patients, carers and nurses) and multiple geographical locations, via utilising three localities within the qualitative studies. Methodological triangulation was conveyed by the utilisation of more than one method of data collection: semi-structured interviews and focus groups.

The defining feature of classical triangulation is the comparison of results from different methods to assess the extent to which they agree: the analogy of two separate lines converging at the top point of the triangle. Good integration and convergence should 'provide a whole greater than the sum of its parts' (Bryman, 2004, p.630); therefore, integration was considered by the researcher at the design, methods and interpretation level. The question at the heart of the research problem, by its very nature, necessitated a mixed-methods design. The quantitative findings were used to develop the interview guides for the qualitative phase. And a degree of data integration was achieved by reporting the qualitative findings utilising the format of the codebook of *a priori* themes from the quantitative findings, acting as a hook to hang the qualitative data on. Meta inferences drawn to integrate understandings derived from both the quantitative and qualitative data at the discussion level were achieved, offering a triangulated, convergent, integrated, holistic mixed-methods study facilitating a greater understanding of case management patient's utilisation of 999 services, A&E attendances and hospital admissions.

3.7 Reflexivity and Researcher Stance

Carolan (2003) noted that definitions of reflexivity differ, but, despite, this there is consensus that the researcher should be transparent in terms of background, experiences and influences within the study (Carolan, 2003; Hand, 2003; Parahoo, 2006). Reflexivity is important throughout the research process and should be seen in all decisions made in relation to study design, methodologies, methods, data collection and presentation of findings. In considering reflexivity, the anthropological concepts of the emic and etic viewpoints must be considered by a nurse researcher (Kottack, 2006). The emic perspective refers to viewing the research from within the participant

group; therefore, the account comes from within the culture being studied (Friedman and Schustack, 2012). The etic stance views from the perspective of the scientific observer, from outside the participant culture, thus remaining objective (Friedman and Schustack, 2012). The etic perspective advocates that members of a culture are often too involved in what they are doing to interpret their cultures impartially (Friedman and Schustack, 2012). Despite the seemingly opposing conceptions, emics and etics are now recognising the value of harmonising approaches (Jingfeng, 2013), especially in the fields of social systems such as patients within healthcare. When the two approaches are combined in ways such as mixed methods research, a richer view of a culture can be understood (Jingfeng, 2013).

Until this point in the researcher's academic career, reflexion had been focused upon the interpretivist paradigm, preferring views of ontology to be based around the premise that there were multiple realities and, as such, subjectivity was important because realities were constructed by people (Guba and Lincoln, 1989), favouring an emic viewpoint. During pre-registration, training research in nursing was becoming established and Stockwell's unpopular patient work (1972) and McCaffery's (1968) work on pain and the phrase 'pain is what the patient says it is' resonated with the researcher. Through master's preparation, viewpoints began to favour post-positivism, considering ideas around the continuum of research (Strickland, 1993).

Teddle and Tashakkori (2009) stated that an important facet of the ontological underpinning of pragmatism is knowing where the researcher sits within the process. Johnson and Onwengbuzie (2004) think that, when considering ontology, there is space for 'mental and social reality as well as the micro and more clearly material reality'. In considering an epistemological stance in light of the researcher's work, the researcher would have previously placed herself as part of the research from an emic viewpoint, collecting qualitative data from colleagues, patients and carers. Undertaking a mixed-methods study meant that part of the researcher's relationship could remain subjective within the qualitative work (Guba and Lincoln, 1989); however, when objectively analysing the data generated from the 999 callouts, A&E and admissions records, the researcher had a lesser influence, and an etic viewpoint was called for. The perspective was therefore flexible depending upon the stage of the

research, an approach advocated by Clarke (2009). Consequently, the researcher's background in community nursing and case management called for open declaration to safeguard transparency within the doctoral study and to avoid an emic perspective bias. In referring to participants as *patients* and *carers*, the researcher acknowledges her previous role as a healthcare provider within a structure system which could denote power and bias (Bourdieu, 1972). However, the researcher was keen to represent the individuals within the study as to how they acknowledge themselves within the system of healthcare: as patients and carers.

Axiology refers to the role of values in inquiry and from the pragmatist viewpoint. Teddlie and Tashakkori (2009) stated that values play a large role in interpreting results. Johnson and Onwuegbuzie (2004) suggested that pragmatism takes an explicitly value-orientated approach to research and, as such, often represents those in society who may be under-represented or discriminated against. Although the central focus of the researcher's work was on the case management programme, it also considered how this role affected individuals with long-term conditions. Thinking sociologically, Parson (1951) clearly stated those individuals who are ill must, as part of their social role, want to get better as soon as possible. In order to do so, they should seek technically competent help and co-operate. As such those individuals with long-term conditions, which by their nature are permanent, are disadvantaged; therefore, the axiology associated with pragmatism would appear to be a good 'fit.'

The researcher has set aside her personal stance in respect to ontology, epistemology and axiology; an additional rationale will now be given for the employment of a mixed methods design. One reason is the complex nature of the area under investigation. Shepperd et al. (2002) stated that studies set in the community are often plagued by methodological and conceptual difficulties. Andrews and Halcomb (2007) considered that community health research needs to be flexible, inclusive and creative, but also practical enough to take account of the complexity of the issues being studied. For this study, the role of the case manager was set up in response to the growing number of individuals with long-term conditions (DOH, 2004a, 2005c). Interventions for this group are numerous: medication, input of health and social care, so the context is complex.

By undertaking a mixed-methods design, the researcher wanted to appeal to a wide audience. Although at heart as an interpretivist and nurse with an emic perspective, the researcher can appreciate the value of combining methods and viewpoints from the etic position. In the current economic climate, commissioners are searching for evidence to justify approaches. As such, a mixed-methods design seeks to provide information that is widely understood and utilised. By combining methods, the researcher seeks to address the issues of quality of service within the reality of economic austerity.

3.8 Chapter Summary

A sequential explanatory, mixed-methods design was employed to address the overarching research aim and meet the demands of the research question. The advantages of such an approach included flexibility and holism (Andrew and Halcomb, 2007), a more comprehensive picture (Clarke, 2009), more complete accounts (Bryman, 1988), flexibility (Sandelowski, 2000) and a contribution that was greater than using a single approach (Johnstone, 2004). The chosen underpinning philosophy of pragmatism supported the flexible mixed-methods design, empowering exploration of perspectives and generalisability of findings (Howe, 1988; Johnson and Onwengbuzie, 2004; Morgan, 2007; Teddlie and Tashakkori, 2009). The quantitative studies (one and two), an investigation of 999 callout, A&E attendance and hospital admission data for case management patients formed the basis of the *a priori* outcomes utilised in the qualitative studies (three, four, five). A non-experimental cross-sectional observation approach was deployed to scrutinise the secondary data available in the NHS. Qualitative exploration of the key stakeholders' perspectives required an approach via semi-structured interviews and focus groups to explore the phenomenon of service use within the case management population. The research design enabled triangulation and convergence, and issues of validity and the stance of the researcher were given due consideration and justification. The protocols for the technical procedure of the studies are presented in Chapter 4.

Chapter 4: Study Protocols

4.1 Introduction

Chapter 3 presented the methodology chosen to investigate the emergency attendance and hospital admission patterns for the case management programme. A sequential explanatory mixed-methods design was selected with an under-pinning pragmatic ontological perspective guiding the study. The chapter begins with the findings of an initial exploration of data availability, which determined what data could be captured. Patient and public involvement in the research was undertaken followed by the design of the study protocols. Studies one and two examined 999 callout data and A&E attendance, as well as hospital admission data respectively. Synthesised findings provided the foundation for further qualitative investigation in studies three to five. In triangulating the evidence, study three, four and five explored the key stakeholders' perspectives, namely patients and carers with qualitative interviews, and case managers with focus groups respectively. All studies were conducted within one county in England and will be referred to as the area or region under investigation.

The protocols for study three (patients) and four (carers) are offered in combination due to the identikit nature of the procedures and to avoid repetition. This chapter presents the four study protocols as they were conducted in the research for the five studies.

4.2 Data Availability

To understand the availability of data for the secondary data analysis studies presented in Chapter 5, it was necessary to investigate the data infrastructure across organisations within a county in England. One Clinical Commissioning Group (CCG), two ambulance Trusts, four acute secondary care Trusts, four community care Trusts and three joint acute and community Trusts were approached for information. Face-to-face meetings took place along with telephone calls to managers of services, chief nurses and IT departments. Discussions with clinicians and a Patient and Public

Involvement group (PPI) also took place across the surveyed sites. The initial exploration highlighted many issues with conjoined working practices, NHS IT systems, legal data sharing and the routine collection of accurate A&E attendance and admission data for case-managed patients. In order to understand the nature of data availability, the relationship between organisations and data held on case-managed patients were classified into four categories: Double Trust Access (DTA), Complex Single Trust Providers (CSTPs), Simple Single Trust Providers (SSTPs), and Ambulance Trusts (AMB).

Double Trust Access (DTA) included community providers and acute providers within a locality working as separate NHS organisations with no joint working, data sharing or interoperability in place. Legal issues of sharing patient information were cited as reasons for poor interoperability along with geographical complexity, for example, case-managed patients accessing many different acute providers in one community locality. Data were not collected or available from these stand-alone acute or community Trusts. The managers within the stand-alone community Trusts collected *ad hoc* subjective data from the case managers themselves on the believed number of hospital admissions the patients on their case-loads had encountered in a given month. The subjective, inaccurate nature of these data made it unsuitable for use within the study.

Complex Single Trust Providers (CSTPs) were organisations that provided both acute and primary care services; however, all were in the infancy of amalgamation and had not yet started data sharing or had no joined IT systems in place. There were no flagged case management data available to request from these Trusts.

Simple Single Trust Providers (SSTPs) were organisations that delivered both secondary care and primary care services; that is, case management services were delivered by the same organisation that provided local acute care. Case management services in this group were run as virtual ward models, and legal data sharing was not a problem due to being able to share patient information within the one organisation. Virtual wards had arrangements in place to share the case management caseload with the IT department to identify the attendance of a case-managed patient. Two of these

organisations were then approached for data for the study; the third was unable to retrieve the information requested from their IT systems. NHS Trust one was named SSTP1 and NHS Trust two SSTP2 throughout this chapter for clarity.

Ambulance Trust (AMB) 999 callout data of case-managed patients were collected by one ambulance Trust within the initial exploration. Three SSTPs working as virtual wards had data-sharing agreements in place and worked jointly with the ambulance service to flag 999 IT systems to highlight the community case management involvement in these patients' care. This joint working practice and interoperability afforded the opportunity to request data held for 999 callouts by case-managed patients in the three virtual wards. Data received from the ambulance Trust in study one will be referred to as AMB1 for consistency throughout the chapter.

The Clinical Commissioning Groups (CCGs) received data from the community Trusts regarding the admissions of case-managed patients on a monthly basis. They received the subjective recall data collected by case managers detailing only the total number by service in a given period, with no further explanatory information. These data were neither comprehensive nor accurate enough for the level of analysis required within the study.

As part of this process, individual clinicians were engaged in both the acute and community care settings. Some clinicians were frustrated by the lack of integration of systems and by the ad hoc and subjective nature of admissions data. They were not always aware what data were collected or by whom. Some clinicians described the data as theirs, believing they had ownership of the data and that they could utilise this freely, demonstrating little comprehension of legal data sharing. However, clinicians aspired to collect accurate admission data as they saw this as a tool to improving patient care.

Following attendance at a local patient involvement group, additional feedback was obtained from patients and the public. They assumed their data were already being shared with different care providers, particularly between GPs and hospitals. In relation to whether it was appropriate for these data to be shared, they trusted that this

was already happening between healthcare providers, and they demonstrated little comprehension of the issues of data sharing, possibly because they viewed the NHS as one large single organisation rather than the multiple providers currently in place.

Multiple methods of admission data collection and management occurred across NHS Trusts in the region. Numerous computer systems were in place that did not synchronise with each other including, MMS®, PMS® PAS®, RIO®, IPM®, GAP®, Vision®, EMIS® and Lorenzo®, to name just a few. Many of these were not interoperable; hence, poor interoperability, even within a single Trust, was highlighted. Little communication transpired between the community and acute providers due data protection. In order to improve interoperability and data sharing, local initiatives were being delivered, but this was not an NHS-wide approach. The availability of data dictated the ongoing trajectory of the study; data were not available from DTAs, CSTPs or CCGs, but data were obtained from two SSTPs and one AMB representing over 19,000 episodes of care for case-managed patients.

4.3 Patient and Public Involvement in the Research

The acceptability and general concept of the research was presented to a Clinical Research Ambassador Group (CRAG) at a local NHS Trust on 01.07.2015. Feedback and advice were taken into account on the design of the whole PhD project, informing the design of the protocols. Further patient and public involvement was sought between 14.04.16-15.04.16 with case-managed patients and case managers regarding the undertaking of the qualitative research. The researcher sought advice on what issues and questions could and should be addressed during interviews/focus groups and the ‘user-friendliness’ of the consent form and information sheets. The researcher also conducted member checking of the interview and focus group manuscripts to ensure reliability and validity as well as to safeguard patient and public involvement as a thread throughout the course of the entire thesis.

4.4 Study One: 999 Ambulance Callout Data for Case-Managed Patients

The researcher sought ambulance data for patients of the case management programme to examine and scrutinise the 999 callout patterns.

4.4.1 Research Aims and Objectives

Study one aimed to understand the patterns of 999 ambulance callouts by case-managed patients within one large NHS ambulance service Trust. This was achieved by meeting the following objectives:

1. Exploration of the demographic factors of the case management patients calling out the ambulance service.
2. Comparison of the incidence of ambulance callouts from case management patients that occurred out-of-hours (Monday to Friday 6pm-8am and Weekends) with those that occurred during service operating hours (Monday to Friday 8am-6pm).
3. Comparison of the incidence of case management patients conveyed to hospital that occurred out-of-hours (Monday to Friday 6pm-8am and Weekends) with those that occurred during service operating hours (Monday to Friday 8am-6pm).

4.4.2 Setting, Recruitment and Participants

The NHS ambulance Trust was a foundation trust that worked with three large acute Trusts in the local area to share data on community patients under the care of a case manager. The ambulance service was regularly updated with caseload details of patients, who were then ‘flagged’ on the NHS ambulance service IT systems. These data-only studies did not involve human participation and used routinely collected anonymised data from the NHS Trust’s electronic record systems. (Approvals included in appendices one and two.)

4.4.3 Data Collection

Data were obtained for patients who had been flagged as case-managed for up to the previous five years or from when the data sharing was implemented – whichever was shorter. The data fields requested were:

- Age of the patient
- Gender of the patient
- Ethnicity of the patient (if available)
- First three letters of postcode (not considered identifiable)
- Date of ambulance callout
- Time of ambulance callout
- Risk reason (category given to 999 call)
- Outcome—patient conveyed to hospital or remained at home

4.4.4 Data Analysis

Initial data tidying was carried out in Microsoft Excel (version 15.0, 2013) to provide workability. Descriptive statistics were then applied to the data set. This involved presenting the data using averages and showing the data graphically. To address the proposed research questions, the ‘time of day’ of ambulance callout data were categorised into one of two groups (a) out-of-hours (Monday to Friday 1800hrs to 0759hrs and Weekends) callouts and (b) during operating hours (Monday to Friday 0800hrs to 1759hrs) callout. ‘Time of day’ was also categorised into day (08:00-17:59), evening (18:00-23:59) and night (00:00-07:59) for analysis. Binary coding of the ‘outcome’ field of ‘see and treat’ and ‘see and convey’ was also performed for further statistical testing.

Inferential statistics were then applied using IBM SPSS (Version 22.0, 2013) to apply different tests for different data types as detailed in Table 9. A *p*-value of less than 0.05 was considered significant, and, where appropriate, a Bonferroni Correction

applied to account for Type I error with multiple testing. Categorical data were subjected to Chi Square test of no association.

Table 9 Hypothesis Testing for 999 Ambulance Callout Data for Case-Managed Patients

Data Source	Hypothesis (or alternative Hypothesis)	Null Hypothesis Test	Test	Data Type
Ambulance	The number of ambulance callouts during case management operating hours differs significantly from the number of callouts outside of operating hours	The number of ambulance callouts during and outside of case management operating hours is the same	Confidence Intervals	NC*
Ambulance	There is a difference in 999 callout time being day, evening, night and the association of conveyance to hospital	There is no relationship between time of day of 999 call and ongoing conveyance to hospital	Chi squared test of no association	C
Ambulance	There is a difference in the gender of patients and 999 callouts in the in- and out-of-hours	There is no relationship between time of day of call and gender	Chi squared test of no association	C
Ambulance	There is a difference in the age of patients and 999 callouts in the in- and out-of-hours	There is no relationship between time of day of 999 call and age	Chi squared test of no association	C
Ambulance	There is a difference in the gender of patients being conveyed to hospital or seen and treated	There is no relationship in the gender of patients being conveyed to hospital or not.	Chi squared test of no association	C
Ambulance	There is a difference in the age of patients being conveyed to hospital or seen and treated	There is no relationship between gender and conveyance to hospital or not.	Chi squared test of no association	C

* (N = numerical data, C = categorical data, O= ordinal data, ND = numerical discrete data, NC = numerical continuous data)

The research process for study one's protocol is presented diagrammatically in Figure 8.

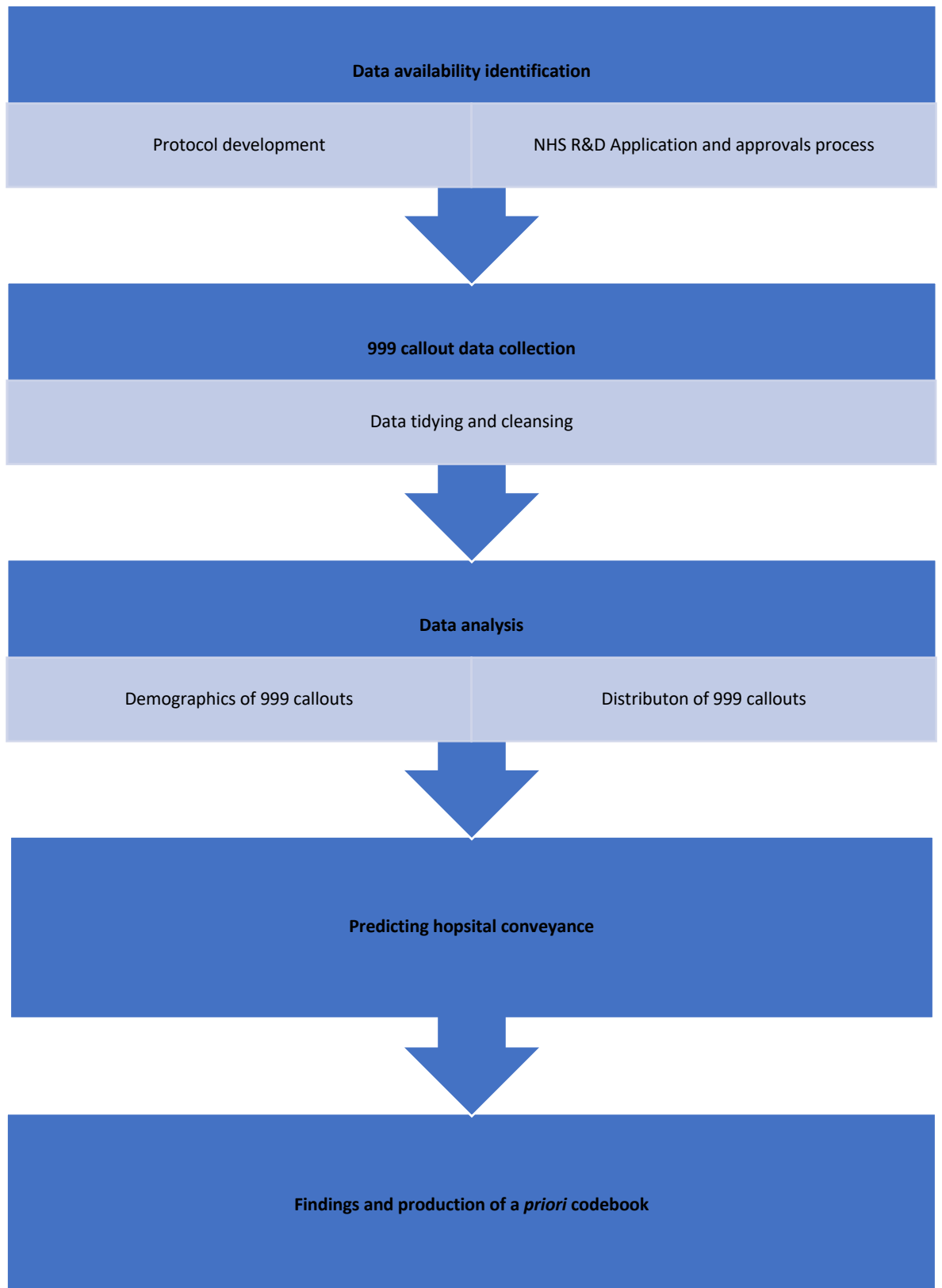


Figure 8. The research protocol process for study one.

4.5 Study Two: A&E Attendance and Hospital Admission Data for Case-Managed Patients

Study two considered the use of routinely collected hospital admission data to explore the pattern of A&E attendances and hospital admissions for patients of a case management programme. This was possible given the identification of NHS trusts that ran and managed both acute secondary care facilities and community services. Within these trusts, interoperable computer systems were utilised and community case management patients were flagged on the main hospital A&E and ward systems. Three trusts were identified within the geographical area under scrutiny, and data were received from two.

4.5.1 Research Aims and Objectives

Study two aimed to understand the patterns of A&E attendances and hospital admissions for patients of the case management programme in two separate NHS care providers. This was achieved by meeting the following objectives:

1. Exploration of the demographic factors of case-managed patients attending A&E and subsequently being admitted to hospital.
2. Exploration of the distribution of A&E attendances and hospital admissions for case-managed patients.
3. Comparison of the incidence of hospital attendances and admissions that occur out-of-hours (Monday to Friday 6pm-8am and Weekends) with those that occur during service operating hours (Monday to Friday 8am-6pm).
4. Examination of A&E conversion rate for case-managed patients
5. Comparison of case-managed patient attendances and admissions with the available Hospital Episode Statistics (HES) data at the provider and area levels.
6. Determination of the predictive factors for admission to hospital for patients of the case management population attending A&E.

4.5.2 Setting, Recruitment and Participants

Data were obtained from two conjoined acute and community NHS organisations that adopted the virtual ward model of case management. Liaison with the case management team and relevant IT departments was necessary to establish the data-extraction processes and gain initial authorisation. The study utilised routinely collected NHS data which was received fully anonymised. (Approvals included in appendices one and three).

4.5.3 Data Collection

Data were obtained for patients who had been case-managed on the virtual ward for up to the previous five years or from when from the virtual ward was implemented – whichever was shorter. The data fields requested were:

- Age of the patient
- Gender of the patient
- Ethnicity of the patient (if available)
- First three letters of postcode (not considered identifiable)
- Date of hospital admission
- Time of hospital admission
- Cost of hospital admission (Healthcare Resource Group code [HRG] or similar)
- Length of stay following admission
- Date of hospital discharge
- Admission method
- Admission source
- Primary and secondary diagnoses

4.5.4 Data Analysis

Initial data tidying and cleansing in Microsoft Excel (Version 15.0, 2013) was carried out to produce consistent and comparable data sheets for analysis. Descriptive statistics were applied to the data sets. This involved presenting the data using averages and exhibiting data graphically. In order to address one of the proposed research objectives, the ‘time of day’ data were categorised into one of two groups: (a) in-hours (service operational hours of 0800-1800 Monday to Friday) or (b) out-of-hours (all other times) and binary coded. ‘Time of day’ was further categorised into day (08:00-17:59), evening (18:00-23:59) and night (00:00-07:59) and coded for regression, along with age category (0-49yrs, 50-69yrs and 70yrs plus), gender (male-1, female-2) and ethnicity (White British and all other codes). Data were compared to Hospital Episode Statistics (HES) (NHS Digital, 2014) for the year 2013-14 for the Trust providers and area region. Categorisation of the ‘outcome’ field into ‘admitted’ and ‘not admitted’ was also required for analyses.

Inferential statistics were then applied according to the data type, utilising IBM SPSS (Version 22.0, 2013); these are detailed in Table 10. A *p*-value of less than 0.05 was considered significant, and, where appropriate, a Bonferroni Correction was applied to account for Type I error with multiple testing. Categorical data were subjected to Chi Square test of no association, and binominal logistic regression was performed to determine predictive factors for being admitted to hospital.

Table 10 Hypothesis Testing for A&E Attendance and Hospital Admission Data for Case-Managed Patients

Data Source	Hypothesis (or alternative Hypothesis)	Null Hypothesis Test	Test	Data Type
Acute	A&E attendance and gender differs when comparing the case management population with the provider-level attendances and area-level attendances	There is no difference in the gender of A&E attendances across the 3 populations	Chi square test of no association	C
Acute	A&E attendance and time of day (day, evening, night) differs when comparing the case management population with the provider-level attendances and area-level attendances	There is no difference in the time of day (day, evening, night) of A&E attendances across the 3 populations	Chi square test of no association	C
Acute	There is a difference in A&E attendance time being day evening or night and the association of admission to hospital	There is no relationship between time of day of A&E attendance and on-going admission to hospital	Chi square test of no association	C
Acute	The number of A&E attendances during case management operating hours differs significantly from the number of A&E attendances outside of operating hours	The number of A&E attendances during and outside of case management operating hours is the same	Confidence intervals	NC*
Acute	The number of hospital admissions during case management operating hours differs significantly from the number of admissions outside of operating hours	The number of hospital admissions during and outside of case management operating hours is the same	Confidence intervals	NC*
Acute	The number of hospital admissions for case management patients differs during the Day, Evening and Night time periods	The time of day does not predict admission to hospital	Non-parametric Binomial test-binary logistic regression	NC
Acute	The number of hospital admissions for case management patients differs if they are male or female in gender	Gender does not predict hospital admission	Non-parametric Binomial test-binary logistic regression	NC
Acute	The number of hospital admissions for case-managed patients differs according to ethnicity	Ethnicity does not predict hospital admission	Non-parametric Binomial test-binary logistic regression	NC
Acute	The number of admissions for case-managed patients differs according to referral source	Referral source does not predict hospital admission	Non-parametric Binomial test-binary logistic regression	NC
Acute	The mean length of stay following hospital admissions during case management operating hours differs significantly from the mean length of stay of admissions outside of operating hours	The mean length of stay of hospital admission during and outside of case management operating hours is the same	Chi squared test of no association	C
Acute	The number of hospital admissions during case management operating hours differs significantly from the number of admissions outside of operating hours	The number of hospital admissions during and outside of case management operating hours is the same	Chi square test of no association	C
Acute	There is a difference in the gender of patients being admitted to hospital or not admitted to hospital	There is no relationship between admission or discharge and gender	Chi squared test of no association	C

*(N = numerical data, C = categorical data, O= ordinal data, ND = numerical discrete data, NC = numerical continuous data)

An *a priori* codebook was produced from the findings of studies one and two and utilised in the initial deductive analysis of studies three, four and five. The research process for the study protocol is represented diagrammatically in Figure 9.

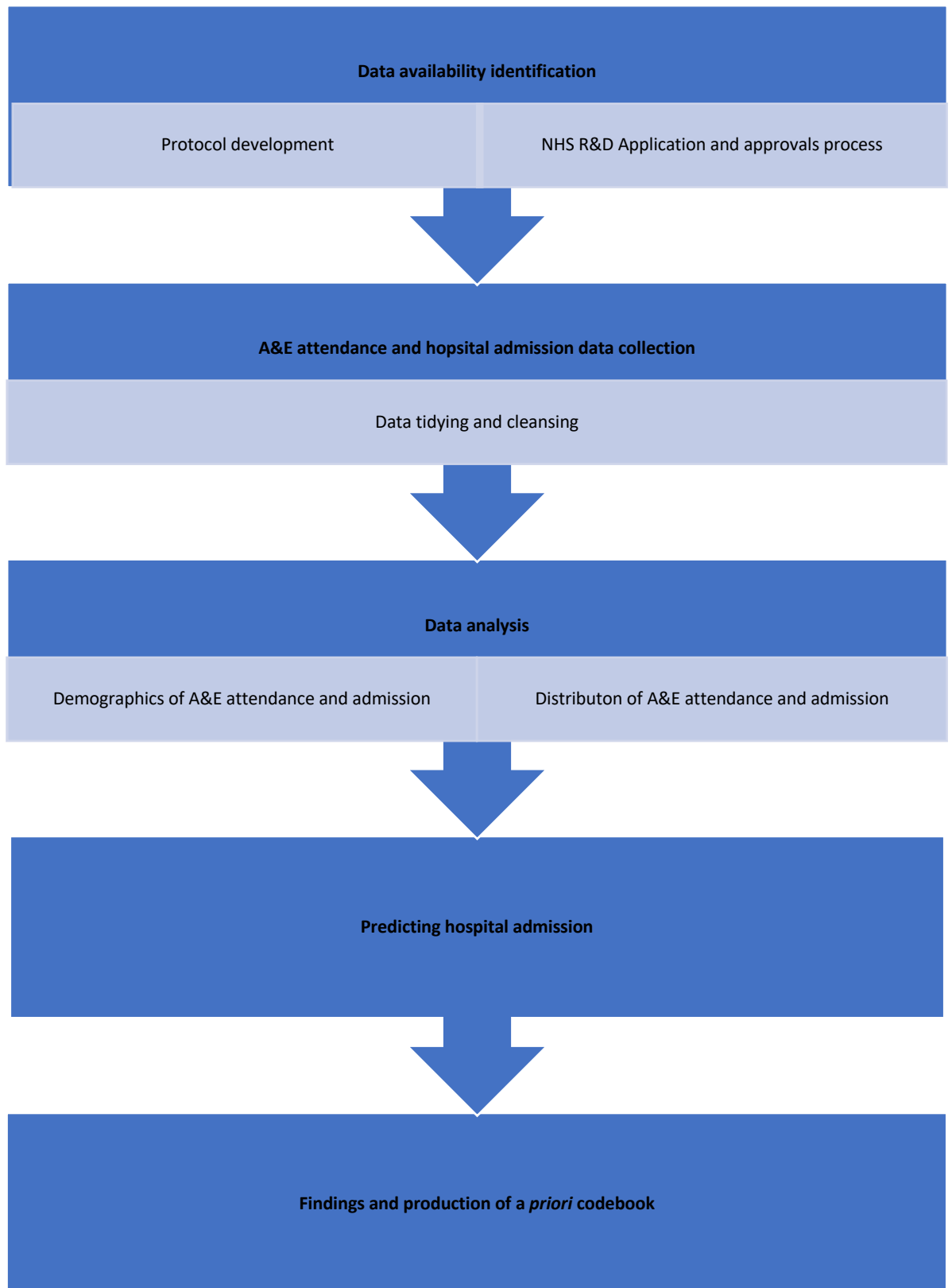


Figure 9. The research protocol process for study two.

4.6 Studies Three and Four: Patient and Carer Stakeholder Perspective Interviews

4.6.1 Introduction

The overarching aim of the qualitative study was to establish an understanding of the key stakeholders' perspective of the 999 emergency services use, A&E attendance and hospital admissions of case-managed patients. The protocols were divided into three separate arms to address specific aims and objectives for each stakeholder and are presented here as two protocols for the three studies. The protocols for studies three and four have been amalgamated into a single protocol to avoid repetition as the studies were conducted identically. The case manager focus group protocol is offered in section 4.7.

4.6.2 Research Aims and Objectives

The aims of studies three and four were to explore and understand the factors patients and carers perceive as influencing the patterns of when, why and how case-managed patients use 999 ambulance services, attend A&E and are admitted to hospital. This was achieved by meeting the following objectives:

1. To explore the factors patients perceive as influencing the patterns of 999 ambulance callouts, A&E attendances and hospital admissions.
2. To explore the factors carers perceive as influencing case-managed patients' patterns of 999 ambulance callouts, A&E attendances and hospital admissions.

4.6.3 Data Collection

The Health Research Authority (HRA), NHS Research Ethics Committee (REC) and Trust R&D approval was required prior to initiation and was granted in September 2016 (REC reference number:16/EM/0325); redacted approvals are presented in appendices four, five and six. In the participating Trust, case managers were informed

by the researcher about the study at a citywide staff meeting, and were asked to identify patients and carers of patients who had experienced an admission(s) to hospital or used emergency services in the past twelve months or during the recruitment period of the study. Participant recruitment packs were provided for dissemination to potential participants (containing: introduction letter [appendix seven], consent form [CONA and CONB] [Appendices eight, nine], and information leaflet [PIS and CIS] [Appendices ten, eleven]). Case managers were asked to explain and introduce the study to patients, where the patients had an existing relationship with them and it was deemed appropriate for the case managers to make the first approach.

The case managers identified eligible patients and carers on their caseloads and asked if they would consider talking to the researcher about their experiences using emergency services, attending A&E and being admitted to hospital. Those participants who expressed an interest verbally consented for their contact details to be passed to the researcher who then contacted them via telephone. A mutually convenient time was arranged to visit them at home or at a location preferable to the participant. A brief description of what was required of them was imparted and it was stressed to patients and carers that if they were too ill to participate on the day that this would be managed. No interviews had to be rearranged or cancelled, and all interviews were carried out in the participants' homes.

The direct contact time with participants was planned at around 60 minutes with a further 15 minutes allocated for consent prior to the interview. Total time for the study, from the time of first contact at recruitment to the time they were supplied with the lay report, was 12 months. Purposive non-probability sampling was used to recruit patients ($n=19$) and carers ($n=19$) for one-to-one interviews, taking into account the inclusion and exclusion criteria which are presented in in Tables 11 and 12.

Studies three and four did not have funds for the use of translators and the reproduction of the information material in languages other than English. Therefore, those who could not sufficiently comprehend written and spoken English to provide informed consent were excluded from the study.

Table 11 *Study Three Inclusion and Exclusion Criteria- Patients*

	Patients
Inclusion Criteria	<p>Patients who were on a community case manager caseload</p> <p>Patients who had one or more contact with emergency services, A&E or admission to hospital in the past 12 months or during the period of the study</p> <p>Patients who could give informed consent</p>
Exclusion Criteria	<p>Patients not on a community case manager caseload during the period of the study</p> <p>Patients who could not sufficiently comprehend written and spoken English to provide informed consent</p> <p>Patients unable to give informed consent</p>

Table 12 *Study Four Inclusion and Exclusion Criteria- Carers*

	Carers
Inclusion Criteria	<p>Carers who had experience with a community case manager</p> <p>Carers who had experience with a relative/friend who had experienced use of emergency services, A&E attendance(s) and/or an admission(s) to hospital during the past 12 months or during the period of the study</p> <p>Carers able to give informed consent</p>
Exclusion Criteria	<p>Carers who had no experience with a community case manager</p> <p>Carers who could not sufficiently comprehend written and spoken English to provide informed consent</p> <p>Carers unable to give informed consent</p>

For consent to be ethical and valid, participants were required to be capable of giving consent for themselves, typically in the form of written consent. However, as many case-managed patients were elderly or incapacitated by chronic morbidity, some may have had the potential to be unable to give written consent but may still have wished to participate in the study. An alternative recorded verbal consent was authorised by

the NHS REC for this circumstance. For this to be ethical, the researcher would read the participant information sheet (PIS, CIS) (Appendices ten, eleven) to the participant, and the researcher would ensure that the participant had understood the purpose and nature of the study, what the research involved, the alternatives to taking part, and was capable of making a free decision. The participant would verbalise and be audio recorded, stating the date, their name, that they had understood what was required of them and that they wished to participate. During studies three and four, the alternative consent procedure, although available, was not required or applied.

The qualitative research interviews were a conversation with structure: semi-structured interviews which allowed patients and carers to share information significant to their use of 999 emergency services/A&E attendance/admission to hospital. All participants were asked the same questions within a flexible framework (Interview Schedules, Appendices twelve, thirteen), and the interview areas were developed from themes that emerged from studies one and two and the literature. The interviews were audio recorded on a Sony DSC-2 digital encrypted dictaphone and notes were taken to pick up on nonverbal behaviour and emergent themes.

Full written informed consent was gained on the day of the interview by the researcher (CONA and CONB, Appendices eight, nine), ensuring the potential participant felt aware of their role and felt comfortable continuing. A brief description of what was required of them was verbally imparted and care was taken to ensure they understood the information sheet and procedures (Appendices ten, eleven). Such an approach acknowledged that gaining informed consent was more than simply reading and signing a form; rather, it was part of the process that takes place over time and includes human dialogue.

4.6.4 Data Analysis

Intelligent verbatim transcription was conducted by 'First Class Secretarial Services' (2017). Verification of the recordings against the transcribed text was conducted throughout the process and analysed with the field notes to capture contextual factors and non-verbal communications that may have been missed in the text. Member

checking was also conducted; the researcher invited the participants to read their interview transcript for clarification of meaning and accuracy, allowing for amendments and augmented credibility.

The interviews were analysed following Creswell's data analysis spiral (2007): tapes were listened to and an acquisition of a feeling for what was being said occurred. The next step encompassed transcribing the tapes verbatim (conducted by private agent). Transcripts were then read, and tapes re-listened to in order to make sense of the whole before breaking it into parts. NVIVO qualitative data analysis software Version 22 (QSR, 2015) was used to aid category formation and classification. Category construction was developed through describing, classifying and interpreting the data. The researcher then stepped back from the data to form larger meanings of what was going on. A constant iterative process of checking and rechecking the emerging themes was conducted on a regular basis. The final step was representation, wherein the data were reflected upon, aggregated and presented, with metaphors offered. Creswell's diagrammatic spiral is presented in Chapter 3 section 3.3.2.

Initial analysis was conducted using the *a priori* codebook (section 5.5) of five themes developed from the outcomes of study one and two. The primary deductive phase was followed by an inductive exploratory phase to allow for the development of additional emerging themes evolving from the data during category formation and classification. Data from study three and four were analysed independently then brought together for presentation within chapter six, with comparison and appraisal offered and as a means of triangulation within the mixed methods approach. Finally, the data were interpreted in relation to the current understanding available in the literature. The research protocol process is presented in Figure 10.

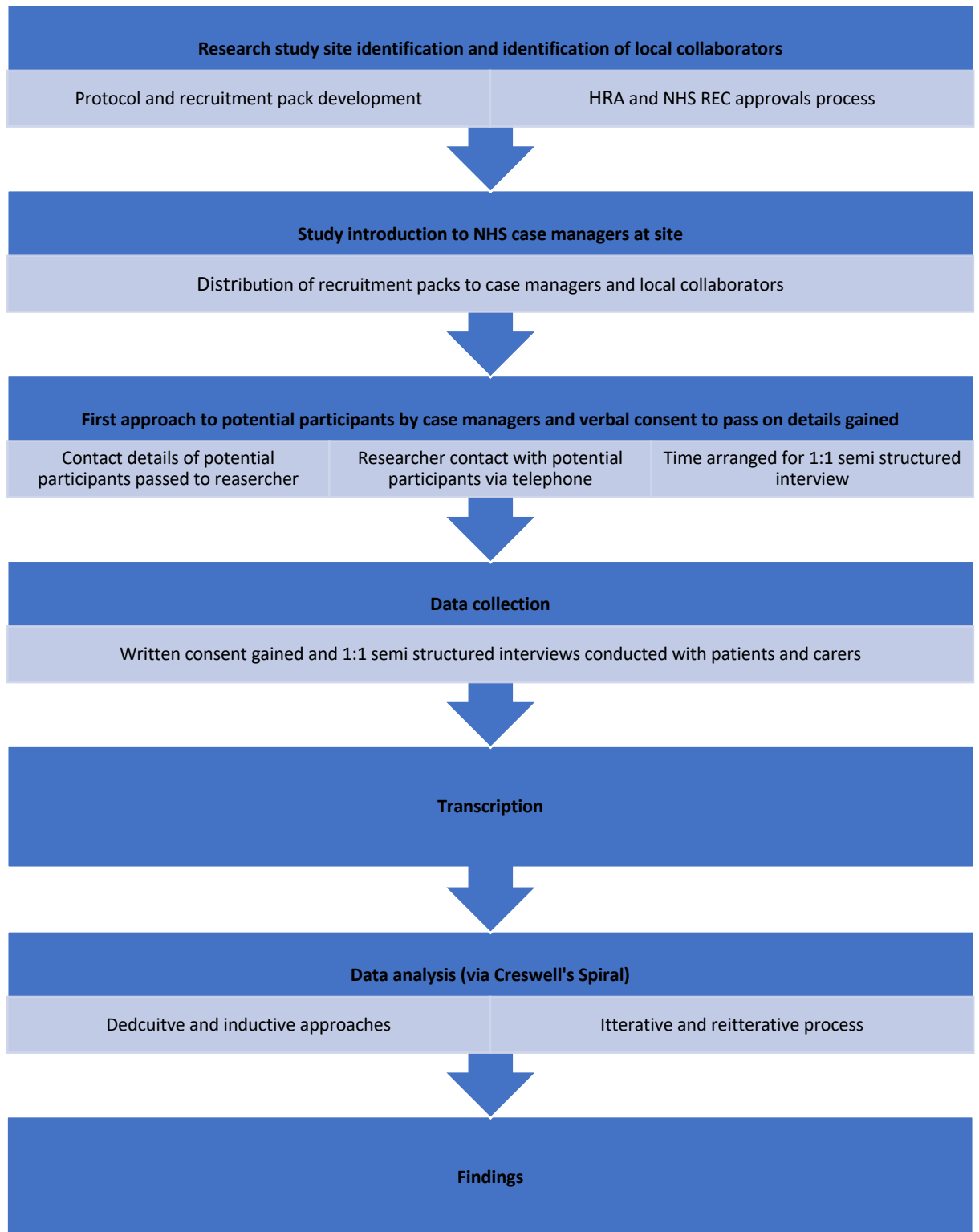


Figure 10. The process protocol for studies three and four.

4.7 Study Five: Case Manager Stakeholder Perspective Focus Groups

4.7.1 Introduction

Three semi-structured qualitative focus groups with case management nurses were undertaken to investigate the staff stakeholder perspective.

4.7.2 Research Aims and Objectives

The aim of this study was to explore and understand the factors that case managers perceive to influence the patterns of when, why and how case-managed patients use 999 ambulance services, attend A&E and are admitted to hospital. This was achieved by meeting the following objective:

1. To explore the factors case managers perceive as influencing case-managed patients' patterns of 999 ambulance callouts, A&E attendances and hospital admissions.

4.7.3 Data Collection

Case managers were recruited from the same NHS community trust that was employed for studies three and four, and HRA, REC and R&D approvals encompassed all three qualitative studies (Appendices four, five, six). Three focus group dates were planned with local collaborators and held at mutually agreed-upon, convenient times, and in quiet locations which were free from distractions. All focus groups took place in private rooms within the NHS Trust premises and were held within the localities' monthly reflection team meetings. This was to ensure that travel costs and times were kept to a minimum. A focus group was held in each of the three localities within the NHS Trust's case management service.

Case managers were introduced to the study at a citywide case management service meeting. Participant information packs (containing participant invite [Appendix

fourteen], participant information [CMIS] [Appendix fifteen] sheet and consent form [CONC] [Appendix sixteen]) were distributed ahead of the event, allowing time for potential participants to consider the information. Case managers could sign up to participate at this meeting if they wished or just turn up to attend on the day. Local collaborators sent email reminders of the dates and times along with electronic versions of the participant information pack prior to the focus groups. Ample time was allocated for potential participants to read the information and ask questions to the researcher as required. At the focus groups, participants were again asked if they had any questions prior to signing the consent form and were reminded that they could withdraw at any time without penalty.

The direct contact time with case managers was for up to 90-minutes for the face-to-face focus groups and an additional 15 minutes prior to this for consent. Total time in the study, from first contact at recruitment to the time they were supplied with the report, was 12 months.

The researcher purposefully invited all case managers in the participating NHS Trust to attend if desired and in line with the inclusion and exclusion criteria presented in Table 13. It was anticipated that five to ten nurses per focus group would attend to ensure that rich data were obtained. Approval was sought for up to 30 attendees in total at the three focus groups.

Table 13 *Study Five Inclusion and Exclusion Criteria- Case Management Nurses*

	Case Managers
Inclusion Criteria	Individuals who worked as a case manager and volunteered or purposefully sampled Consent to participate
Exclusion Criteria	Those who were purposefully sampled but declined

Focus groups were audio recorded on a Sony DSC-2 digital encrypted dictaphone and field notes were taken to pick up on nonverbal behaviour, group dynamics and

emergent themes. The researcher acted as the facilitator and field note taker (Focus group schedule appendix seventeen).

4.7.4 Data Analysis

Analysis of the focus group data followed the protocol of studies three and four as presented in 4.5.5. Intelligent verbatim transcription was conducted by 'First Line Secretarial Services' (2017) and Creswell's spiral of analysis (2007) and categorisation via NVIVO (Version 22, QSR, 2015) underscored the methods of analyses. The research process for study five can be seen in Figure 11.

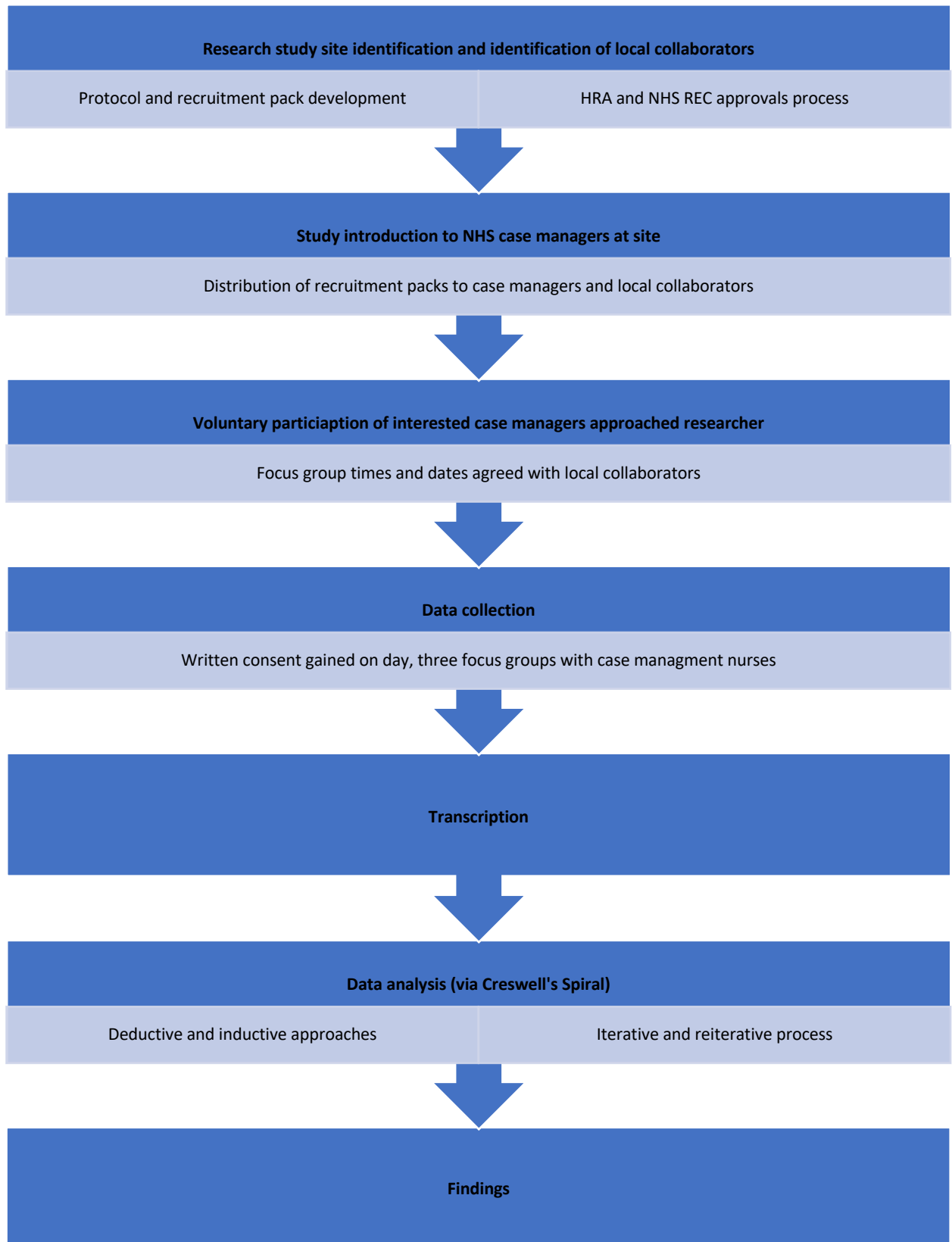


Figure 11. The research process protocol for study five.

4.8 Data Protection and Confidentiality

4.8.1 Confidentiality and Anonymity

Participant confidentiality was always maintained and the study complied with the requirements of the Data Protection Act (Great Britain, 1998). The researcher and NHS site staff complied with the requirements with regards to the collection, storage, processing and disclosure of personal information, and they upheld the Act's core principles. Participation in the research was confidential; the researcher did not divulge the details of participants to anyone outside of the immediate research team. This right to confidentiality and anonymity was made clear in the participant information sheets.

4.8.2 Data Protection

Electronic data were collated on the University's secure server, requiring staff login to gain access. Data that existed on paper or other physical forms were held in a lockable filing cabinet within the facilities of the University. Coded, depersonalised data were created whereby the participants' identifying information were replaced by an unrelated sequence of characters. Secure maintenance of the data and the linking code was stored in separate locations using encrypted digital files with password-protected folders and storage media. The only individuals with access were limited to the project team and for necessary quality control, audit and analysis only. Data will be stored securely on the University server for a period of five years.

4.8.3 Right to Approach and Withdrawal

All potential participants were approached in a way that did not breach their right to privacy and data protection. Case management nurses for the participating NHS Trust approached potential patient and carer participants in person and gained initial verbal consent. The researcher was only privy to details of those who wished to participate. During study five, the researcher introduced the study to the staff group, and

volunteers were appealed for. Information sheets were provided prior to the focus groups and potential participants were asked to supply their details to the researcher.

Participation was completely voluntary, and participants were free to withdraw at any time and without giving a reason. It was emphasised that data could be withdrawn up to two weeks after it had been collected, after which time it would have been incorporated into the analysis. No participants withdrew from studies three, four or five.

4.9 Chapter Summary

Five studies were conducted using the protocols detailed above. The findings are presented in Chapter 5 for studies one and two and Chapter 6 for studies three, four and five. They are conjointly deliberated in Chapter 7.

Chapter 5: Findings Of Studies One and Two

Findings of the Examination of 999 Callout Data, A&E Attendances and Hospital Admissions for Patients of the NHS Case Management Programme

5.1 Introduction

This chapter presents the findings of studies one and two, the 999 callouts, A&E attendances and hospital admissions for case-managed patients respectively. The chapter begins with setting the context of how the data were retrieved and from whom, setting the scene with regard to the organisations. Following this, explanation is offered with regard to data accuracy issues and some missing data problems that were encountered prior to analysis commencing. Examination of the 999 callout data of case-managed patients from one NHS ambulance Trust is presented followed by the A&E attendance and hospital admission data for case-managed patients from two large NHS acute Trusts. Discussion of the results is presented in Chapter 7. Due to the size of the data, not all findings have been reproduced graphically. Figure 12 gives an overview of the data received for studies one and two, highlighting the intersections.

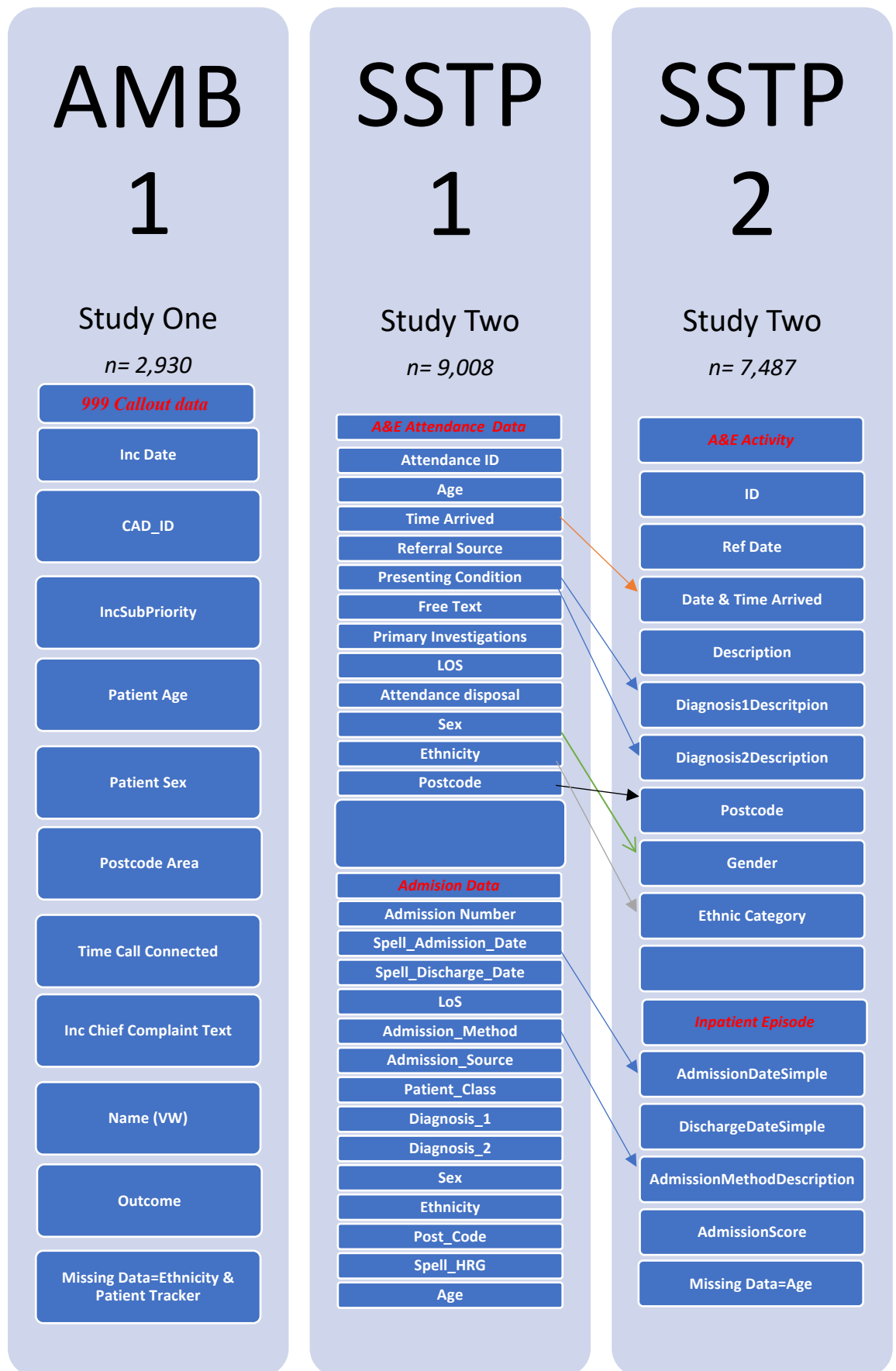


Figure 12. Overview of data received for studies one and two with intersections.

5.2 Context Setting

5.2.1 Data Context

Study one investigated the 999 ambulance callouts for case-managed patients. Data were obtained from one large NHS ambulance Trust as per the classifications previously discussed. AMB1 covers an area of 5,000 square miles, serving a population of over 5 million and responds to over 3000 callouts every day. The fully anonymised dataset contained just under 3000 callout episodes for case-managed patients and was supplied in a comma-separated values (CSV) format. Table 14 provides information on the data variables obtained with a brief descriptor for understanding.

Table 14 *Data Fields Provided by AMB1 with Descriptors*

Data Field Provided	Descriptor
Inc Date	Date of 999 call
CAD_ID	Ambulance service ID code- not used
IncSubPriority	Priority category of 999 call
Patient Age	Age of the case-managed patient
Patient Sex	Gender of case-managed patient
Postcode Area	First three digits of postcode
Time Call Connected	Time call first received by 999
Inc Chief Complaint Text	Clinical reason given for 999 call
Name	Virtual ward name/area
Outcome	Outcome of call to 999, whether conveyed to hospital or not.

There was no publicly available Hospital Episode Statistics (HES) data from which to draw comparisons with this dataset. The ambulance service Quality Indicators and Clinical Outcomes Data, (NHS England, 2014c) offered an alternative source for some

comparison. Specifically, the outcome of the call was considered at the national level, area level and case management level. No other comparable datasets were available for analysis.

Study two considered the A&E attendances and hospital admissions for patients of the case management programme. Data were obtained from two simple single Trust providers, SSTP1 and SSTP2, generating 9,008 and 7,487 episodes of care respectively in CSV file format. The original protocol outlined a six-month data retrieval process in order to obtain continuously updated and timely data. However, one Trust (SSTP2) was decommissioned shortly after the first data retrieval, and another Trust (STTP1) was unable to provide repeat data extractions.

STTP1 is an NHS Foundation Trust, providing hospital and adult community services to the populations of the north west of the county under investigation. With one large secondary care site providing the main hospital facilities, seeing over 100,000 A&E visits per year, it also provides a variety of community services covering the local area. The community case management service for long-term conditions is provided in the format of a virtual ward. Data were received in two separate files—attendances at A&E and admissions—and required some data cleaning. Tables 15 and 16 present the data fields received for A&E attendances and admissions respectively, with relevant descriptors for illumination. The findings from SSTP1 were published in *Applied Nursing Research* in February 2017 (Appendix eighteen).

Table 15 *Data Fields Provided by SSTP1 for A&E Attendances with Descriptor*

Data Field Provided	Descriptor
Attendance ID	Internal ID code used by trust
Age	Age of case-managed patient
Time Arrived	Time arrived at A&E
Referral Source	How arrived at A&E, e.g. ambulance etc.
Presenting Condition	Clinical conditions and reasons for attendance-
Free Text	Further clinical information provided in free text format
Primary Investigations	Initial tests done in A&E e.g. X-ray etc.
LOS	Length of stay in days
Attendance disposal	Outcome of attendance e.g. admitted etc.
Sex	Gender of case-managed patient
Ethnicity	Category of ethnic identification
Postcode	First three digits of postcode

Table 16 *Data Fields Provided by SSTP1 for Admissions to Hospital with Descriptors*

Data Field Provided	Descriptor
Admission Number	Internal ID code used by trust
Spell_Admission_Date	Date of admission to hospital for case-managed patient
Spell_Discharge_Date	Discharge date from hospital for case-managed patient
LoS	Length of stay in days
Admission_Method	Route was admitted to hospital, e.g. via emergency via A&E etc.
Admission_Source	Place was admitted from e.g. usual place of residence or other etc.
Patient_Class	Type of admission, e.g. ordinary or day case etc.
Diagnosis_1	Primary clinical reason admitted
Diagnosis_2	Secondary clinical reason admitted
Sex	Gender of case-managed patient
Ethnicity	Category of ethnic identification
Post_Code	First three digits of postcode
Spell_HRG	Healthcare resource group code
Age	Age of case-managed patient

SSTP2 is an NHS Foundation Trust and has approximately 250,000 A&E department attendees per year, covering the east region of the county under investigation. Although it is an acute hospital Trust with three large secondary care sites, it does provide some community care in the south of the local area covered by the Trust. Specifically, it provided a virtual ward model of case management to patients with complex, multiple long-term conditions at risk of hospitalisation, although this service was decommissioned in December 2015. Data were received in one file that required some data cleaning. Table 17 presents the fields received.

Table 17 *Data Fields Obtained from SSTP2 for Both A&E Attendances and Hospital Admissions with Descriptors*

	Data Field Provided	Descriptor
A&E Activity	ID	Internal ID code used by Trust
	Ref Date	Date referred to flagging system by case management service
	Date Arrived	Date arrived in A&E
	Description	Which A&E department attended
	Diagnosis1Description	Primary clinical reason for attendance
	Diagnosis2Description	Secondary clinical reason for attendance
	Postcode	First three digits of postcode
	Gender	Gender of case-managed patient
	Ethnic Category	Category of ethnic identification
Inpatient Episode	AdmissionDateSimple	Date admitted to hospital
	DischargeDateSimple	Date discharged from hospital
	AdmissionMethodDescription	Route came to be admitted, e.g. via A&E etc.
	AdmissionScore	Score assigned to the admission

5.2.2 Data Quality Issues

Upon receipt of the data, initial review and data cleaning activities identified two data quality issues: one relating to inconsistent data and the other to data accuracy. The

labels given to the data variables differed by Trust despite the requests made per protocol, as can be seen in the different fields for each of the organisations provided in Tables 18 and 19. Therefore, in some instances, the variables were equivalent but labelled differently: for example, ‘Presenting condition’ in the SSTP1 dataset and ‘diagnosis\description’ in the SSTP2 dataset. However, in some cases, one dataset contained additional data fields; for example, the SSTP1 dataset explicitly provided the variable ‘Attendance disposal’, whereas this could only be deduced as either admitted or discharged for the SSTP2 dataset by the presence of admission data. In other cases, variables were completely absent, e.g., ‘Age’ in the SSTP2 dataset and ‘Ethnicity’ in AMB1. These inconsistencies prevented the aggregation of data to generate a super dataset; therefore, data have been analysed according to the source of the data. Additionally, AMB1 did not provide a patient tracker code so analysis could not look at repeat callers of 999. This limited the interpretation of predictive statistical models which require independent cases. Within all datasets, missing data were evident: ethnicity, presenting condition and age data fields; the extent to which these occurred are detailed in the relevant findings’ sections.

Data accuracy issues were noted across the data sets during initial scrutiny, some of which encumbered planned statistical analysis. Ethnicity coding was different across the two datasets for which it was supplied, with different categories being used to describe similar ethnic groups. Little alignment was seen with the Health and Social Care Information Centre (HSCIC) (HSCIC, 2016) or Census categories (Office for National Statistics (ONS), 2011). Different numbers of categories to describe ethnicity were used (SSTP1=12, SSTP2= 14).

Age data was not always documented as a number with ‘80s,’ ‘80’s,’ ‘X’ and ‘Null’ being recorded in SSTP1 and AMB1. ‘Presenting condition’ showed the greatest variation in coding with more than 200 diagnostic labels, many of which represented the same or similar condition with minor differences, that is, an abbreviation or placement of an apostrophe. Examples included UTI, disorder of urinary system and Urinary Tract Infection. Inaccuracies in data coding were the highest in this field with no obvious relationship to nationally recognised HRG codes (HSCIC, 2013, 2014), ICD10 codes (Connecting for Health, 2011; WHO, 2015) or DOH reference cost codes

(DOH, 2012a). The vague and unspecific response ‘Medical other’ represented 53% of the dataset in SSTP1, making meaningful deductions about the role presenting condition had in attendance or admission difficult. At the individual patient level, repeat data inaccuracies occurred; for example, in SSTP2, a male patient was coded as attending A&E four times for ‘inflammatory disorders of the vagina’.

Data inaccuracies reduce the reliability of the findings and further imposed limitations on the interpretations made. Nonetheless, it is typical to have errors and omissions in these types of healthcare datasets and overall the large amount of data that was worked with improves the validity and reliability of what was found. In respect to the findings of these studies, limitations are discussed in detail in Chapter 7.

5.3 999 Callout Data for Case-Managed Patients (AMB1): Study One

5.3.1 Introduction

For the period 01.05.13-29.03.16, there were 2,931 999 callouts from case-managed patients. One record was from a four-year-old child, which was included in error and removed from the dataset, leaving 2930 callouts for the period. Due to the individual reference codes being given to every callout, it was not possible to ascertain how many patients this was from or if there were any recurrent callers. In order to provide a single year’s data, the researcher selected a financial year for comparison. The full financial year data was only available for the period 01.04.14-31.03.15; however, this did not include data from all of the participating case management services in the area. Therefore, it was decided to utilise the period 01.04.15-29.03.16 (the 29th of March being the date the data was extracted). For the period 01.04.15- 29.03.16, there were 1,461 999 callouts by case-managed patients in AMB1, and this financial year provided the most thorough analysis due data from all virtual ward areas. At the area level there was 1,068, 959 999 calls received in 2015-16 (NHS England, 2014c).

5.3.2 Demographics of 999 Callouts

Ten anomalous codes were present in the dataset for age: 50s, 60's, 70's, 70s, 80's, 80s, 80 year, 90's, NULL and X; these represented 149 records and have been removed in the data presented in Figure 13. The mean age of case-managed patients making 999 callouts was 81.69 years (mode= 83, median= 83, SD 9.90, 95% CI+- 0.36 [81.33, 82.05] range 19-103). During 2015-2016 the mean age of case-managed patients making 999 callouts was 81.07 years (mode= 82, median= 83, SD 16.42, (95% CI+- 0.84 [80.23, 81.91]), range= 19-103). The average mean and median age at area level population was 39 in the 2011 Census (Office for National Statistics, 2011). No data were available on the demographics of ambulance callers for the area or provider levels.

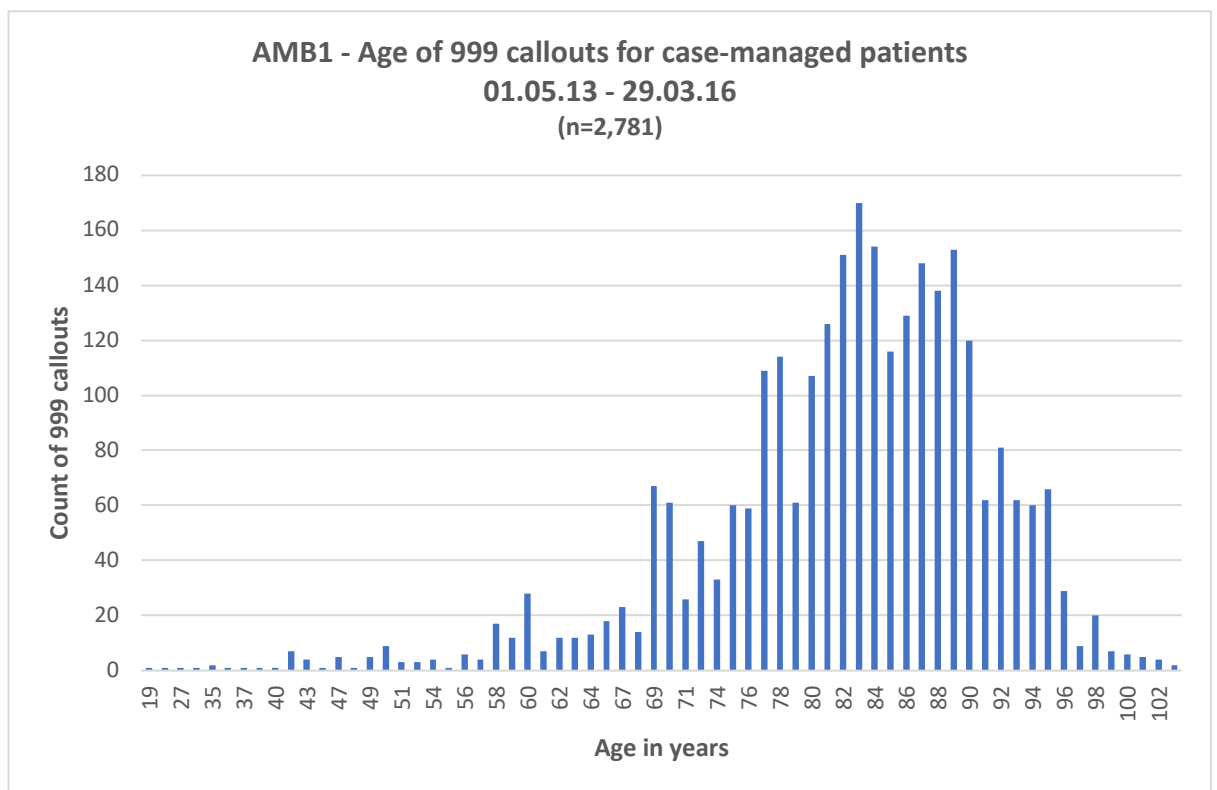


Figure 13. AMB1- Age of 999 callouts for case-managed patients 999 01.05.13-29.03.16.

When classifying age according to three categories, the majority of patients were aged 70 or older (89.72%, 95% CI+- 1.13 [88.59, 90.85]) for the period 01.05.13-29.03.16. During 01.04.15-29.03.16, 87.92% (95% CI+- 1.71 [86.21, 89.63]) of case-managed

patients were 70 years and older. These can be seen in Figure 14. The 149 anomalous entries were removed from this dataset also.

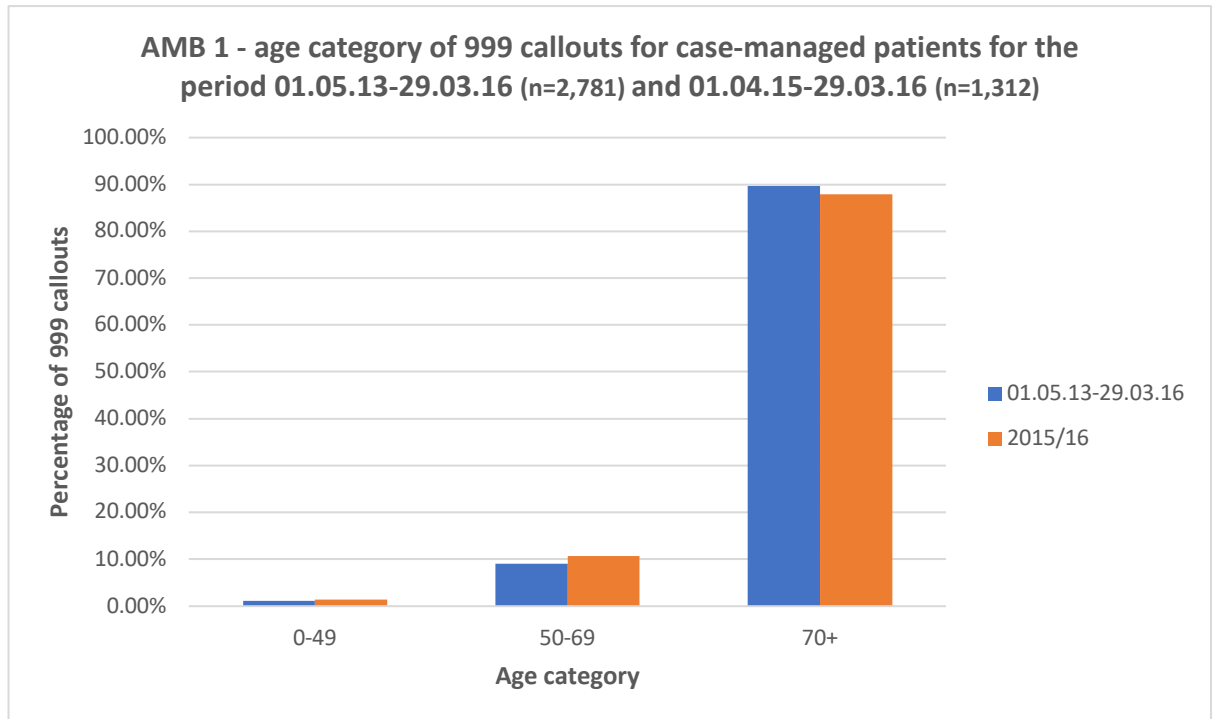


Figure 14. AMB1- Age category of 999 callouts for case-managed patients 01.05.13-29.03.16 and 01.04.15-29.03.16.

With regard to gender, 44.20% (95% CI+/- 1.8 [42.40, 46.00]) of callouts were by males, 51.47% (95% CI+/- 1.81 [49.66, 53.28]) by female and 4.33% (95% CI+/-0.74 [3.59, 5.07]) were documented as unclassified (see Figure 15). During the financial year 01.04.15-29.03.16, 44.56% (95% CI+/-2.55 [42.01, 47.11]) of callouts were from males and 51.46% (95% CI+/- 2.56 [48.84, 53.96]) from females. Unclassified accounted for 4.04% (95% CI+/- 1.01 [3.03, 5.05]) of the dataset. Area level Census data recounts 51% of the total population as female and 49% male (Office for National Statistics, 2011). No data were available on the gender of 999 callouts for the area or provider level.

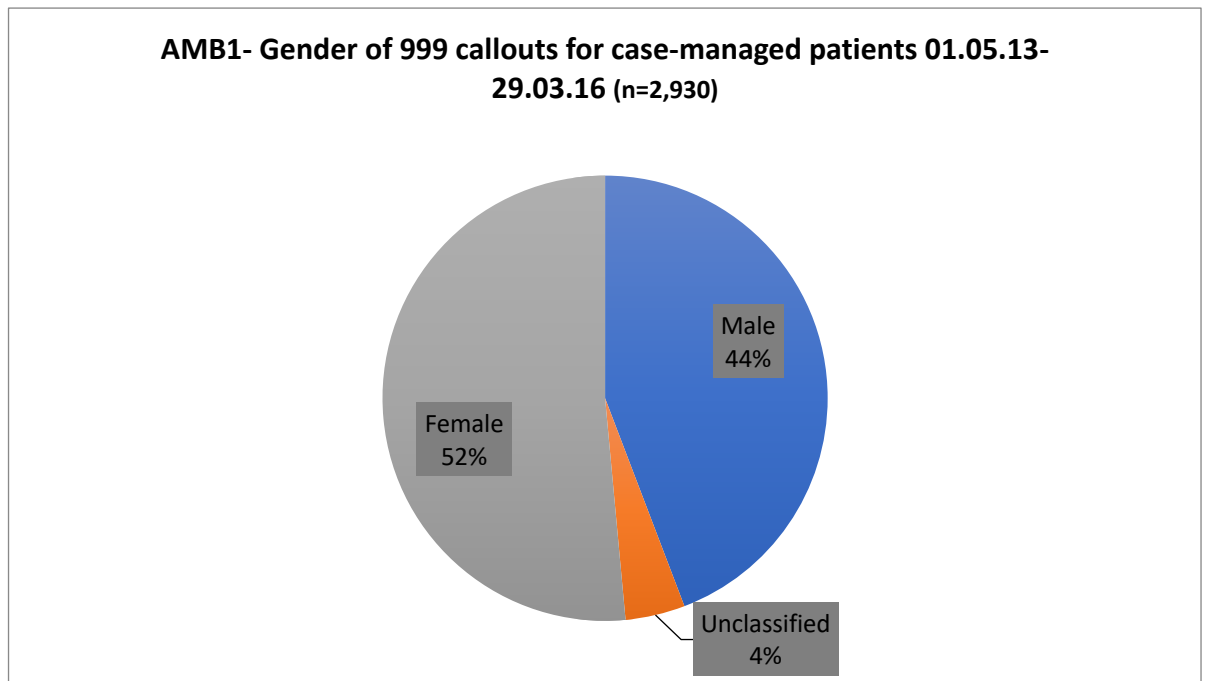


Figure 15. AMB1- Gender of 999 callouts for case-managed patients 01.05.13-29.03.16.

The 'IncSubpriority' category was the code used by emergency services to grade the severity of the call and to establish the response needed and on what time scale. See Table 18 for a description of the codes utilised.

Table 18 *AMB1- 'IncSubPriority' Category Response Description*

Response	Description
Red 1 (Respiratory / cardiac arrest)	Response in 8 minutes Two resources should be dispatched to these incidents where possible. Patient suffered cardiac arrest or stopped breathing.
Red 2	Response in 8 minutes All other life-threatening emergencies.
Green 1	Response in 20 minutes Blue lights and sirens
Green 2	Response in 30 minutes Blue lights and sirens
Green 3	Telephone assessment within 20 minutes Response within one hour (no blue lights required)
Green 4	Telephone assessment within 60 minutes. Telephone assessment within 60-minutes.
Transport	Non-urgent transport
Urgent response care	Urgent response car dispatched

For the period 01.05.13- 29.03.16, 49.73% (95% CI+- 1.81 [47.92, 51.54]) of callouts were classified green 2, and the second-most recorded category was red 2 with 35.70% (95% CI+-1.73 [33.97, 37.43]) of calls, which were life-threatening emergencies. Urgent response cars were dispatched in 7.47% (95% CI+- 0.95 [6.52, 8.42]) of cases and 0.03% (95% CI+- 0.06 [0, 0.09]) of calls had an ‘unrecorded category.’ Similar patterns were seen during 01.04.15-29.03.16. A comparison of the two datasets can be seen in Table 19.

Table 19 *AMB1- 'IncSubPriority' of 999 Callouts for Case-Managed Patients 01.04.15-29.03.16 and 01.04.15-29.03.16*

	01.05.13-29.03.16	01.04.15-29.03.16
Green 2	49.73% (95% CI+- 1.81 [47.92, 51.54])	46.95% (95% CI+- 2.56 [44.39, 49.51])
Red 2	35.70% (95% CI+-1.73 [33.97, 37.43])	38.47% (95% CI+- 2.49 [35.98, 40.96])
Urgent response car	7.47% (95% CI+- 0.95 [6.52, 8.42])	6.84% (95% CI+- 1.29 [5.55, 8.13])
Green 4	4.98% (95% CI+- 0.79 [4.19, 5.77])	4.72% (95% CI+- 1.09 [3.63, 5.81])
Red 1	2.01% (95% CI+- 0.51 [1.5, 2.52])	2.94% (95% CI+- 0.87 [2.07, 3.81])
Transport	0.07% (95% CI+- 0.01 [0, 0.1])	0.07% (95% CI+- 0.14 [0, 0.21])

In examining the 'presenting condition' in the case management population's 999 callouts, 72 categories were used as responses. Numerous duplications were seen, such as 'eye problem' and 'eye injury,' 'chest pain' and 'chest pain cardiac', as were undecipherable codes such as, 'DX011'. The top four documented reasons for contacting emergency services were:

1. falls 756 (25.80% (95% CI+- 1.58 [24.22, 27.38])
2. breathing problems 538 (18.36%, 95% CI+- 1.4 [16.96, 19.76])
3. generally ill 267 (9.11%, 95% CI+- 1.04 [8.07, 10.15])
4. chest pain 178 (6.08%, 95% CI+- 0.87 [5.21, 6.95]).

For the period 01.04.15-29.03.16, 60 'presenting condition' codes were utilised. The top four categories for case management 999 callouts were:

1. breathing problems 316 (21.63%, 95% CI+- 2.11 [19.52, 23.74])
2. falls 248 (16.97%, 95% CI+- 1.92 [15.05, 18.89])
3. generally ill 113 (7.73%, 95% CI+- 1.37 [6.36, 9.10])
4. chest pain 76 (5.20%, 95% CI+- 1.14 [4.06, 6.34])

Data were received from the ambulance trust that covered three NHS case management services; these were broken down into six virtual ward areas by ambulance service, which were unidentifiable to the researcher and are presented in Table 20.

Table 20 *AMBI- Number of 999 Callouts for Case-Managed Patients per Virtual Ward Area*

Virtual Ward	Year				Total
	2013 (01.05.13-31.12.13)	2014	2015	2016 (01.01.16-29.03.16)	
Virtual Ward A1 (01.05.13-29.03.16)	12.46%	30.85%	15.87%	1.06%	60.24%
Virtual Ward A2 (20.04.15-29.03.16)	0.00%	0.00%	8.12%	1.95%	10.07%
Virtual Ward A3 (07.05.15-29.03.16)	0.00%	0.00%	10.61%	1.95%	12.56%
Virtual Ward A4 (25.04.15-29.03.16)	0.00%	0.00%	6.45%	2.22%	8.67%
Virtual Ward A5 (09.05.15-29.03.16)	0.00%	0.00%	6.01%	1.40%	7.41%
Virtual Ward SLW (11.10.15-29.03.16)	0.00%	0.00%	0.51%	0.55%	1.06%
Total	12.46%	30.85%	47.58%	9.11%	100.00%

It was seen that virtual ward A1 had been jointly sharing information with the ambulance service the longest, hence the largest proportion of calls. The other virtual ward areas commenced joint working at various points in 2015 which explains the number of callouts per virtual ward area, as can be seen in Table 20. No provider or area level data were available for comparison.

5.3.3 Distribution of 999 Callouts

When examining 999 callouts of case-managed patients from 01.05.13-29.02.16, September received the greatest number of callouts at 348 (11.88%, 95% CI+-1.17 [10.71, 13.05]) and March received the lowest number of calls with 144 (4.91%, 95% CI+- 0.78 [4.13, 5.69]). During the period 01.04.15-29.03.16, January 2016 was the busiest month with 10.06% (95% CI+- 1.54 [8.52, 11.6]) of calls and April received the lowest number of calls with 5.41% (95% CI+- 1.16 [4.25, 6.57]). Busiest refers to the greatest number of 999 callouts for case-managed patients and quietest the lowest number and does not reflect acuity. March 2016 was recorded as having no 999 calls for case-managed patients; however, given that this was not the full month's reporting period, this could have been due to a delay in updating the records. Data are presented in Figure 16.

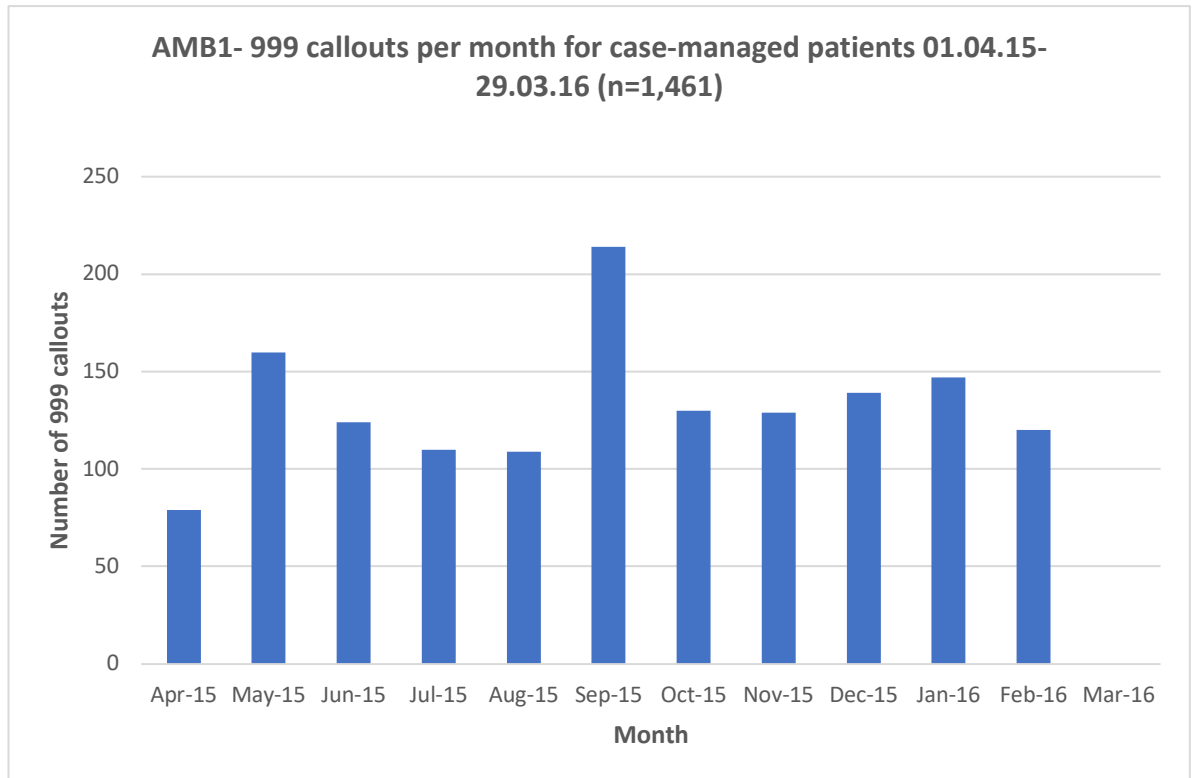


Figure 16. AMB1- 999 callouts per month for case-managed patients 01.04.15-29.03.16.

In terms of days of the week, Monday (15.32%, n=449, 95% CI+- 1.3 [14.02, 16.62]) was the busiest day for calls during the period 01.05.13-29.02.16, and Saturday the quietest day receiving 13.00% (n=381, 95% CI +- 1.22 [11.78, 14.22]) of callouts. During 01.04.15-29.03.16, Friday was the busiest day (n=224, 95% CI+- 1.85 [13.48, 17.18]) and Thursday the quietest day (n=186, 95% CI+- 1.71 [11.02, 14.22]). The graphical appearance of both data sets is presented in Figure 17.

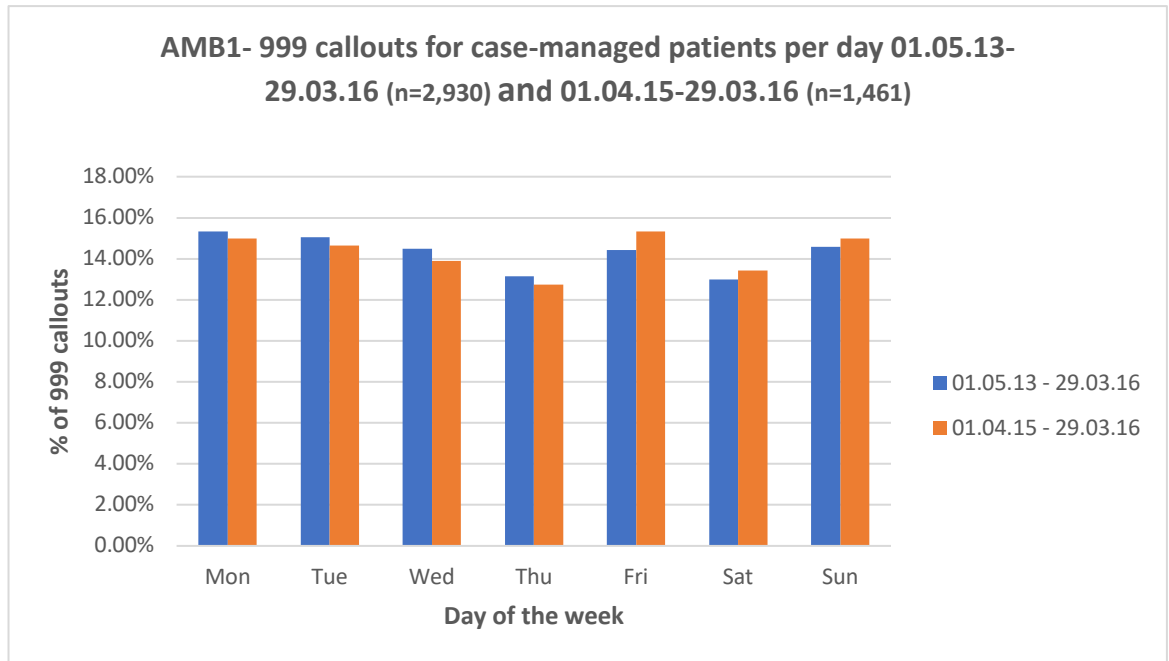


Figure 17. AMB1- 999 callouts for case-managed patients per day 01.05.13-29.03.16 and 01.04.15-29.03.16.

With regards to timing of 999 callouts, 9am was the single busiest hour for case-managed patients during 01.05.13–29.03.16 and 3am was the quietest. During 01.04.15–29.03.16, 3pm was the single busiest hour for 999 callouts of case-managed patients and 2am the quietest. Moreover, 7am to 7pm was the busiest time for case-managed patients and a relatively high number of calls can still be seen 7am to 9am and 6pm to 7pm as seen in the Heatmap presented in Figure 18. It must be noted that as a crude tool the heat map does not reflect proportionality, as 70% of the hours are out-of-hours. More activity appears to happen within only 305 of the available hours. The limitation of the heatmap in terms of representation cannot be accounted for statistically.

Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Mon	6	6	2	4	11	4	9	9	16	10	6	6	13	14	16	15	13	10	10	8	9	7	7	8
Tue	5	8	3	2	6	11	9	11	6	11	15	8	13	18	9	12	9	7	14	16	7	8	5	1
Wed	4	3	3	4	17	9	4	11	11	8	10	9	17	7	12	17	6	8	7	8	9	7	6	6
Thu	7	4	10	5	3	7	5	8	11	7	8	9	9	14	9	4	15	10	9	10	6	4	6	6
Fri	5	4	3	3	6	7	8	8	13	12	14	14	15	17	13	19	9	9	8	6	7	7	10	7
Sat	4	3	5	4	4	7	5	10	13	18	12	5	11	13	10	14	5	11	8	9	9	2	10	4
Sun	1	8	2	4	3	7	3	13	11	14	16	14	6	10	12	13	11	9	10	16	14	5	8	9

Figure 18. AMB1- Heatmap of 999 callouts per day/hour for case-managed patients 01.04.15–29.03.16 (Red shading indicates higher attendance).

Of the 999 callouts of case-managed patients, 60.75% (95% CI+ 1.66 [58.98, 62.52]) occurred during the out-of-hours period between 01.05.13–29.02.16, compared with 39.25% (95% CI+1.77 [37.48, 41.02]) during in hours. No area or provider level data were available for comparison.

For the period 01.04.15–29.03.16, 61.46% (95% CI+ 2.5 [58.96, 63.96]) of calls made were in the out-of-hours period and 35.54% (95% CI+ 2.45 [33.09, 37.99]) were made during service hours. ‘In hours’ refers to Monday to Friday 8am to 6pm and out-of-hours to all other times. However, out-of-hours accounts for 70% of the week (24 hours x7 = 168 hours in a week, 08:00-18:00 = 10 hours, 10 hours per day x5 days a week =50 hours, 168/50 = 0.296, rounds up to 0.30, 30% of the week in hours, which leaves 70% of the week as out-of-hours); therefore, a disproportionate amount of people called emergency services during standard operating hours compared with out-of-hours.

The majority of patients were seen and conveyed to hospital for the period 01.05.13–29.02.16 (56.38%, 95% CI+ 1.8 [54.58, 58.18]) followed by 40.31% (95% CI+ 1.79 [38.53, 40.09]) being seen and treated at home. During the period 01.04.15–29.03.16, 57.56% (95% CI+ 2.53 [55.03, 60.09]) were seen and conveyed to hospital and 39.08% (95% CI+ 2.5 [36.58, 41.58]) were treated at the scene. Data are presented in Figure 19.

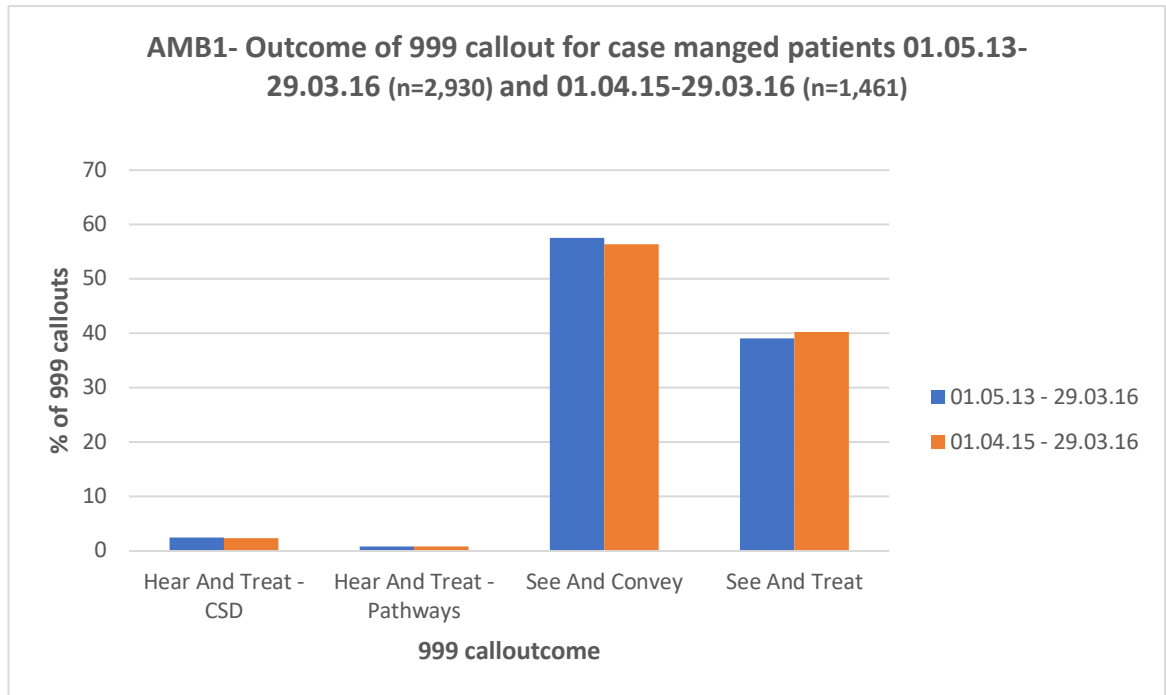


Figure 19. AMB1- Outcome of 999 calls for case-managed patients 01.05.13–29.03.16 and 01.04.15–29.03.16.

Data were aggregated and the ‘hear and treat-csd’ and ‘hear and treat pathways’ categories were added to the ‘see and treat category’ in order to make comparisons with the ‘see and convey category’ in the full data set 01.05.13-29.03.15. During the out-of-hours period, a similar proportion of callouts were ‘seen and treated’ as ‘seen and conveyed,’ (29.83% (95% +/- 1.66 [28.17, 31.49]) and 30.92% (95% CI+- 1.67 [29.25, 32.59]) respectively) but during the in hours period more patients were conveyed to hospital (25.46% (95% CI+- 1.57 [23.88, 27.04]) and 13.79% (95% CI+- 1.25 [12.54, 15.04]) respectively) than treated at the scene.

Similar patterns were found in the period 01.04.15–29.03.16. Out-of-hours ‘see and treat’ category comprised 29.23% (95% CI+- 2.33 [26.9, 31.56]) of 999 callouts and ‘see and convey’ 32.24% (95% CI+- 2.4 [29.84, 34.64]). During in hours ‘see and treat’ accounted for 13.21% (95% CI+- 1.74 [11.47, 14.95]) of callouts and ‘see and convey’ 25.33% (95% CI+- 2.23 [23.1, 27.56]).

Chi squared analyses were conducted to determine whether there was any significant difference between the two possible outcomes for the time periods ‘in hours’ and ‘out-

of-hours', which indicated a statistically significant difference ($x^2 p < 0.05$) for the two-way comparison. This applied for both periods 01.05.13–29.03.16 and 01.04.15–29.03.16.

When integrating the data according to three different periods of time and whether 999 callouts for case-managed patients were taken into hospital or treated at the scene for the period 01.05.13–29.03.16, Chi square analyses indicated a statistically significant difference between 'day', 'evening' and 'night' ($x^2 p < 0.05$). Post hoc testing with an applied Bonferroni correction demonstrated statistical significance between 'day' and 'evening' ($p < 0.016$), and 'day' and 'night' ($p < 0.016$) but not for 'evening' and 'night' ($x^2 p = 0.24$). For the period 01.04.15–29.03.16, the identical pattern was demonstrated.

Additional Chi squared analyses examining gender and whether callouts were in or out-of-hours were found to be insignificant ($x^2 p > 0.05$). With regards to gender and whether patients were seen and treated or conveyed was also insignificant ($x^2 p > 0.05$); similarly, age category and whether patients were seen and treated or conveyed was insignificant ($x^2 p > 0.05$).

When looking at a single month for comparison with the area level and with England-wide figures, the Ambulance Service Quality Indicators for December 2015 were utilised (NHS England, 2016). England wide, 819,183 calls were made to 999 emergency services, 107,014 of which were from the area level and 139 of these were from case-managed patients in the area level. The 'see and treat' rate was 38.3%, 37.1% and 29% for England, the area level and case-managed patients respectively. The percentage of patients conveyed to hospital at the case-managed level during December 2015 was 63%. At the area level, only 50.8% of emergency services calls were conveyed to hospital. Similarly, the national figure for England was 51%. No other publicly accessible data were available for comparison.

5.3.4 Predicting Hospital Conveyance

Statistical analyses such as binomial logistic regression offer opportunities to ascertain the effects of independent variables on the likelihood of a binary outcome, such as

whether patients are seen and treated or conveyed to hospital. However, these tests have basic assumptions that need to be met before application to a dataset. Binomial logistic regression was not appropriate for this dataset because the independence of observations could not be proven and was likely not to have been met. Consequently, statistical analysis for predicting the effects of multiple independent variables on a binary outcome was not possible on this dataset.

5.4 A&E Attendance and Hospital Admission Data for Case-Managed Patients (SSTP1 & SSTP2): Study Two

5.4.1 Introduction

SSTP1 provided data for the period 01.04.10–31.08.15; there were 9,008 attendances at A&E representing 3,355 case-managed patients. The mean number of attendances per patient was 5.36 (mode= 1, median= 2, SD= 3.43, 95% CI+- 0.29 [5.3, 5.42], range= 1-92). Data for the period 01.04.13 to 31.03.14 (hereby referred to as 2013-14) were extracted from the case-managed dataset and compared to the same period of HES data (HSCIC, 2013, 2014) for the provider and area levels. HES data (HSCIC, 2013, 2014) for the participating NHS Trust are referred to as ‘provider level’ and for the local region as ‘area level’. For this period, there were 1,832 attendances representing 969 case-managed patients. The mean number of attendances per patients was 1.89 (mode= 1, median= 1, SD= 1.72, 95% CI+-0.08 [1.81, 1.97], range= 1-25). There were 95,375 and 896,768 attendances at the provider- and area-level data respectively, but, owing to the nature of the data, it was not possible to know how many patients this represented.

With regards to SSTP2, for the period 17.01.11–08.10.15, there were 7,487 A&E attendances from 1,685 case-managed patients. The mean number of attendances per patient was 6.02 (mode= 1, median= 4, SD= 8.09, 95% CI+-0.18 [5.84, 6.2], range 1-112). Data for the period 2013-14 were extracted from the case-managed dataset and compared to the same period of HES data (HSCIC, 2013, 2014) for the provider and area levels. For this period, there were 1,975 attendances representing 493 patients.

The mean number of attendances per patient was 4.01 (mode= 1, median= 2, SD= 4.58, 95% CI+/- 0.2 [3.81, 4.21], range= 1-44). There were 237,701 and 896,768 attendances at the provider- and area-level data respectively, but, as with STTP1, it was not possible to make further inferences about how many patients this represented.

5.4.2 Demographics of Attendances

The demographic fields supplied by SSTP1 and SSTP2 are presented in Table 21 and discussed in turn.

Table 21 *Demographic Data Supplied by SSTP1 and SSTP2*

Data Field	SSTP1	SSTP2
Age	√	Not supplied
Gender	√	√
Ethnicity	√	√
Referral Source	√	Not supplied
Presenting Condition	√	√
Primary Investigation	√	Not supplied

5.4.2.1 Age

The demographic data for age was not supplied by SSTP2 for analysis. For SSTP1, following a review of the data, no data were removed. The mean age of case-managed patients attending A&E (SSTP1) for the period 01.04.10–31.08.15 was 78.72 years old (mode= 84, median= 81, SD= 11.75, 95% CI +- 0.24 [78.49, 78.95], range= 19-103). Data are presented in Figure 20.

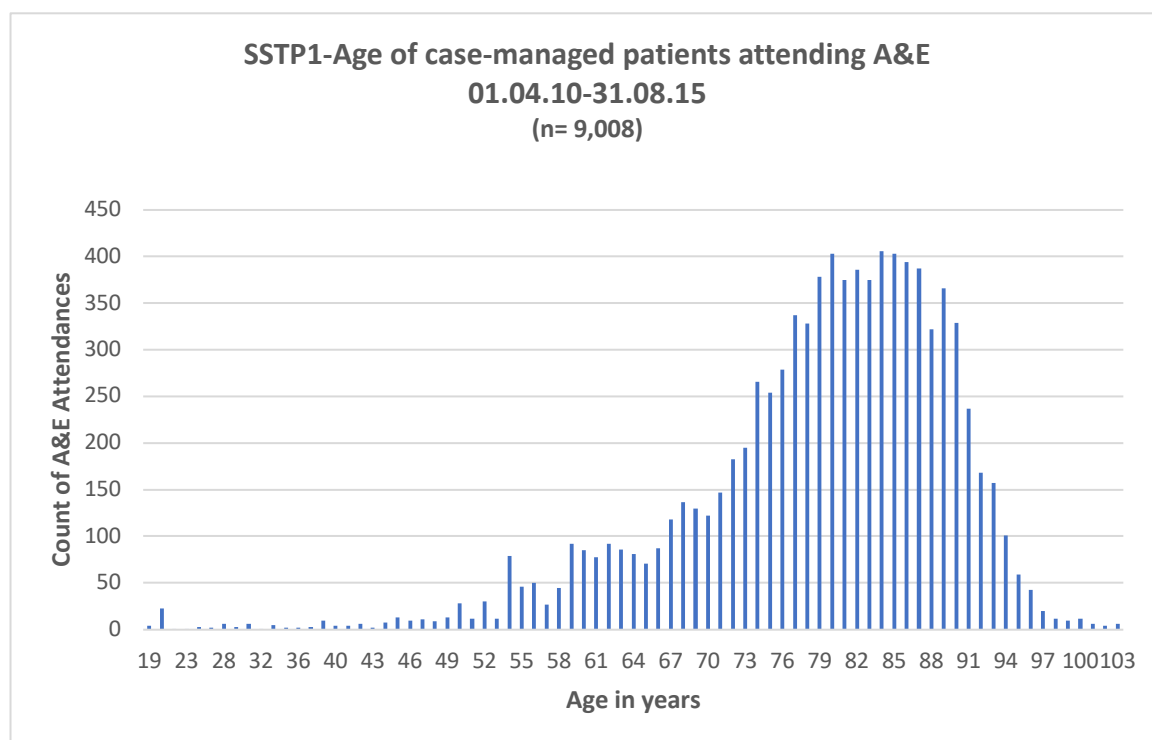


Figure 20. SSTP1- Age of case-managed patients attending A&E 01.04.10–31.08.2015.

For the period 2013-14, the mean age for case-managed patients of all attendances was 79.35 years (mode= 85, median= 81, SD= 35.5, 95% CI+- 1.63 [78.9, 98.8], range= 29-103). The Census data reported the mean and median age of the population at provider level as 39, and at the provider level the mean age was 35 and the median 32 (Office for National Statistics, 2011). The publicly accessible HES data (HSCIC, 2013, 2014) used for the year 2013-14 do not provide data at the individual attendance level; therefore, to compare, the two datasets were classified according to HES data (HSCIC, 2013, 2014) categories '0-49 years of age', '50-69 years of age' and '70 years and older'. Data are presented in Figure 21. Case-managed patients presenting at the participating A&E (SSTP1) were older than the general population presenting at A&E at the same Trust and within the local area.

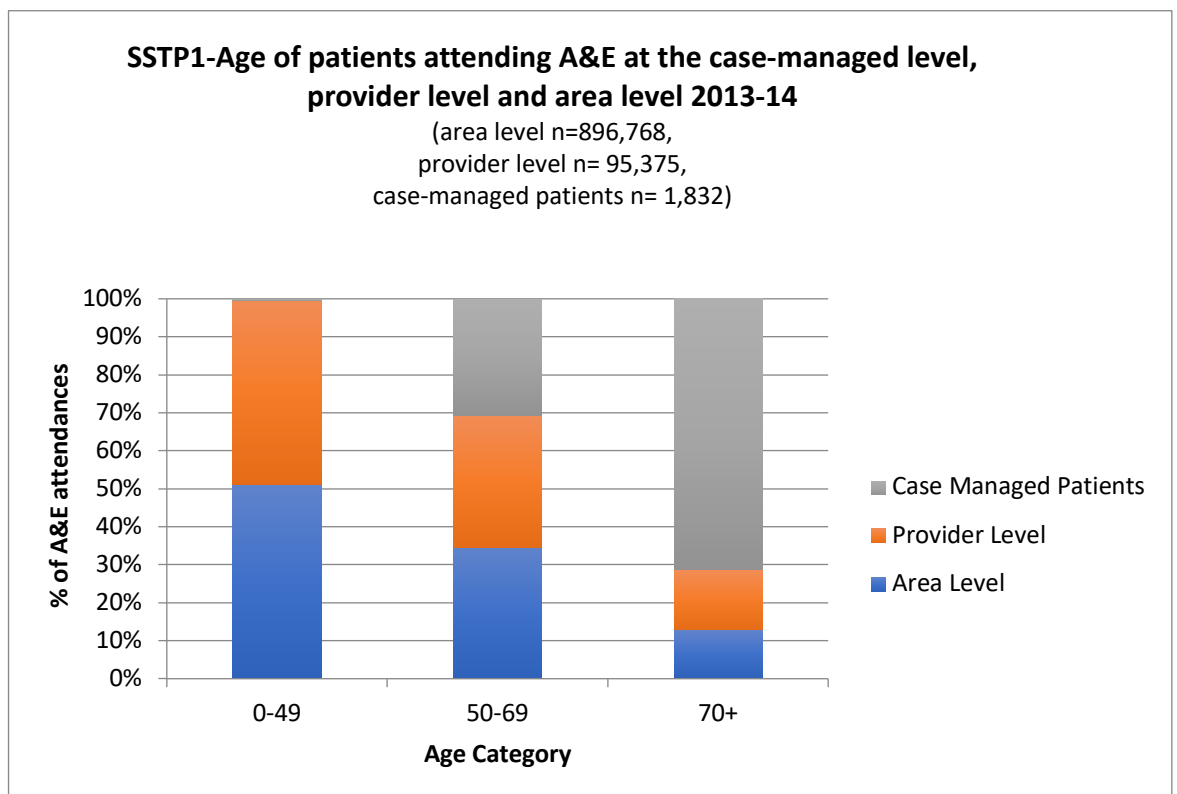


Figure 21. SSTP1- Age of patients attending A&E at the case-managed level, provider level and area level 2013-14.

5.4.2.2 Gender

With regards to gender at SSTP1, 52.92% (95% CI+-1.03 [51.89, 53.95]) of attendances for the period 01.04.10–31.08.15 were by females and 47.08% (95% CI+-1.03 [46.05, 48.11]) were by males; this can be seen in Figure 22.

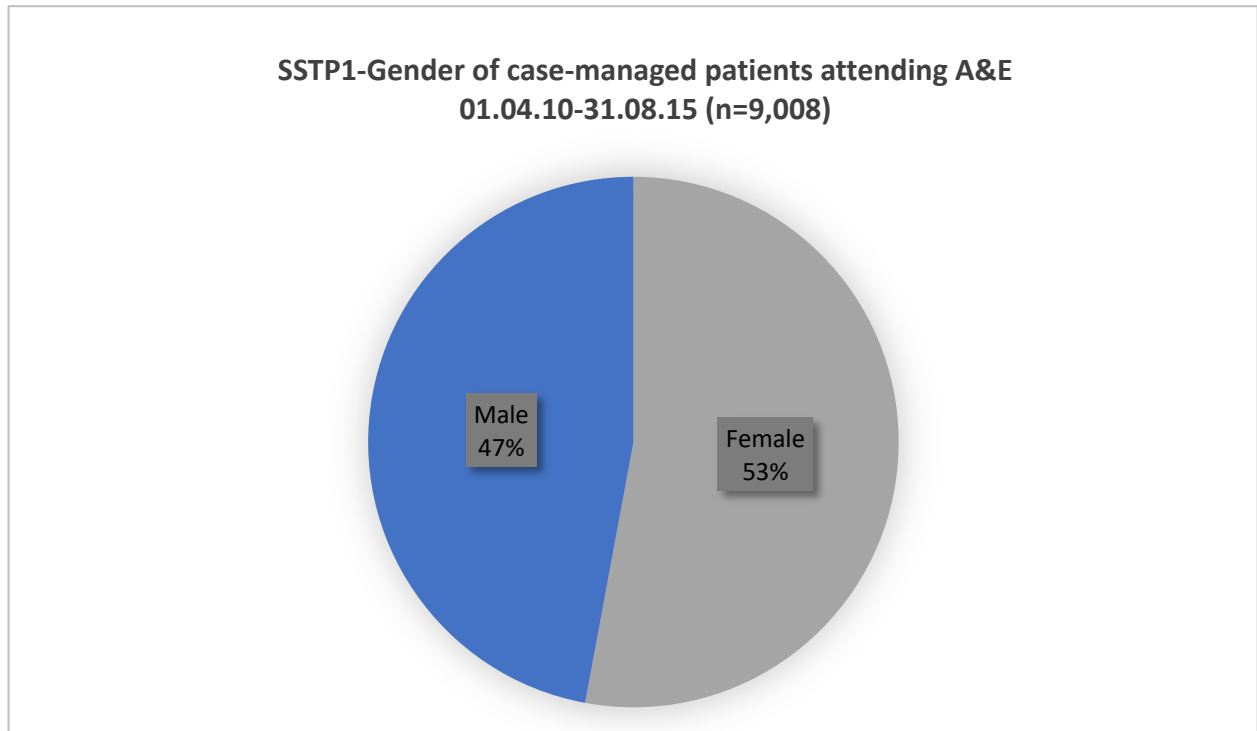


Figure 22. SSTP1- Gender of case-managed patients attending A&E 01.04.10–31.08.15.

With respect to patients at the provider and area level for the year 2013-14 (SSTP1), more attendances were by males than females (female= 46.83%, 95% CI+- 0.32 [46.51, 47.15]; male= 53.17%, 95% CI+- 0.32 [52.85, 53.49]; and female = 48.80%, 95% CI+-2.2 [48.7, 48.9]; male= 51.20%, 95% CI+-2.2 [51.5, 51.3] respectively). In contrast, for the same period for the case-managed population (SSTP1), females accounted for more attendances (54.75%, 95% CI+- 2.28 [52.13, 57.37]) than males (44.25%, 95% CI+-2.27 [41.63, 46.87]). The difference in gender for the three populations was significant (χ^2 $p < 0.001$). The data sets are presented in Figure 23. Post hoc testing (Bonferroni correction applied to produce an adjusted p value of 0.0167) revealed that the populations between the case-managed patients (SSTP1) and the provider's patients, and the area-level patients were significantly different (χ^2

p<0.001, χ^2 p<0.001 respectively). However, the provider-level and area-level patients did not differ (χ^2 p=0.785).

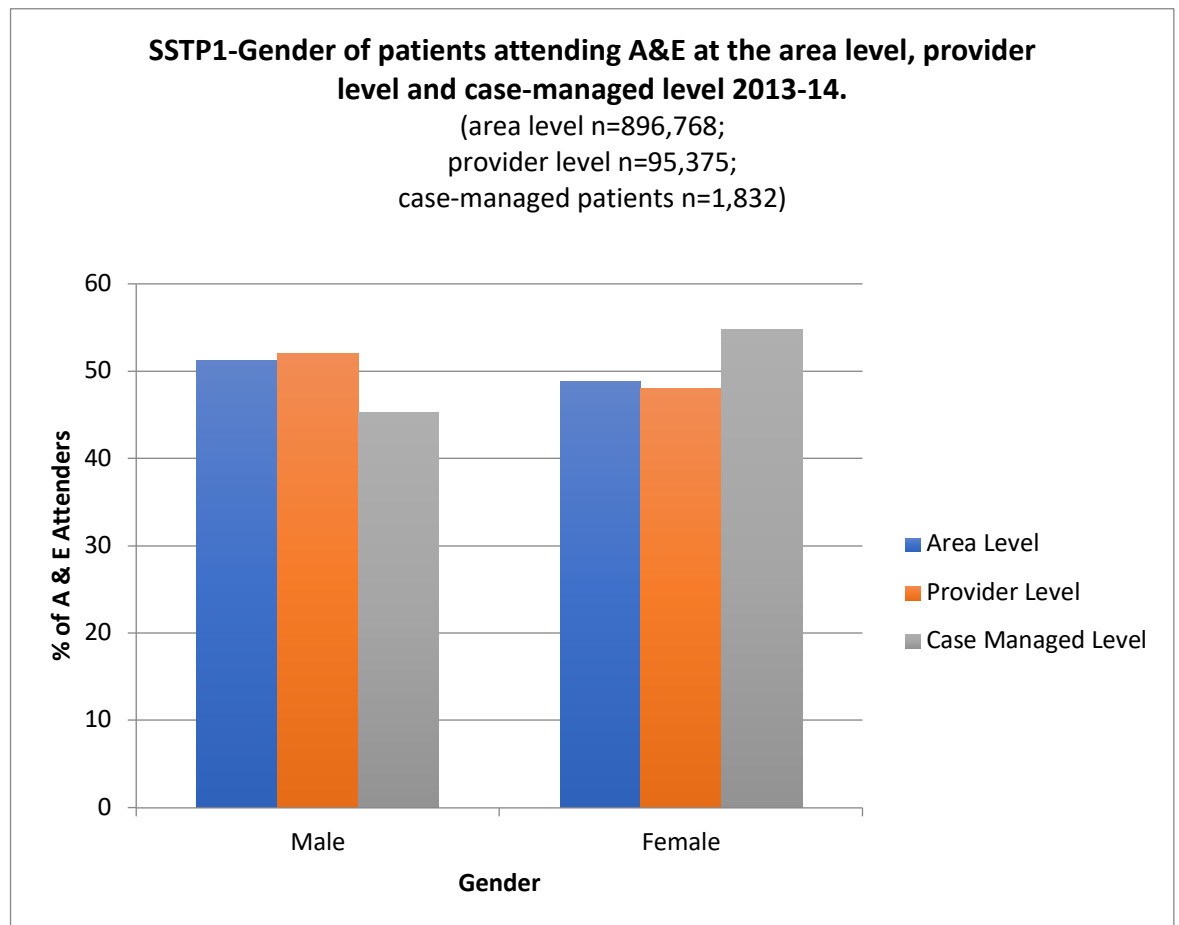


Figure 23. SSTP1- Gender of patients attending A&E at the area level, provider level and case-managed level 2013-14.

With regards to SSTP2, similarly to SSTP1, females represented the largest group (59.22%, 95% CI+- 1.11 [58.11, 60.33]), and 40.78% (95% CI+- 1.11 [39.67, 41.89]) of attendances were male; this can be seen in Figure 24.

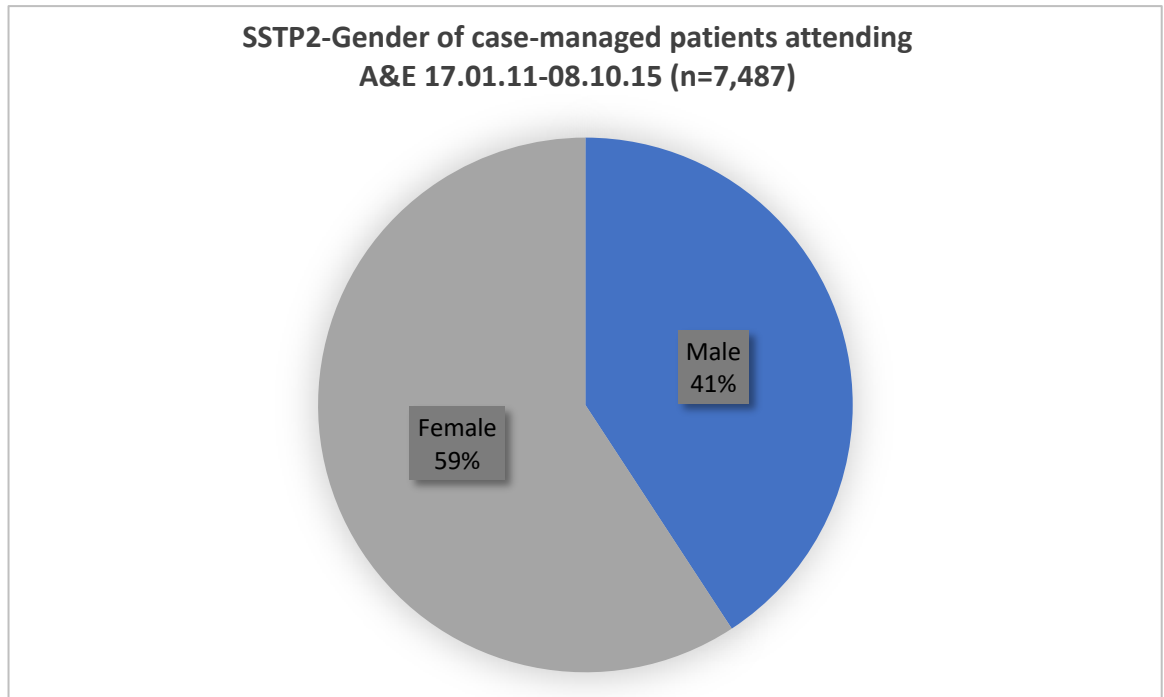


Figure 24. SSTP2- Gender of case-managed patients attending A&E 17.01.11–08.10.15.

With respect to patients at the provider and area level for the year 2013-14, more attendances were by males than females (male= 50.54%, 95 CI+-2.2 [48.34, 52.74] female=49.46%, 95 CI+- 2.2 [47.26, 51.66] and male= 51.20%, 95% CI+-2.2 [49.0, 53.4] female=48.80%, 95% CI+- 2.2 [46.6, 51.0] respectively). In contrast, for the same period for case-managed patients (SSTP2), females account for more attendances than males (male= 42.73%, 95% CI+- 2.18 [40.55, 44.91] female= 57.27%, 95% CI+-2.18 [55.09, 59.45]). This is represented graphically in Figure 25.

The difference in gender for the three populations was significant (χ^2 $p < 0.05$). Post hoc testing (with a Bonferroni correction applied to produce an adjusted p-value of 0.0167) revealed that the populations between the case-managed patients (SSTP2) and provider level, case-managed patients and the area level, and the area level and the provider level were all significantly different (χ^2 $p < 0.001$, χ^2 $p < 0.001$, χ^2 $p < 0.001$ respectively).

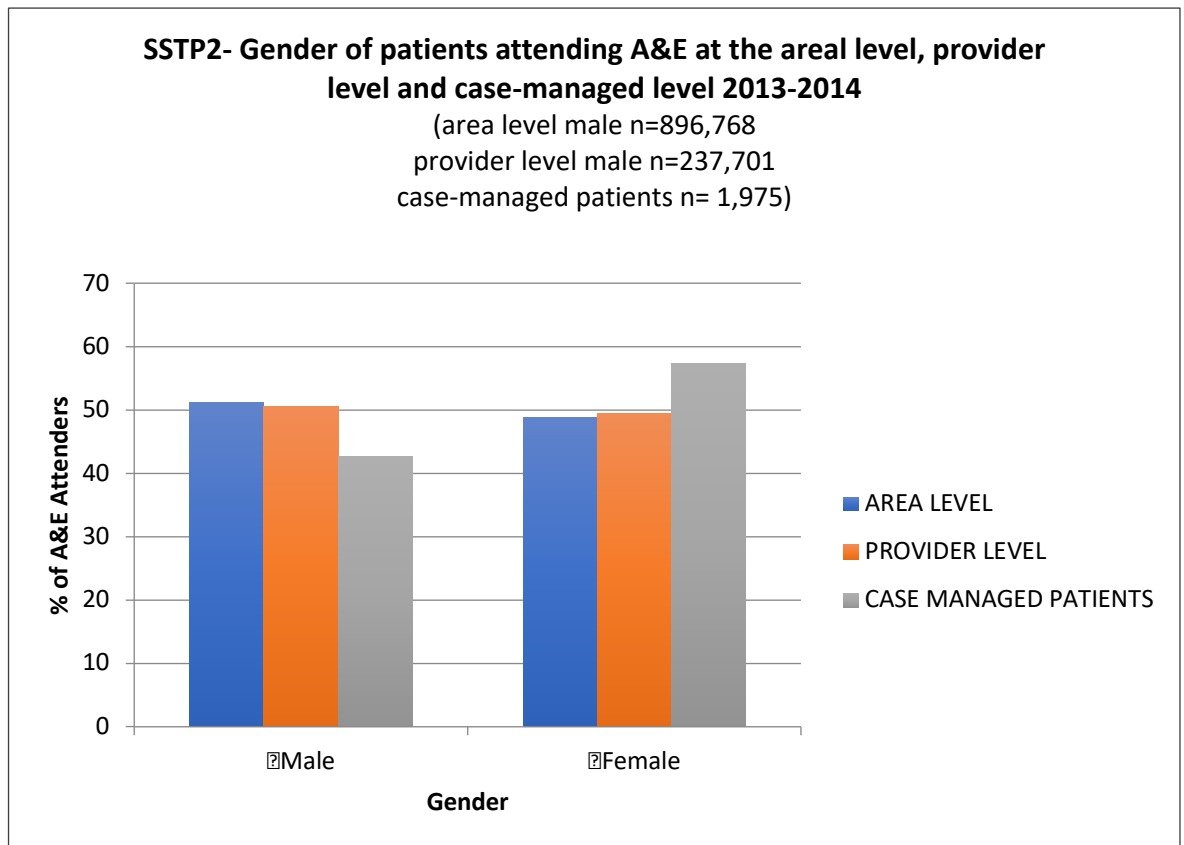


Figure 25. SSTP2- Gender of patients attending A&E at the area level, provider level and case-managed level 2013-14.

5.4.2.3 Ethnicity

Of the 8,121 attendances for which ethnicity had been recorded in SSTP1 (90.15%) for the period 01.04.10–31.08.15, 7,822 attendances represented ‘White – British’ patients. ‘Asian or Asian British – Pakistani’ was second most frequent with 1.02% and ‘Black or British Black African’ was the least frequent with 0.04%. For the year 2013-14 (SSTP1), ethnicity was documented in 100% ($n=1,832$) of the records. ‘White- British’ patients accounted for 95.63% of case-managed attendances at A&E; ‘Asian or Asian British – Pakistani’ was the second-most common ethnic category (1.31%). Twelve codes in total were used, similar to the Health and Social Care Informatics Centre (HSCIC, 2016) codes and the Census (Office for National Statistics, 2011) coding system, although some nationally used categories were missing from the SSTP1 dataset. Data are presented in Table 22.

Publicly available HES data (HSCIC, 2013, 2014) does not report the ethnicity of A&E attenders, therefore comparisons to understand where case managed patients sit within the population are limited. Within the 2011 Census data (Office for National Statistics, 2011) at the area level, 86.10% of the population were recorded as ‘British,’ 1.80% ‘Indian’ and 1.68% ‘Pakistani.’ At the provider level, 83.20% reported their ethnicity as ‘British,’ 4.90% as ‘Indian’ and 1.70% as Pakistani. A marginally higher percentage of ‘White-British’ as an ethnic category is reported within the case management population. However, this may be representative of the age of case management population, in that they are proportionally older than the average area and provider level ages. The 2011 census data (Office for National Statistics, 2011) may also be unrepresentative of current population figures; contextualising this data remains problematic.

SSTP2 recorded an ethnic category for all 7,487 episodes for the period 17.01.11–08.10.15. Of these, 84.44% were classified as ‘British’; the least common ethnic category was ‘White and Black African’ 0.01%. ‘Not stated’ accounted for 8.33% and ‘unknown’ 3.41%. Fourteen codes in total were used and did not align with the Health and Social Care Informatics Centre (HSCIC, 2016) codes or the Census (ONS, 2011) coding system. In 2013-14, ten codes were recorded with 83.79% ‘British’ the most frequent. ‘Not stated’ accounted for 8.88%, unknown 3.71% and ‘any other mixed background’ the least used ethnic category, at 0.04%. No publicly accessible HES data was available for comparison with SSTP1 or SSTP2 to contextualise how the case managed patient figures relate to the wider population. At the provider level, 76.0% of the total population reported their ethnicity as ‘British,’ 5.20% as ‘Pakistani’ and 2.50% ‘Indian’ (Office for National Statistics, 2011). A marginally higher percentage of case managed patients are recounted as ‘White-British.’ Data are presented in Table 22.

Table 22 *Ethnicity for SSTP1 (01.04.10-31.08.15 and 2013-14) and SSTP2 (17.01.11– 08.10.15 and 2013-14)*

Ethnicity	SSTP1 (01.04.10- 31.08.15)	SSTP1 2013-14	SSTP2 (17.01.11– 08.10.15.)	SSTP2 2013-14
% of records recorded in	90.15%	100%	100%	100%
Number of codes utilised	12	12	14	10
Most frequent category	‘White British’- 7,822 (96.32%, 95% CI+- 0.41 [95.91, 96.73])	‘White-British’- 95.63% (95% CI+- 0.9 [94.69, 96.57])	‘British’ - 84.44% (95% CI+- 0.82 [83.62, 85.26])	‘British’- 83.79% (95% CI+- 1.38 [82.41, 85.17])
2nd most frequent category	‘Asian or Asian British – Pakistani’- 1.02% (95% CI +-0.22 [0.8, 1.24])	‘Asian or Asian British – Pakistani’ (1.31%, 95% CI+-0.52 [0.79, 1.83]).	‘Not stated’ - 8.33% (95% CI+- 0.63 [7.7, 8.96])	‘Not stated’ - 8.88% (95% CI+- 1.07 [7.81, 9.95])
Least Frequent category	‘Black or British Black African’ - 0.04% (95% CI+- 0.04 [0, 0.8]).	‘Black or Black British African’- 0.07% (95% CI +-0.13 [0, 0.20])	‘White and Black African’ 0.01% (95% CI+- 0.02 [0, 0.03]).	‘any other mixed background’0.04% (95% CI+- 0.08 [0, 0.12])
‘Unknown’ or ‘Null’ category	‘Null’- 7.93% (95% CI+- 0.64 [7.29, 8.57])	‘Null’ – 0.66% (95% CI+- 0.37 [0.29, 1.03])	3.41% (95% CI+ -0.41 [3.0, 3.82]).	3.71% (95% CI+- 0.71 [3.00, 4.42])
Not stated category	0.48 % (95% CI+- 0.16 [0.32, 0.64])	0.66% (95% CI+- 0.37 [0.29, 1.03])	8.33% (95% CI+- 0.63 [7.7, 8.96])	8.88% (95% CI+- 1.07 [7.81, 9.95])

5.4.2.4 Referral Source

Data on referral source was only obtained from SSTP1. For the period 01.04.10–31.08.15, 84.89% (95% CI+/- 0.74 [84.15, 85.63]) of case-managed patients arrived at A&E via emergency services and 11.81% (95% CI+/- 0.67 [11.14, 12.48]) of attenders directly referred themselves. This can be seen in Figure 26. This was higher than the national English average of 23.9% documented in the HES data for 2013-14 (NHS Digital, 2015).

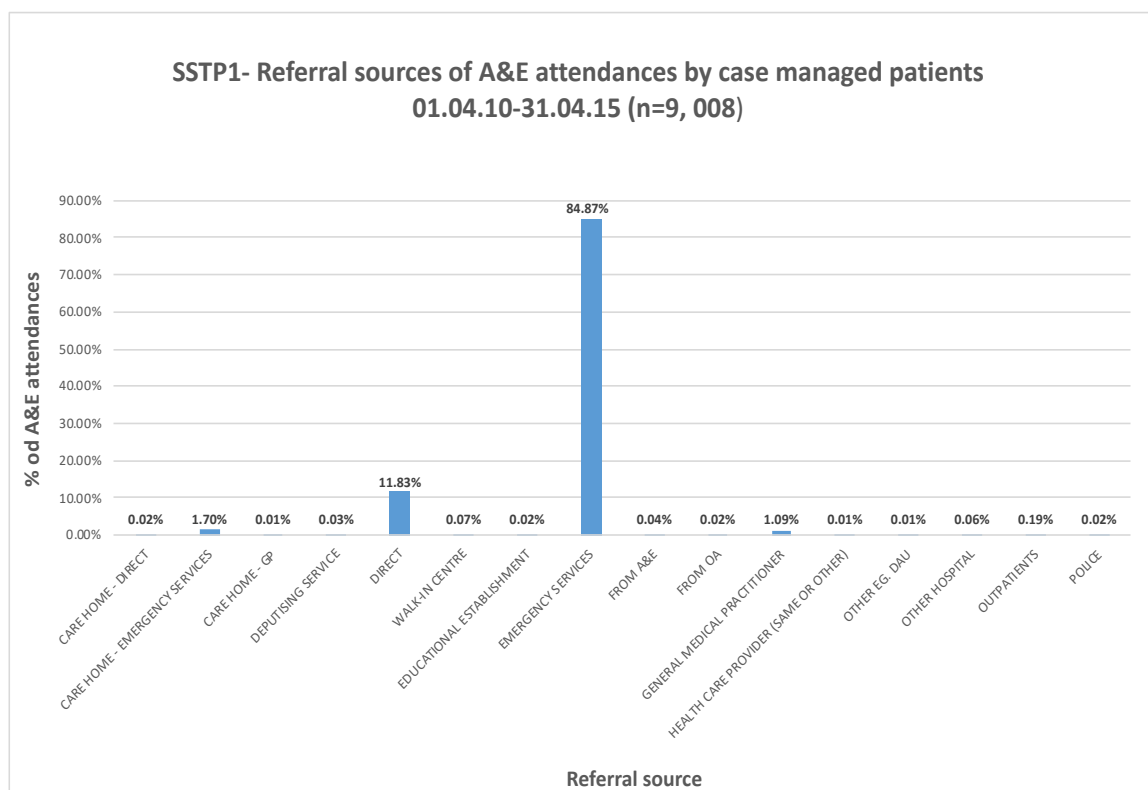


Figure 26. SSTP1- Referral source of A&E attendances by case-managed patients 01.04.10–31.10.15.

During 2013-14 (SSTP1), 85.64% (95% CI+/- 1.61 [84.03, 87.25]) of case-managed patients arrived via emergency services and 12.01% (95% CI+/- 1.49 [10.52, 13.5]) directly presented to A&E.

The publicly accessible HES data used for the year 2013-14 do not provide data at the individual attendance level; therefore, to compare, the two datasets were classified

according to HES data (HSCIC, 2013, 2014) categories ‘emergency services’ and ‘all other arrival methods.’ At the area level 26.68% (95% CI+- 0.09 [26.58, 26.76]) of patients arrived via emergency services and 73.32% (95% CI+- 0.09 [72.24, 72.42]) arrived via other methods. At the provider level 31.26% (95% CI+- 0.29 [30.97, 31.55]) of patients arrived via emergency services and 68.74% (95% CI+- 0.29 [68.45, 69.03]) attended A&E via other methods. In comparison, case-managed patients (SSTP1) arrived by emergency services in 85.64% (95% CI+-1.61 [84.03, 87.25]) of A&E attendances in 2013-14, 3.2 times higher than in the area population and 2.7 times higher than in the provider-level population. ‘Other methods’ accounted for 14.36 % (95% CI+- 1.61 [12.75, 15.97]) of attendances who presented themselves. Graphical representation of the data sets is presented in Figure 27.

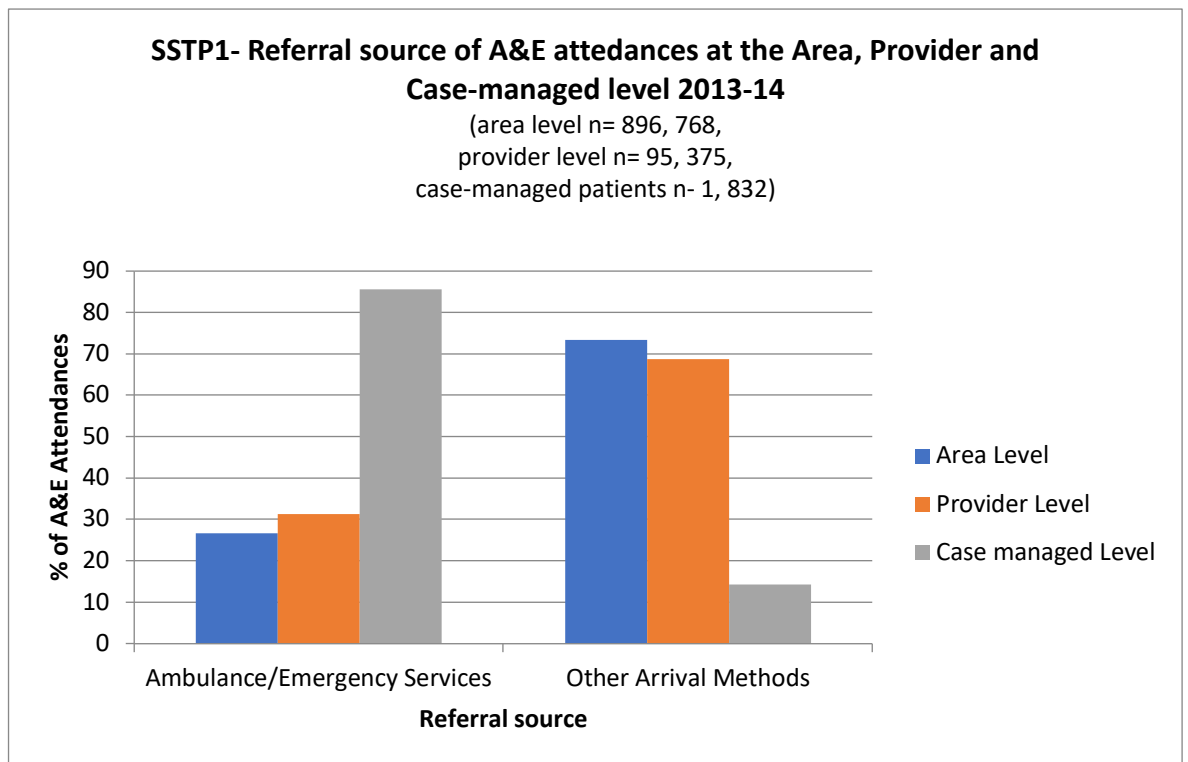


Figure 27. SSTP1- Referral source of A&E attendances at the area, provider and case-managed level 2013-14.

5.4.2.5 *Presenting Condition*

The presenting condition or diagnostic reason for which case-managed patients accessed A&E was supplied by both SSTP1 and SSTP2. As can be seen in Tables 15 & 17, fields supplied by the SSTP1 and SSTP2 differed in their taxonomy, but essentially referred to the same concept: data presenting the medical reason for attendance.

In examining the ‘presenting condition’ field for the case-managed population for the period 01.04.10–31.08.15 (SSTP1), more than half the A&E attendances were coded as ‘Medical-other’ (53.41%, 95% CI± 1.03 [52.38, 54.44]), which can be seen in Table 23. ‘Falls’ were the next highest recorded reason (16.24%, 95% CI± 0.76[15.48, 17]) then ‘breathing difficulties’ (12.30%, 95% CI± 0.68[11.62, 12.98]) and ‘chest pain’ (7.78%, 95% CI± 0.55 [7.23, 8.33]). For 2013-14 (SSTP1) the same four most common presenting conditions were documented: ‘Medical-other’ (56%, 95% CI± 2.27 [53.73, 58.27]); ‘Fall’ (95% CI± 1.71 [15.05, 18.47]); ‘Difficulty breathing’ (9.93%, 95% CI± 1.37 [8.56, 11.3]) and ‘chest pain’ (8.08%, 95% CI± 1.25 [6.83, 9.33]). These codes appeared to represent International Classification of Disease-10th revised A&E codes (ICD-10) used nationally (Connecting for Health, 2011).

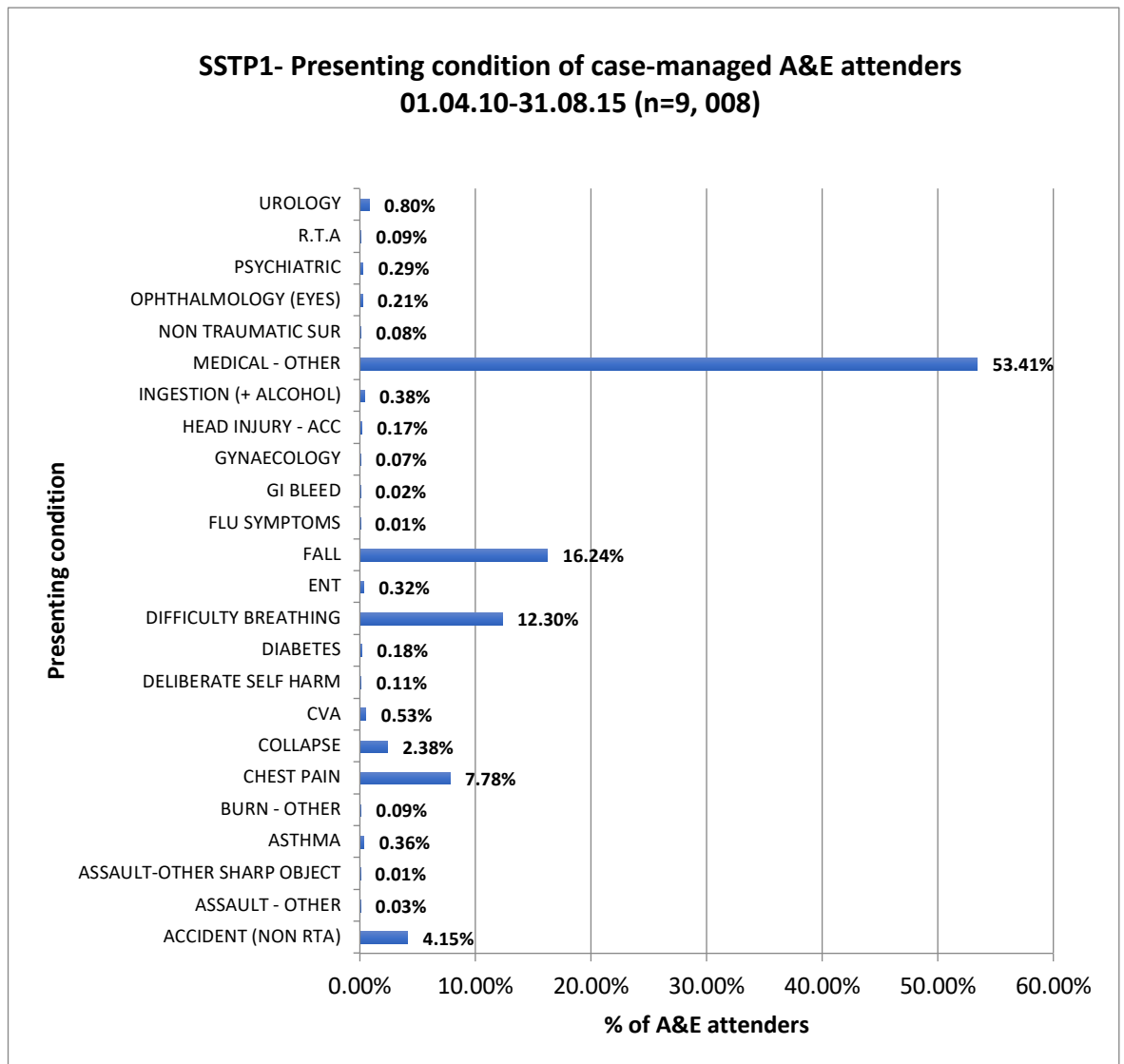


Figure 28. SSTP1- Presenting Condition of Case-Managed A&E Attenders 01.04.10–31.08.15

In examining the ‘Diagnosis_1’ field within the SSTP2 case-managed population for the period 17.01.11–08.10.15, 278 diagnostic codes were used which were not ICD-10 (Connecting for Health, 2011; WHO, 2015), Health Resource Group (HRG) (HSCIC, 2014) or Department of Health (DOH) Reference Cost Codes (DOH, 2012a). Many duplicates such as ‘UTI’ and ‘Urinary Tract Infection’ were recorded. Disorder of urinary system was the most common reason for attendance (5.70%, 95% CI+- 0.53 [5.17, 6.23]), followed by COPD (5.56%, 95% CI+- 0.52 [5.04, 6.08]) then dyspnoea (5.14%, 95% CI+- 0.5 [4.64, 5.64]).

For the financial year 2013-14 (SSTP2), 173 codes were used as diagnostic descriptions with duplicates and a ‘blank’ category used. The top three reasons for attendance were:

- COPD 7.48%, 95% CI+- 1.16 [6.32, 8.64]
- Dyspnoea 5.8%, 95% CI+- 1.04 [4.81, 6.89]
- Disorder of urinary system 5.08%, 95% CI+- 0.97 [4.11, 6.05].

5.4.2.6 Primary Investigation

When in A&E in STTP1, the most common primary investigation was ‘bacteriology’ (42.97%, 95% CI+- 1.02 [41.95, 43.99]) followed by ‘ECG’ (25.88%, 95% CI+- 0.9 [24.98, 26.78]), ‘X-Ray’ (6.73%, 95% CI+- 0.52 [6.21, 7.25]) and ‘urine’ (3.99%, 95% CI+- 0.4 [3.59, 4.39]). This clinically correlates to the documented reasons for attendance regarding chest pain, falls and breathing difficulties. Nearly 7% (95% CI+- 0.53 [6.18, 7.22]) were coded as ‘none’, suggesting no investigations occurred while in A&E. For the period 2013-14, the most common ‘primary investigation’ while in A&E was ‘bacteriology’ (61.19%, 95% CI+- 2.23 [58.96, 63.42]), then ‘ECG’ (30.08%, 95% CI+- 2.1 [27.98, 32.18]) and ‘XRy’ (2.51%, 95% CI+- 0.72 [1.79, 3.23]). No investigation was carried out in A&E in 3.11% (95% CI+- 0.79 [2.32, 3.9]) of attendances and was coded as ‘none.’ No primary or secondary investigation data fields were supplied by the Trust SSTP2.

5.4.3 Distribution of Attendances

The division of attendances was examined by month, day and hour for both SSTP1 and SSTP2, the results of which are presented in 5.4.3.1- 5.4.3.3. Busiest refers to the greatest number of case-managed patients attending and quietest the lowest number and does not reflect acuity.

5.4.3.1 Month

In terms of A&E attendances by month for the period 2013-14 for SSTP1, November received the highest number of attendances at 169 (9.22%, 95% CI+- 1.32 [7.69,

10.75]) and June received the lowest with 117 (6.39%, 95% CI+- 1.12 [5.1, 7.68]). Graphical presentation is given in Figure 29. HES data (HSCIC, 2013, 2014) exhibit less variation in attendances per month ranging from 7.50% of attendances in February to 8.90% in May and July. No provider-level data were publicly available for A&E attendances per month. The full data set was not comparable due to the uneven number of months and lack of full-year data from January to March 2010 and from August to December 2015.

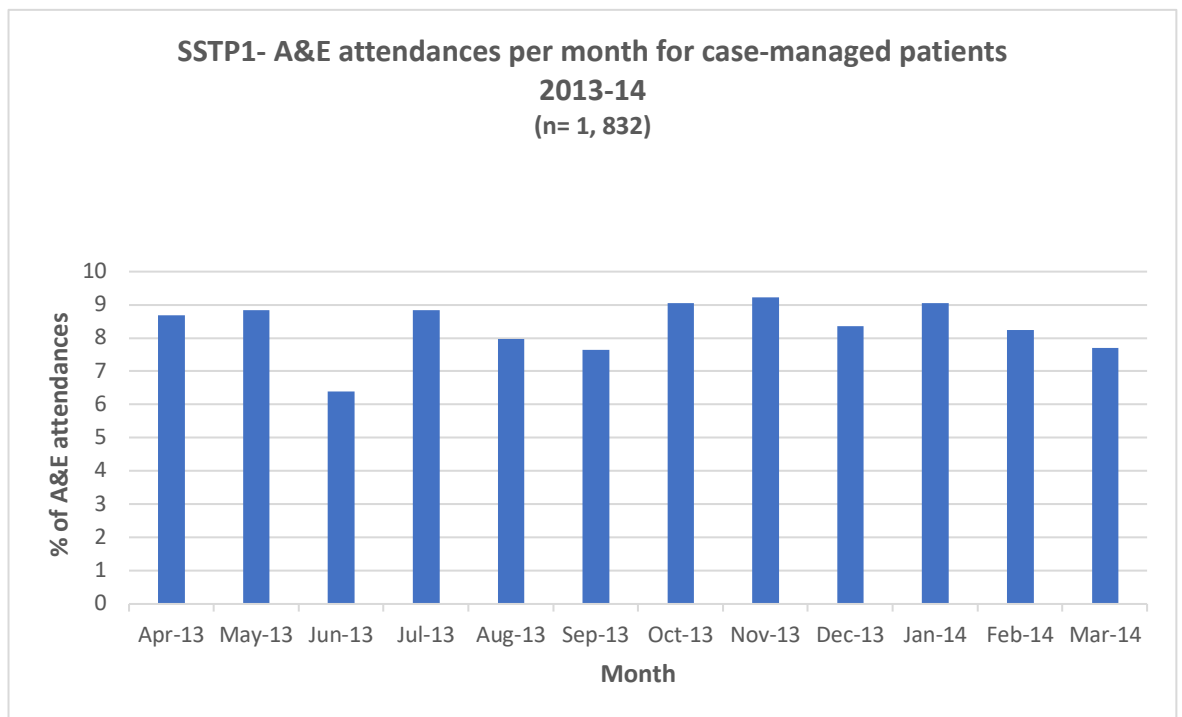


Figure 29. SSTP1- A&E attendances per month by case-managed patients 2013-14.

The SSTP1 whole data set from 01.04.10–31.08.15 revealed 11am (6.94%, 95% CI+- 0.52 [6.42, 7.46]) as the single busiest hour for attendance, and 3am (1.67%, 95% CI+- 0.26 [1.41, 1.93]) was the least busy hour for attendance at A&E by case-managed patients. Monday (15.10%, 95% CI+- 0.74 [14.36, 15.84]) was the busiest day for A&E attendances and Tuesday (13.04%, 95% CI+- 0.7 [12.34, 13.74]) was the quietest day for SSTP1 01.04.10–31.08.15. Appraisal of the 2013-14 data set with HES data (HSCIC, 2013, 2014) for day and time is presented in 5.4.3.2.

SSTP2 examination of A&E attendances per month for the period 2013-14, highlighted March was the busiest month with 248 attendances (12.56%, 95% CI+-

1.46 [11.1, 14.02]) and August the quietest month with 117 attendances by case-managed patients (5.92%, 95% CI \pm 1.04 [4.88, 6.96]) as seen in Figure 30. HES had less variation in attendance per month ranging from 7.50% of attendances in February to 8.90% in May and July. No provider-level data were publicly available for A&E attendance per month. The full data sets were not comparable due to the uneven number of months and lack of full-year data for January 2011 and from October to December 2015 akin to SSTP1.

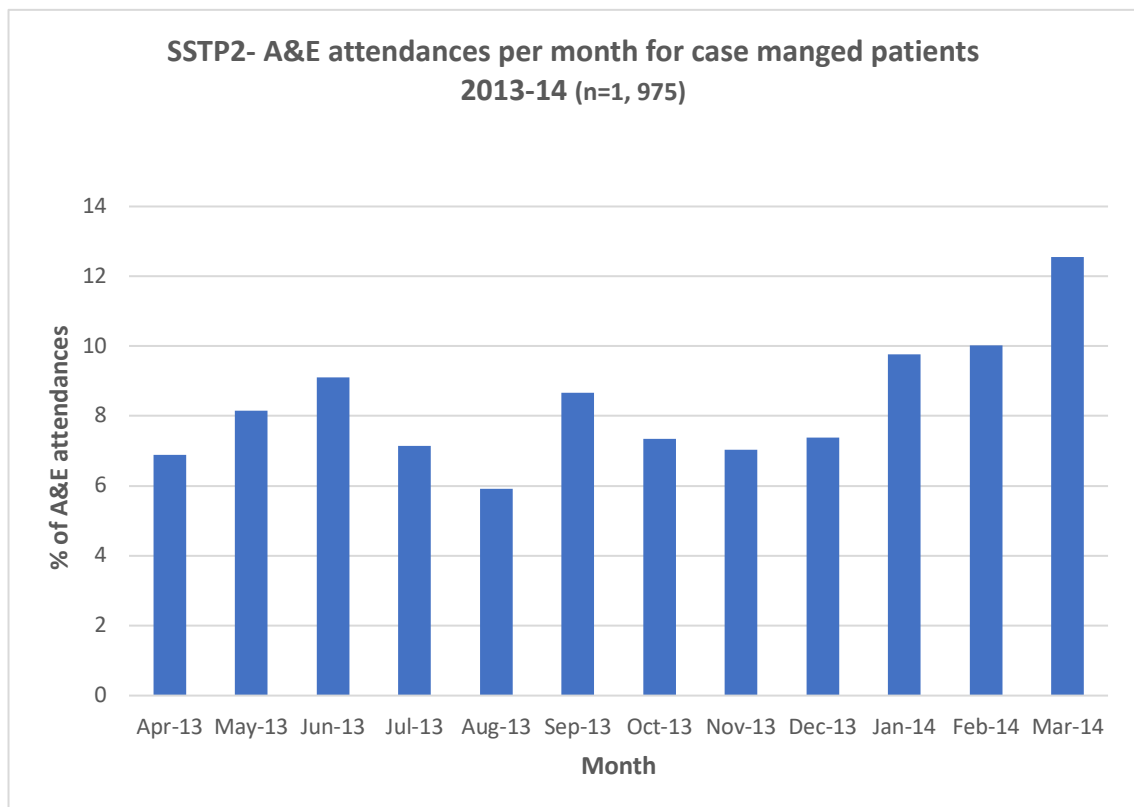


Figure 30. SSTP2- A&E attendances per month for case-managed patients 2013-14.

The whole data set from 17.01.11-08.10.15 (SSTP2) revealed 2pm (7.05%, 95% CI \pm 0.58 [6.47, 7.63]) as the single busiest hour for attendance, and 2am (1.60%, 95% CI \pm 0.28 [1.32, 1.88]) was the least busy hour for attendance at A&E by case-managed patients. Friday (15.80%, 95% CI \pm 0.83, [14.97, 16.63]) was the busiest day for A&E attendances and Monday (12.42%, 95% CI \pm 0.75 [11.67, 13.17]) the quietest day. Appraisal with the HES data (HSCIC, 2013, 2014) follows.

5.4.3.2 Day

In terms of days of the week, Friday was the busiest day for case-managed patients attending SSTP1 A&E, with 279 (15.23%, 95% CI+- 1.65 [14.49, 15.97]) attendances on Fridays in the year 2013-14. The lowest day for attendances was Tuesday with 234 attendances (12.77%, 95% CI +-1.53 [12.08, 13.46]). At the provider level, Monday was the busiest day with 15,443 (16.19%, 95% CI+- 0.23 [15.96, 16.42]) attendances in 2013-14 and the quietest day was Saturday with 12,889 (13.51%, 95% CI+- 0.22 [13.29, 13.73]) attendances. At the area level, Monday was also the busiest day with 143,173 (15.97%, 95% CI+- 0.08 [15.89, 16.05]) attendances and Saturday the quietest day with 122,942 (13.71%, 95% CI+- 0.07 [13.64, 13.78]) attendances, presented in Figure 31.

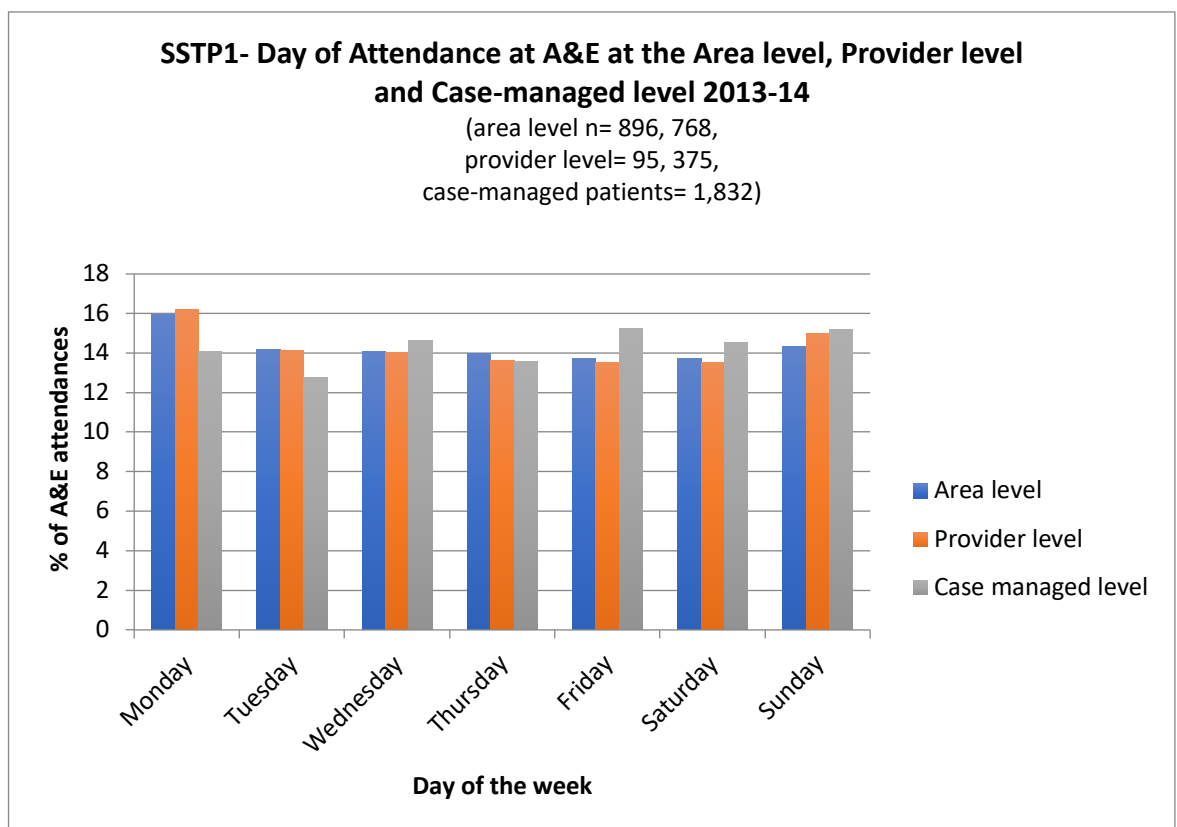


Figure 31. SSTP1- Day of attendance at A&E at the area level, provider level and case-managed level 2013-14.

In SSTP2, Monday was the busiest day of the week for case-managed patients attending A&E with 323 (16.35%, 95% CI+- 1.63 [14.72, 17.98]) attendances in the

year 2013-14. The quietest day for attendances was Sunday, which saw 249 (12.61%, 95% CI+- 1.46 [11.15, 14.07] case management A&E attendances, seen in Figure 32. In comparing to HES data (HSCIC, 2013, 2014) for the provider level, Monday was the busiest day with 37,831 (15.92%, 95% CI+- 0.15 [15.77, 16.07] attendances and Friday was the quietest day with 32,115 (13.51%, 95% CI+- 0.14 [13.37, 13.65] attendances. At the area level, Monday was the busiest day with 143, 173 (15.97%, 95% CI+- 0.08 [15.89, 16.05] attendances and Saturday the quietest day with 122, 942 (13.71%, 95% CI+- 0.07 [13.64, 13.78] attendances.

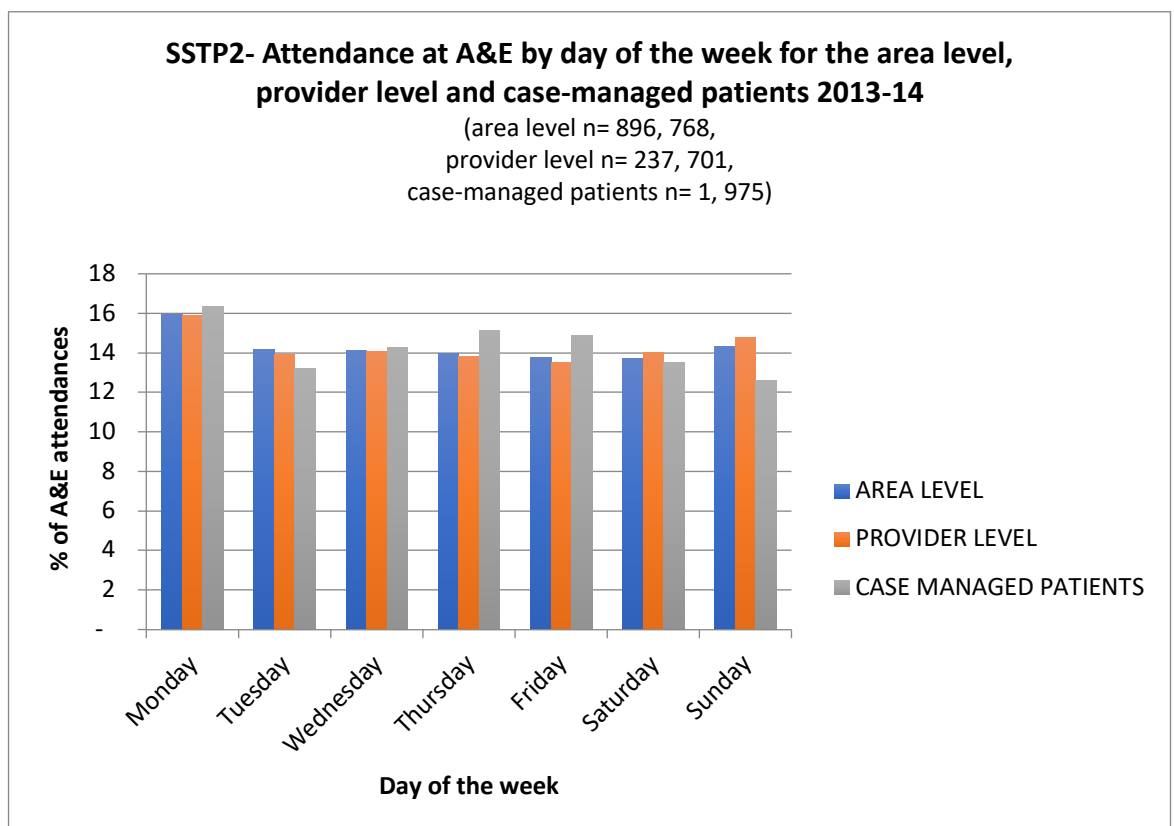


Figure 32. SSTP2- Attendance at A&E by day of the week for the area level, provider level and case-managed patients 2013-14.

5.4.3.3 Hour

In all three populations, 11 am was the single busiest hour in 2013-14 in SSTP1 (Area, provider and case management). The data for the case-managed population can be

seen in the Heatmap, Figure 33. The busiest time for case-managed patients remained between 9am to 5pm. It must be noted that as a crude tool the heat map does not reflect proportionality, as 70% of the hours are out-of-hours. More activity appears to happen within only 305 of the available hours. The limitation of the heatmap in terms of representation cannot be accounted for statistically.

Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Sun	8	4	4	3	3	4	4	13	11	19	17	22	13	17	19	18	14	20	14	4	8	12	13	14
Mon	6	8	6	5	5	3	3	8	8	14	17	18	15	18	19	21	11	13	14	13	17	5	6	5
Tue	3	6	4	4	2	4	5	3	9	13	13	18	10	12	18	18	14	15	14	12	11	3	13	10
Wed	12	9	6	3	8	1	5	8	7	16	19	29	18	17	18	10	17	10	12	10	10	9	7	7
Thu	6	4	8	7	3	13	2	9	10	17	10	11	11	16	14	13	14	14	10	11	15	11	13	7
Fri	3	9	7	7	8	8	4	10	6	11	17	23	22	8	21	11	25	20	9	8	8	12	10	12
Sat	8	9	7	1	5	6	6	9	11	26	14	14	9	19	17	14	14	14	8	14	12	10	7	12

Figure 33. SSTP1- Heatmap of A&E attendances by day and time, 2013-14 for case-managed patients (Red shading indicates higher attendance).

With regards to attendance in hours or out-of-hours for the period 01.04.10–31.08.15 for SSTP1, 41.60% (95% CI+- 1.02 [40.58, 42.62]) of attendances were in hours and 58.40% (95% CI+- 1.02 [57.38, 59.42]) out-of-hours, whereby ‘in hours’ refers to Monday to Friday 8am to 6pm and out-of-hours is all other times. However, out-of-hours represents 70% of the week (24 hours x7 = 168 hours in a week, 08:00-18:00 = 10 hours, 10 hours per day x5 days a week =50 hours, 168/50 = 0.296, rounds up to 0.30, 30% of the week in hours, which leaves 70% of the week as out-of-hours); therefore, there is a disproportionate amount of people attending A&E during standard operating hours compared with out-of-hours. Given a variation of demand over a 24-hour period, it is not unexpected that foot flow into A&E is lower during the night, when people are sleeping or less active. Therefore, it was important to consider the use of services with regards to time and with respect to different demand across the day.

When comparing the hour of arrival in SSTP1 (2013-14), the case-managed population followed a similar trajectory to patients at the provider level and the area level, as demonstrated in Figure 34. Chi squared analyses were conducted to determine whether there was any significant difference between the three populations for the

time periods 00:00 – 08.59, 09:00 – 17:59 and 18:00 – 11:59 and indicate that they were from statistically significantly different populations ($\chi^2 < 0.05$ for the three-way comparison and $\chi^2 < 0.0167$ for each of the three pairwise comparisons with Bonferroni correction applied to the p-value).

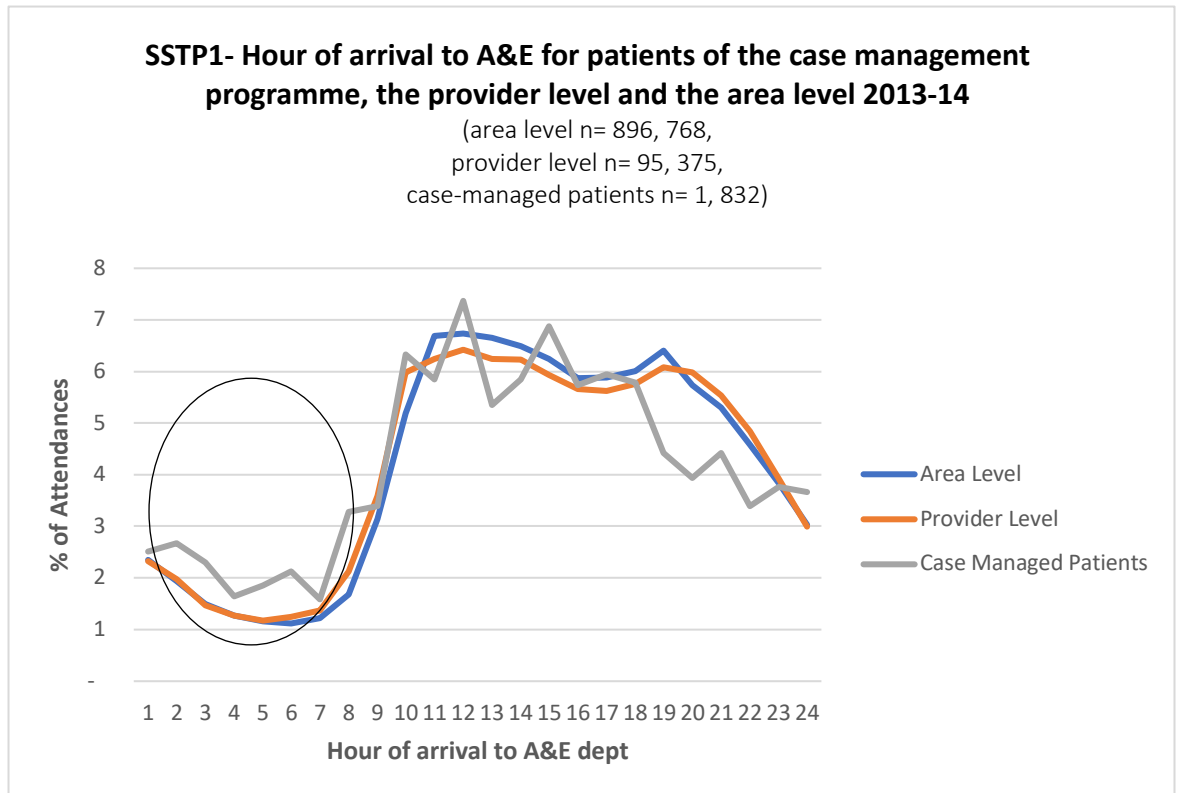


Figure 34. SSTP1- Hour of arrival to A&E for patients of the case management programme, the provider level and the area level 2013-14.

With regards to timing of attendances 2013-14, 3pm (7.24%, 95% CI+-1.14 [6.1, 8.38]) was the single busiest hour to attend SSTP2 for case-managed patients, and 4am (1.57%, 95% CI+- 0.55 [1.02, 2.12]) was the least busy hour. Also, 11am was the busiest hour for area and provider-level patients. The data for case-managed patients can be seen in the Heatmap, Figure 35, with the busiest time for case-managed patients remaining between 9am and 6pm. As noted previously, it must be acknowledged that as a crude tool the heat map does not reflect proportionality, as 70% of the hours are out-of-hours. More activity appears to happen within only 305 of the available hours. The limitation of the heatmap in terms of representation cannot be accounted for statistically.

Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Sun	2	4	10	12	1	7	4	5	7	21	15	22	11	19	17	14	8	14	14	12	7	11	8	4
Mon	11	4	6	5	9	4	9	3	8	16	25	13	35	24	16	25	14	15	24	23	8	8	15	3
Tue	4	5	7	3	4	7	2	2	6	5	13	15	24	21	20	19	15	15	27	8	6	15	5	13
Wed	5		11	7	4	3	6	2	4	7	17	14	16	21	25	33	10	17	20	13	13	13	12	9
Thu	4	5	3	6	4	6	8	7	5	14	11	16	13	21	22	20	23	22	18	13	11	27	8	12
Fri	11	8	9	6	5	5	10	1	6	12	14	16	12	16	24	18	22	22	16	14	16	5	16	10
Sat	6	8	1	2	4	3	4	13	17	7	8	20	13	18	14	14	13	17	18	17	14	6	15	15

Figure 35. SSTP2- Heat Map of A&E attendances by day and time, 2013-2014 for case-managed patients (Red shading indicates higher level of attendance).

With regard to attendance in-hours or out-of-hours, 56.98% (95% CI+- 1.12 [55.86, 58.1]) of case-managed patients attended A&E during the out-of-hours period, compared with 43.02% (95% CI+- 1.12 [41.9, 44.14]) during in hours for the period 17.01.11–08.10.15 in STTP2.

In SSTP2 during 2013-14, 57.62% (95% CI+- 2.18 [55.44, 59.8]) of case-managed patients attended A&E during the out-of-hours period, compared with 42.38% (95% CI+- 2.18 [40.2, 44.56]) during operating hours. When comparing the hour of arrival, the case-managed population followed a similar trajectory to patients at the provider and area level (see Figure 36). Chi squared analyses were conducted to determine whether there was a significant difference between the three populations for the time periods 00:00-07:59, 08:00-17:59, 18:00-11:59 and indicate that they were from statistically significantly different populations ($\chi^2 < 0.05$ for the three-way comparison and $\chi^2 < 0.0167$ for each of the three pairwise comparisons with Bonferroni correction applied to the p-value).

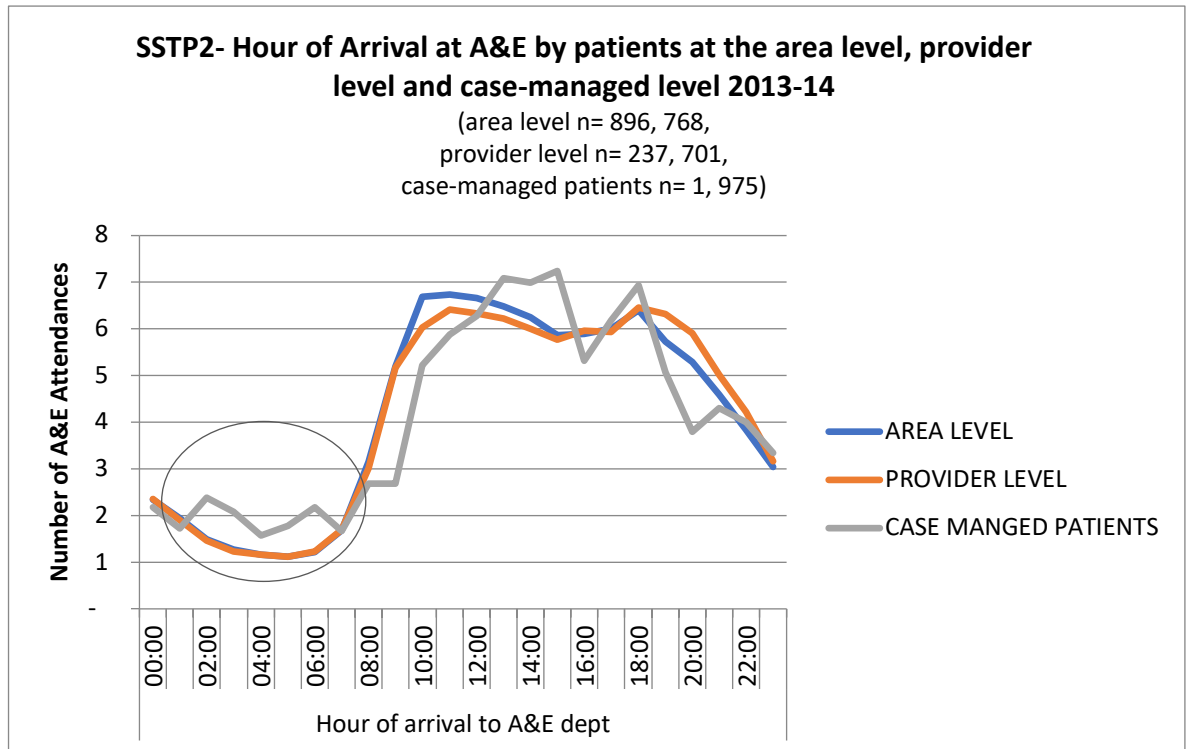


Figure 36. SSTP2- Hour of arrival at A & E by patients at the area, provider and case-managed level 2013-14.

5.4.4 Demographics of Admission

For the period 01.04.10–31.08.15 in SSTP1, of the 9,008 attendances at A&E for case-managed patients, 6,935 (76.99%, 95% CI+- 0.87 [76.12, 77.86]) were converted to admissions, representing 2,935 case-managed patients. Case-managed patients on average were admitted 2.36 times (mode= 1, median= 2, SD= 2.54, 95% CI+- 0.09 [2.3, 2.42], range= 1-44), giving an A&E conversion rate of 76.99% from all case-managed attendances to A&E.

For the period 2013-14, out of 1,832 SSTP1 attendances, there were 1,507 (82.26%, 95% CI+- 1.75 [80.51, 84.01]) A&E attendances by case-managed patients that were converted to admissions to hospital. These 1,507 admissions were attributable to 834 patients, who, on average, were admitted 1.81 times (mode= 1, median= 1, SD= 1.44, 95% CI+- 0.07 [1.74, 1.88], range= 1-13), resulting in an A&E conversion rate of 82.26%, higher than the national average (26%, NAO, 2013). During 2013-14, 325

(17.74%, 95% CI+- 1.75 [15.99, 19.49]) case-managed patients were not admitted following their A&E attendance.

For SSTP2 for the period 17.01.11-08.10.15, of the 7,487 attendances at A&E for case-managed patients, 2,726 (36.41%, 95% CI+- 1.09 [35.32, 37.5]) were converted to admissions, representing 790 case-managed patients, who, on average, were admitted 3.42 times (mode= 1, median= 2, SD= 3.92 95% CI+- 0.27 [3.15, 3.69], range= 1-36). During 17.01.11-08.10.15, 4761 (63.59%, 95% CI+- 1.09 [62.5, 64.68]) case-managed patients were not admitted, resulting in an A&E conversion rate of 36.41%, lower than SSTP1 but higher than the national average of 26% (NAO, 2013).

For the period 2013-14, out of 1,975 SSTP2 attendances, there were 350 (17.72%, 95% CI+-1.68 [16.04, 19.4]) A&E attendances by case-managed patients that were converted to admissions to hospital. These 350 admissions were attributable to 166 patients, who, on average, were admitted one time (mode= 1, median= 1, SD= 1.46, 95% CI+- 0.15 [0.85, 1.15], range= 1-8), resulting in an A&E conversion rate of 17.72%, lower than SSTP1 and the national average. Case-managed patients not admitted in SSTP2 2013-14 accounted for 1,625 (82.28%, 95% CI+- 1.68, [80.6-83.96]) of all A&E attendance that year.

5.4.4.1 Age

The data field of age was only supplied by SSTP1, Figure 37 represents the age of case-managed patients admitted to hospital following A&E attendance for the period 01.04.10-31.08.15. The mean age of case management admissions from SSTP1 A&E for the period 01.04.10-31.08.15 was 79.34 years old (mode= 85, median= 81, SD= 10.29, 95% CI+- 0.24 [79.1, 79.58], range= 20-103). For the period 2013-14, the mean age of admission to hospital via A&E for case-managed patients was 79.50 years old (mode= 85, median= 82, SD= 9.95, 95% CI+-0.5 [79.0, 80.0], range= 40-101). The mean age of admissions at the area level for 2013-14 was 50.0 years of age and 57.0 years at the provider level (HSCIC, 2014). In comparison, the age of case managed admissions was significantly older as a proportion of the area and provider level populations.

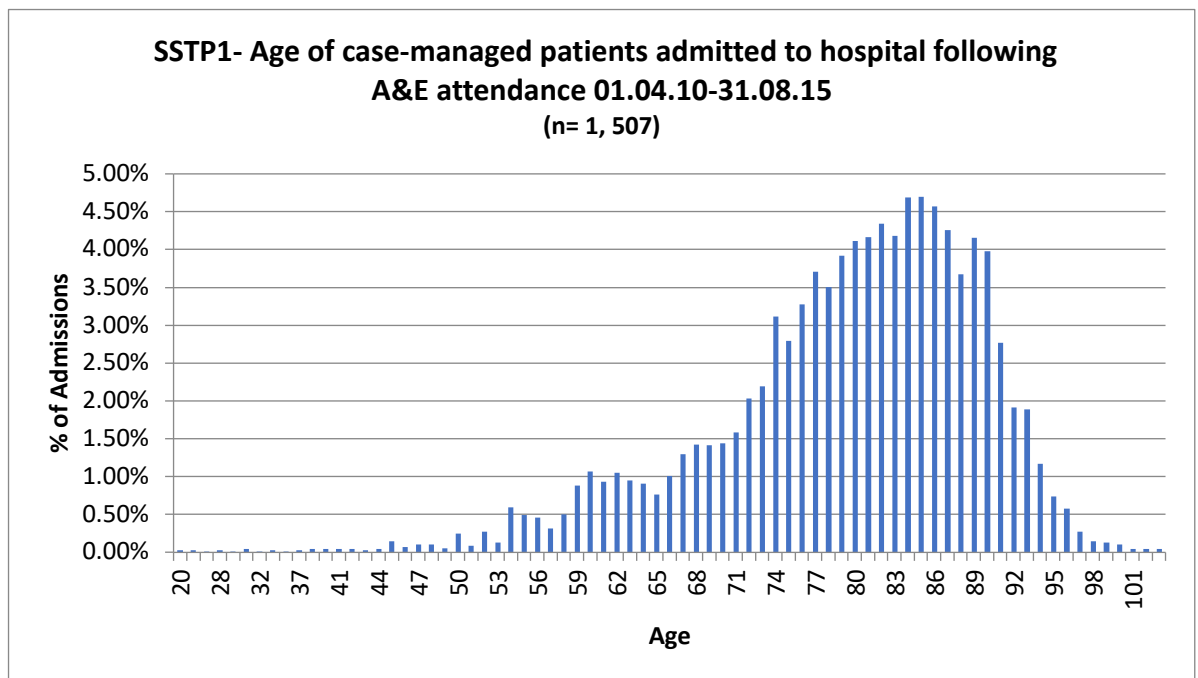


Figure 37. SSTP1- Age of case-managed patients admitted to hospital following A&E attendance 01.04.10–31.08.15.

5.4.4.2 Gender

With regards to gender, 46.66% (95% CI+- 1.17 [45.27, 47.61]) of the case management admissions from SSTP1 A&E for the period 01.04.10-31.08.15 were male and 53.34% (95% CI+- 1.17 [52.17, 54.51]) were females (as demonstrated in Figure 38). For the period 2013-14, 44.72% (95% CI+- 2.51 [42.21, 47.23]) of case-managed patients admitted from A&E were male and 55.28% (95% CI+- 2.51 [52.77, 57.79]) were female. Chi square analyses were conducted to determine if there was any significant difference between the two populations of male and female (gender) and admission or not admitted following attendance at A&E in SSTP1; no statistically significant difference was proven ($\chi^2 p=0.145$). In the area population 2013-14, 56.7% of admissions were from males and 43.3% from females (HSCIC, 2014). At the provider level 46.5% of admissions were from males and 53.5% from females in 2013-14 (HSCIC, 2014). The area level and case management level populations demonstrated similar patterns.

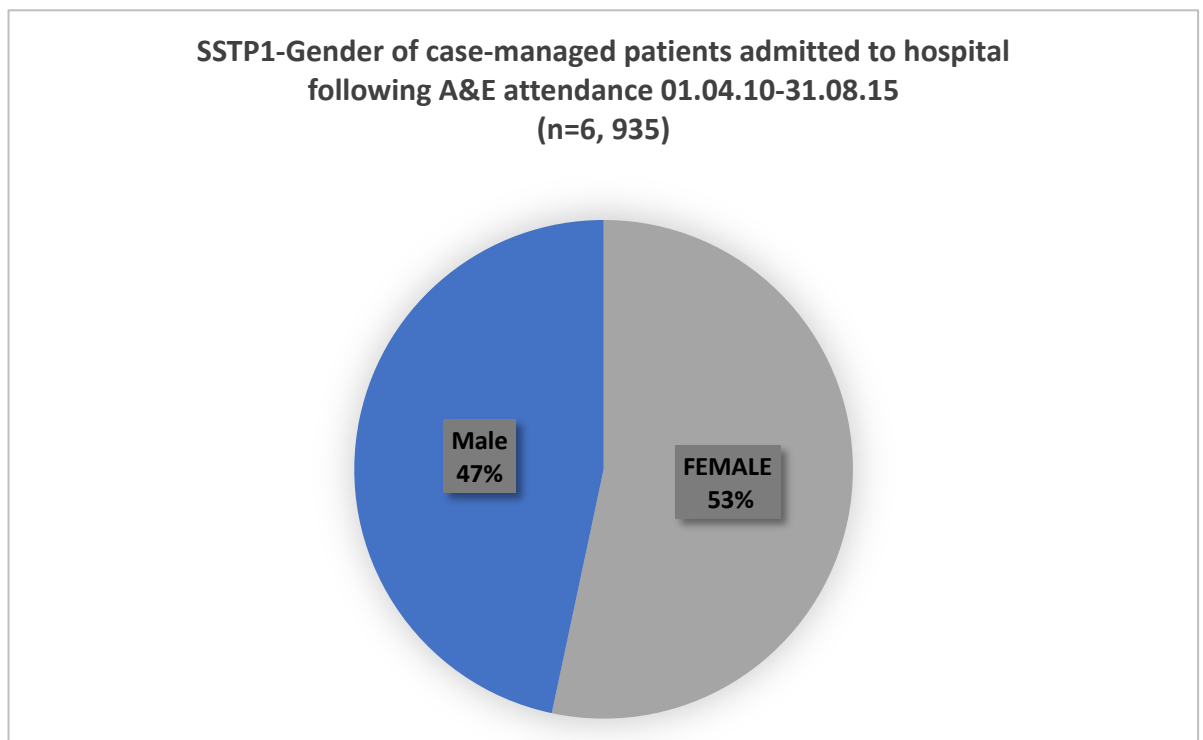


Figure 38. SSTP1- Gender of case-managed patients admitted to hospital following A&E attendance 01.04.10–31.08.15.

The gender of case management admissions from A&E in SSTP2 was 39.99% (95% CI+- 1.84 [38.15, 41.83]) male compared to 60.01% (95% CI+- 1.84 [58.17,61.85]) female. During 2013-14, 43.14% (95% CI+- 5.19 [37.95, 48.33]) of admissions were males compared to 56.86% (95% CI+- 5.19 [51.67, 62.05]) females. No statistically significant difference was demonstrated via Chi square analyses for gender and admitted or not admitted populations (χ^2 p=0.29). At the provider level in 2013-14, 41.2% of admissions were from males and 58.8% were from females (HSCIC, 2014). Similarities can be seen with the case management population and provider level population.

5.4.4.3 Ethnicity

Within the SSTP1 dataset within which ethnicity had been recorded (92.06%, n=6385) for the period 01.04.10–31.08.15, 6,153 (96.37%, 95% CI+- 0.44 [95.91, 96.83]) admissions represented ‘White – British’ patients. ‘Asian or Asian British – Pakistani’

was second-most frequent with 0.94% (95% CI+- 0.23 [0.7, 1.18]) and ‘Black or Black British African’ the least frequent with 0.03% (95% CI+- 0.04 [0, 0.07]). For the period 2013-14, ethnicity was recorded in 99.27% (n=1496, 95% CI+- 0.43 [98.84, 99.70]) of the case-managed patients’ admissions. ‘White-British’ accounted for 95.49% (95% CI+- 1.05 [94.44, 96.54]) of admissions, followed by ‘Asian or Asian British- Pakistani’ (1.26%, 95% CI+- 0.56 [0.70, 1.82]). ‘Black or Black British African’ was the least documented with 0.07% (95% CI+- 0.13 [0, 0.20]) of admissions. Twelve codes were used in total.

An ethnic code was recorded for every record in the SSTP2 dataset 17.01.11–08.10.15, with 12 ethnic category codes utilised; however, codes included ‘not stated’ and ‘unknown’. ‘British’ accounted for 83.79% (95% CI+- 1.38 [82.41, 85.17]), ‘not stated’ 8.88% (95% CI+- 1.07 [7.81, 9.95]), ‘unknown’ 3.71% (95% CI+- 0.71 [3.00, 4.42]) and ‘any other mixed background’ lowest at 0.04% (95% CI+- 0.08 [0, 0.12]). During 2013-14, eight ethnic category codes were used. ‘British’ represented 83.71% (95% CI+- 3.87 [79.84, 87.58]) of case-managed patient admissions, ‘unknown’ was second-most frequent 4.57% (95% CI+- 2.19 [2.38, 6.76]) and other black background/Caribbean/ other white background the least frequent at 0.29% (95% CI+- 0.56 [0, 0.85]). Contextualising and recounting the place of the case management population in relation to the area and provider level population was not possible due to the lack of ethnicity recording within the publicly available HES data (HSCIC, 2013. 2014).

5.4.4.4 Referral Source

The data field of referral source for admission was only supplied by SSTP1; SSTP2 provided an admission method column closely related, not supplied in the A&E attendance data.

The majority of SSTP1 case management patients that were admitted from A&E had a referral source of ‘emergency services,’ (91.28%; 95% CI+- 0.66 [90.62, 91.94]). Direct attendance at A&E accounted for 5.96% of admissions (95% CI+- 0.56 [5.4, 6.52]).

For all A&E attendances within SSTP1, for the time 01.04.10–31.08.15, the A&E conversion rate for case-managed patients was 76.99% (95% CI+- 0.87 [76.12, 77.86]). For case-managed patients who arrived via emergency services, the A&E conversion rate was 82.78% (95% CI+- 0.85 [81.93, 83.63]). For case-managed patients who presented directly to A&E, the conversion rate was 38.82% (95% CI+- 2.93 [35.89, 41.75]). No publicly accessible HES data were available for comparison, but the England-wide A&E conversion rate for the general population who arrive at A&E via 999 emergency services is known to be 51% (National Audit Office, 2013). A comparison with the period 2013-14 can be seen in Table 23. No publicly available HES data could be utilised for comparison.

Table 23 *SSTP1- A&E Conversion Rates for 01.04.10–31.08.15 and 2013-14 for All A&E Attendances of Case-Managed Patients and Those Who Arrived via 999 Ambulance Services*

	A&E conversion rate for all case management patient A&E attendances	A&E conversion rate for case management patients who arrived at A&E via 999 emergency services
01.04.10-31.08.15	76.99%	82.78%
2013-14	82.26%	88.40%
National Average (NAO, 2013)	26%	51%

As stated in 5.5.4, the A&E conversion rate for all case-managed patient attendances at A&E in SSTP2 during 17.01.11-08.10.15 was 36.41% (95% CI+- 1.09 [35.32, 37.5]), and 17.72 % (95% CI+- 1.68 [16.04, 19.4]) in 2013-14. Referral source was not supplied by SSTP2; however, a similar field of ‘AdmissionMethodDescription’ was supplied, although it did not indicate if admissions had arrived via 999 emergency service or were self-directed. Therefore, no further analysis was possible on this data field.

5.4.4.5 Length of Stay

For the period 01.04.10–31.08.15, length of stay in SSTP1 was recorded as less than one day 19.55% (95% CI± 0.93 [18.62, 20.48]) of the time. Maximum length of stay was recorded as 195 days (mean= 8.62, mode= 0, median= 29, SD= 40.88, range= 0-195). For the period 2013-14, in 19.84% (95% CI± 2.01 [17.83, 21.85]) of admissions, length of stay was recorded as less than one day. Maximum length of stay was 141 days (0.07%, 95% CI± 0.13 [0, 0.20]) (mean= 8.22, mode= 0, median= 4, SD= 12.07). 68.26 % (95% CI± 2.35 [65.91, 70.61]) admissions were under three days in this year as Figure 39 demonstrates. At the area level the mean length of stay was 5 days and the median 1, and at the provider level then mean and median length of stay was 3 days in 2013-14 (HSCIC, 2014). Lengths of stays are higher in the case management population in comparison to the area and provider level population.

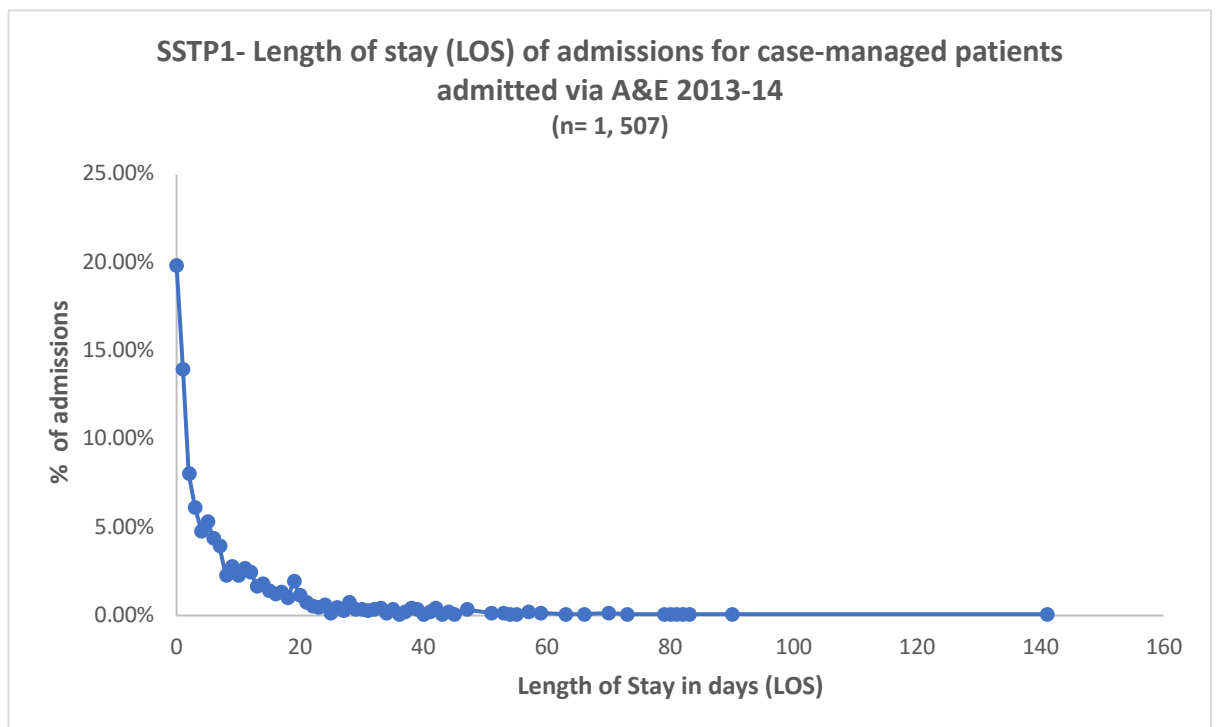


Figure 39. SSTP1- Length of Stay (LOS) of admission for case-managed patients admitted via A&E 2013-14.

Chi squared analyses were conducted to determine whether there was any significant difference between A&E attendance (and subsequent admission) in or out-of-hours

and length of stay. There was no statistically significant difference (χ^2 $p=0.086$). Length of stay was not affected by whether patients attended A&E during the in-hours or out-of-hours period. Data breakdown can be seen in Table 24.

Table 24 *SSTP1- Length of Stay Comparison with Attendance at A&E (and Subsequent Admission) In- and Out-of-Hours 01.04.10–31.08.15*

LOS	0	1	2
In hours	36.58 % n=496 (95% CI+- 0.99 [35.59, 37.57])	40.81% n=411 (95% CI+-1.01 [39.80, 41.82])	36.75% n=201 (95% CI+-1.0 [35.75, 37.75])
Out-of-hours	63.42% n=860 (95% CI+- 0.99 [62.43, 64.41])	59.19% n=596 (95% CI+- 1.01 [58.18, 60.20])	63.25% n=346 (95% CI+-1.0 [62.25, 64.25])

Analysis of SSTP2 demonstrated that length of stay was recorded as less than one day 37.02% (95% CI+- 1.81 [35.21, 38.83]) of the time. Maximum length of stay was recorded as 103 days (0.11%, 95% CI+- 0.12 [0, 0.23]) for the full data set 17.01.11-08.10.15 (mean= 42.59, mode= 1, median= 9.5, SD= 132.98, 95% CI+- 4.99 [37.6, 47.59], range= 0-103). The period 2013-14 LOS ranged from 0-41 days. A length of stay less than one day was recorded in 60.57% (95% CI+- 5.12 [55.45, 65.69]) of admissions for case-managed patients. The maximum LOS stay of 41 days was in 0.29% (95% CI+- 0.56 [0, 0.85]) of admissions (mean= 15.91, mode= 1, median= 2, SD= 45.26, 95% CI+- 4.74 [11.17, 20.65]). The majority of admissions (85.71%, 95% CI+- 3.67 [82.04, 89.38]) were under three days in this year for SSTP2. At the provider level the mean and median length of stay was 3.5 days in 2013-14 (HSCIC, 2014); lower than the case management population and area level population.

Chi squared analyses were conducted to determine whether there was any significant difference between A&E attendance (and subsequent admission) in- or out-of-hours

and length of stay. There was no statistically significant difference ($\chi^2 p=0.39$). Length of stay was not affected if case-managed patients attend A&E (and are subsequently admitted) in-hours compared to out-of-hours. Data breakdown can be seen in Table 25.

Table 25 SSTP2- Length of Stay Comparison with Attendance at A & E (and Subsequent Admission) In- and Out-of-Hours 17.1.11–08.10.15

LOS	0	1	2
In hours	46.18 % n=466 (95% CI+- 1.87 [44.31, 48.05])	51.69% n=160 (95% CI+- 1.88 [49.81, 53.57])	45.75% n=70 (95% CI+- 1.87 [43.88, 47.62])
Out-of-hours	53.82% n=543 (95% CI+- 1.87 [51.95, 55.69])	48.31% n=157 (95% CI+- 1.88 [46.43, 50.19])	54.25% n=83 (95% CI+- 1.87 [52.38, 56.12])

5.4.4.6 HRG code

Health Resource Group (HRG) codes were supplied by SSTP1 for the admissions to hospital for case-managed patients. The HRG code is the NHS cost-coding tariff used to calculate the payment emergency departments receive for an attendance at A&E and calculate the further payments they may receive for non-elective activity if the patient is then admitted. Payments for emergency services depend on the level of activity and the national tariff which applies to that activity plus the market forces factor payment which is unique to an organisation (HSCIC, 2013).

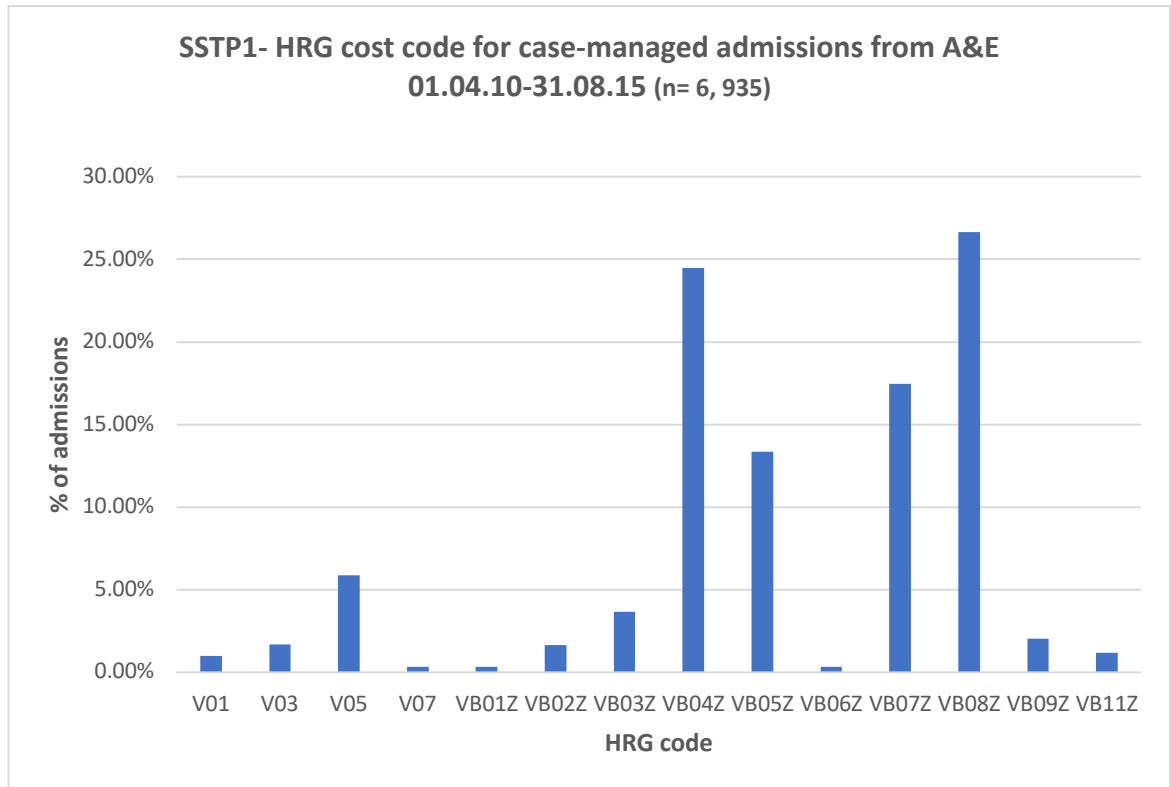


Figure 40. SSTP1- HRG cost code for case-managed admissions from A&E 01.04.10–31.08.15.

All the case management admissions were ‘V’ codes, which represented the ‘Multiple trauma, emergency medicine and rehabilitation’ cost grouper. The most frequent HRG code ‘VB08Z’ (26.60%, 95% CI+/- 1.04 [25.56, 27.64]) represents ‘Emergency medicine category 2, investigations with category 1 treatment’ providing a £110 payment per patient attendance in 2013/14 (HSCIC, 2013). The second-most frequent was ‘VB04Z’ (24.48%, 95% CI+/- 1.01 [23.47, 25.49]) representing ‘Emergency Medicine category 2 investigations with category 4 treatment’ and providing a £139 payment per patient attendance 13/14 (HSCIC, 2013). ‘V05’ (5.87%, 95% CI+/- 0.55 [5.32, 6.42]) correlated to ‘low cost investigation (died or admitted). 1.17% (n= 81, 95% CI+/- 0.25 [0.92, 1.42]) of case-managed patient admissions had no significant investigation or treatment. The most frequent codes for case-managed patients appear to be mid-range cost codes within the NHS tariff. The denotations of the HRG recorded in Figure 41 are as follows:

- V01- High-cost imaging (died/admitted)
- V03- Other high-cost investigation (died/admitted)

- V05- Low-cost investigation (died/admitted)
- VB01Z- Any investigation with category 5 treatment (highest cost code)
- VB02Z- Category 3 investigations with category 4 treatment.
- VB03Z- Category 3 investigations with category 1-3 treatments
- VB05Z- Category 2 investigations with category 3 treatment
- VB06Z- Category 1 investigations with category 1-3 treatments
- VB07Z- Category 2 investigations with category 2 treatments
- VB09Z- Category 1 investigations with category 1 treatment
- VB011Z- No investigation with no significant treatment.

During 2013-2014, 'VB04Z' was the most frequent HRG code (31.79%, 95% CI+- 2.35 [29.44, 34.14]) then 'VB08Z' (25.68%, 95% CI+- 2.21 [23.47, 27.89]) mirroring the full data set; however, only 10 codes were utilised in this period (VB012Z-VB11Z).

SSTP2 did not provide HRG codes. However, some diagnosis codes for admissions from A&E were provided; the most common codes used during the period 17.01.11–08.10.15 were:

- 1) Dyspnoea 6% (95% CI+- 0.89 [5.11, 6.89])
- 2) Chest Pain, unspecified 5.64% (95% CI+- 0.87 [4.77, 6.51])
- 3) Unspecified acute lower respiratory tract infection 4.97% (95% CI+- 0.82 [4.15, 5.79]).

In all, 167 codes were noted and often duplicated or meant the same thing. During 2013-14, 'chest pain' was the highest documented diagnostic code for admission (8.58%, 95% CI+- 2.93 [5.65, 11.51]), followed by COPD (6.93%, 95% CI+- 2.66 [4.27, 9.59]) then Dyspnoea (6.60%, 95% CI+- 2.6 [4.0, 9.2]) with 81 diagnostic codes utilised. Both SSTP1 and SSTP2 data sets were incomparable with HES data.

5.4.5 Distribution of Admissions

Data sets from SSTP1 and SSTP2 for case-management patients were analysed with regard to month, day and hour of admission to hospital from A&E. No HES data was available for comparison.

5.4.5.1 Month

The full data sets were not comparable for this parameter due to the uneven number of months, lack of full-year data and lack of publicly available HES data available for comparison.

The admissions of case-managed patients from A&E for SSTP1 for the period 2013-14 was equally high in July 2013 and October 2013 (9.36%, 95% CI+- 1.54 [7.82, 10.9]) and lowest in June 2013 (6.17%, 95% CI+- 1.27 [4.9, 7.44]) (Figure 41).

Admissions from A&E were highest in January 2014 and March 2014 (11.43%, 95% CI+- 3.33 [8.1, 14.76]) and lowest in July 2013 (4.0%, 95% CI+- 2.05 [1.95, 6.05]) during 2013-14 for SSTP2. Data for SSTP1 and SSTP2 are presented in Figure 41.

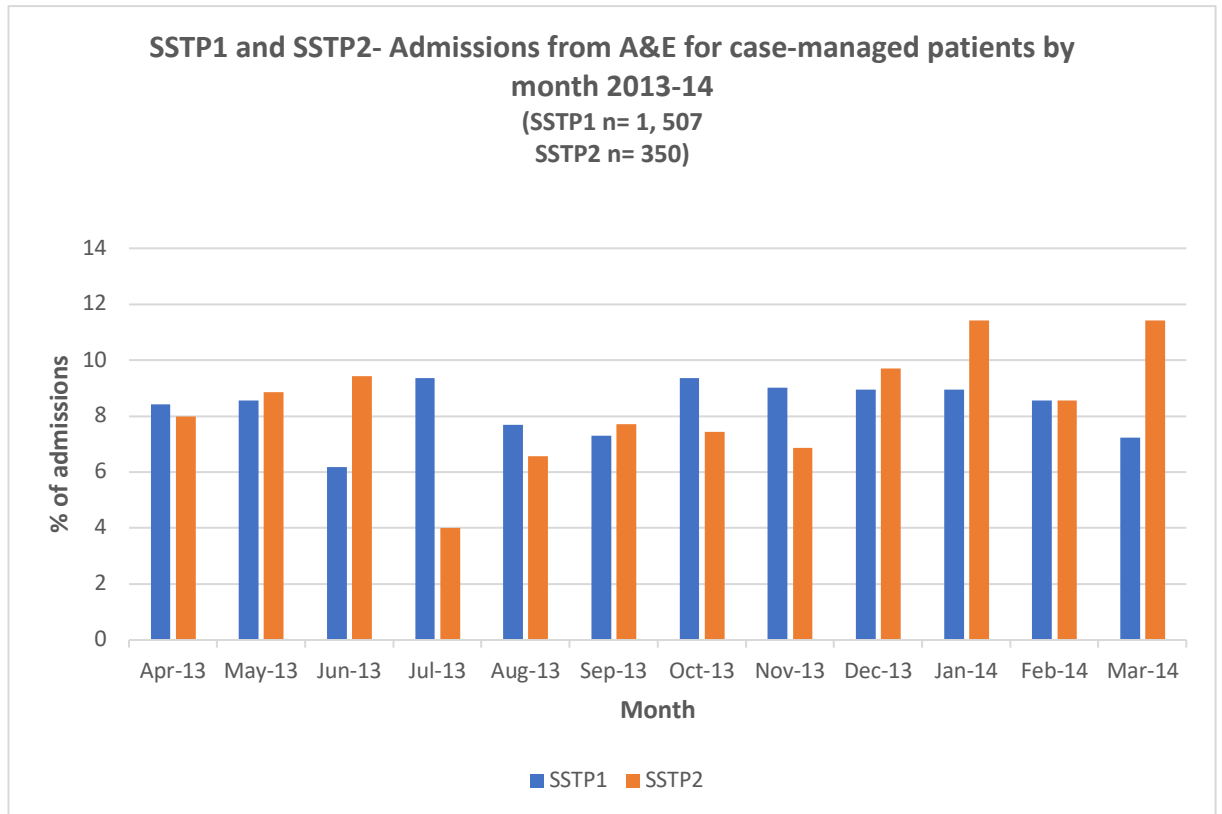


Figure 41. SSTP1 and SSTP2 Admissions from A&E for case- managed patients by month 2013-14.

5.4.5.2 Day

With respect to day of the week for the period 2013-14, more case-management attendances in SSTP1 were converted from A&E on a Sunday (15.53%, 95% CI+- 1.83 [13.7, 17.36]) than any other day of the week, with Tuesday being the lowest day (13.01%, 95% CI+- 1.7 [11.31, 14.71]); this can be seen in Figure 41. With regards to SSTP2, more case management A&E attendances were converted to admissions on a Monday than on any other day of the week (18.57%, 95% CI+- 4.07 [14.5, 22.64]), Wednesday (9.93%, 95% CI+- 3.13 [6.8, 13.06]) being the lowest. Data for SSTP1 and SSTP2 are presented in Figure 41.

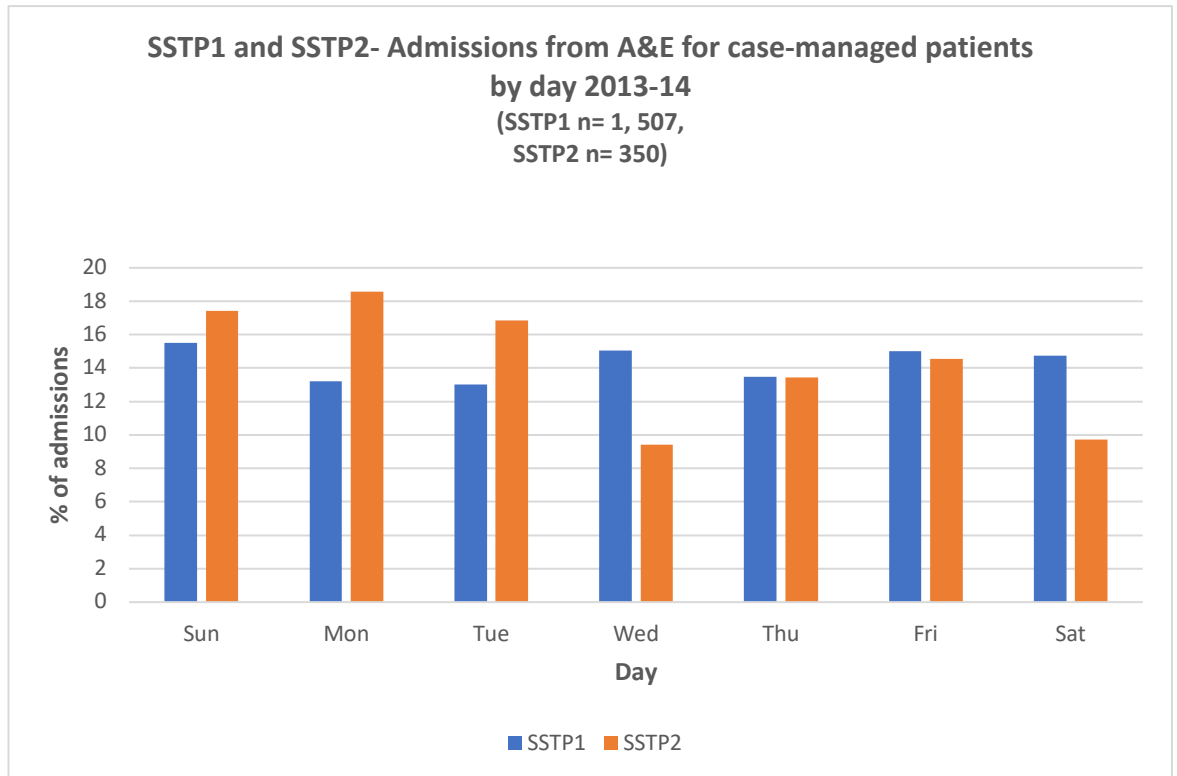


Figure 42. SSTP1 and SSTP2 - Admissions from A&E for case-managed patients by day 2013-14.

5.4.5.3 Hour

The distribution of admissions in SSTP1 in- and out-of-hours for the time period 17.01.11–08.10.15 was aggregated into ‘admitted’ and ‘not admitted for analyses; in-hours, 76.74 % (95% CI+- 0.87 [75.87, 77.61]) of case-managed patients were admitted, and 23.26% (95% CI+- 0.87 [22.39, 24.13]) were not admitted. In the out-of-hours, 78.59% (95% CI+- 0.85 [77.74, 79.44]) of case-managed patients were admitted and 24.41% (95% CI+- 0.89 [23.52, 25.30]) were not admitted. Chi square analyses were conducted to determine whether there was any significant difference between the two populations for the time periods ‘in-hours’ and ‘out-of-hours.’ Analyses determined that they were statistically significantly different ($\chi^2 p < 0.005$).

Regarding the proportions of patients admitted or not admitted depending on time as classified by ‘day’, ‘evening’ or ‘night’ in SSTP1 (00:00-07:59, 08:00-17:59, 18:00-11:59), further Chi square analyses were conducted. There was a statistically significant difference between the three populations ($\chi^2 p < 0.05$) for the three-way

comparison and χ^2 $p < 0.0167$ for the day versus evening and day versus night comparison with Bonferroni correction applied to the p value, no significance was attributed for evening versus night. Data are presented in Table 26.

Table 26 SSTP1- Day/Evening/Night Attendance at A&E (01.04.10–31.08.15) Comparison with On-Going Admission to Hospital

	Day	Evening	Night
Admitted	n=3,731 (75.09%) (95% CI+-0.89 [74.2, 75.98])	n=1,715 (78.53%) (95% CI+- 0.85 [77.68, 79.38])	n=1,489 (80.27%) (95% CI+- 0.82 [79.45, 81.09])
Not admitted	n=1,238 (24.91%) (95% CI+- 0.89 [24.02, 25.80])	n=469 (21.47%) (95% CI+- 0.85 [20.62, 22.32])	n=366 (19.73%) (95% CI+- 0.82 [18.91, 20.55])
Total	4969	2184	1855
Day vs evening	P=0.00169061 P<0.0167		
Day vs night	P=7.20436e ⁻⁰⁵ P<0.0167		
Evening vs night	P=0.354852565 p>0.0167		<i>Bonferroni Correction</i> <i>p=<0.0167</i>

Further analyses of the period 2013-14 (SSTP1) revealed that, in-hours, 79.97% (95% CI+- 1.83 [78.14, 81.80]) of case-managed patients were admitted and 20.03% (95% CI+- 1.83 [18.20, 21.86]) were not admitted. In the out-of-hours, 83.84% (95% CI+- 1.8 [79.04, 82.64]) were admitted and 16.16% (95% CI+- 1.69 [14.47, 17.85]) were not admitted. Chi square analyses showed statistically significant difference between the two populations of in-hours and out-of-hours (χ^2 $p=0.033$).

Comparing the day (08:00-17:59), evening (18:00-11:59) and night (00:00-07:59) time periods in SSTP1, Chi square testing determined statistically significant difference (χ^2 $p<0.05$) for the three-way comparison and χ^2 $p<0.0167$ for two (day

versus night and evening versus night) of the pairwise comparisons with Bonferroni correction applied to the p-value. Data are presented in Table 27.

Table 27 SSTP1- Day/Evening/Night Attendance at A&E (2013-14) Comparison with On-Going Admission to Hospital

	Day	Evening	Night
Admitted	n=811 (80.38%) (95% CI+- 1.82 [78.56, 82.20])	n=352 (81.48%) (95% CI+- 1.78 [79.70, 83.26])	n=344 (87.98%) (95% CI+- 1.49 [86.49, 89.47])
Not admitted	n=198 (19.62%) (95% CI+- 1.82 [17.8, 21.44])	n=80 (18.52%) (95% CI+- 1.78 [16.74, 20.30])	n=47 (12.02%) (95% CI+- 1.49 [10.53, 13.51])
total	1009	432	391
Day vs evening	p=0.62626644 p>0.0167		
Day vs night	p=0.0078236 P<0.0167		
Evening vs night	p=0.01038694 P<0.0167		<i>Bonferroni Correction p=<0.0167</i>

With regards to the distribution of admissions in- and out-of-hours for the time period for SSTP2 (17.01.11–08.10.15), the data were again aggregated into ‘admitted’ and ‘not admitted’ for analyses. For in-hours, 40.39% (95% CI+- 1.11 [39.28, 41.5]) of case-managed patients were admitted and 59.61% (95% CI+- 1.11 [58.5, 60.72]) were not admitted. In the out-of-hours, 33.40% (95% CI+- 1.07 [32.33, 34.47]) of case-managed patients were admitted and 66.00% (95% CI+- 1.07 [64.93, 67.07]) were not admitted. Chi square analyses were conducted to determine whether there was any significant difference between the two populations for the time periods ‘in-hours’ and ‘out-of-hours’. A statistically significant difference was demonstrated (χ^2 p< 0.005) for the two-way comparison.

Looking at proportions of patients admitted or not admitted depending on time of day, evening or night in SSTP2 (00:00-07:59, 08:00-17:59, 18:00-11:59), further Chi square analyses were conducted. There was a statistically significant difference between the three populations ($\chi^2 p < 0.05$) for the three-way comparison and $\chi^2 p < 0.0167$ for each of the comparisons with Bonferroni correction applied to the p-value. Data are presented in Table 28.

Table 28 SSTP2- Day/Evening/Night Attendance at A&E (17.01.11–08.10.15) Comparison with On-Going Admission to Hospital

	Day	Evening	Night
Admitted	n=1,716 (39.94%) (95% CI+- 1.11 [38.83, 41.05])	n=391 (21.52%) (95% CI+-0.93 [20.59, 22.45])	n=619 (45.05%) (95% CI+- 1.13 [43.92, 46.18])
Not admitted	n=2,580 (60.06%) (95%CI+- 1.11 [58.95, 61.17])	n=1,426 (78.48%) (95% CI+- 0.93 [77.55, 79.41])	n=755 (54.95%) 95% CI+- 1.13 [53.82, 56.08])
Total	4296	1817	1374
Day vs evening	P=1.21134x10 ⁴³ P<0.0167		
Day vs night	P=0.000814194 P<0.0167		
Evening vs night	P=1.82704x10 ⁴⁵ P<0.0167		<i>Bonferroni Correction</i> <i>p=<0.0167</i>

Additional Chi square analyses were conducted to determine if there was any significant difference between the two populations of male and female (gender) and admission or not admitted following attendance at A&E in SSTP2; no statistically significant difference was proven in the full dataset (p=0.291).

For comparing the day (08:00-17:59), evening (18:00-11:59) and night (00:00-07:59) time periods, Chi square testing determined statistically significant difference (χ^2 $p < 0.05$) for the three-way comparison and χ^2 $p < 0.0167$ for two (day versus evening and evening versus night) of the pairwise comparisons with Bonferroni correction applied to the p-value). Data are presented in Table 29.

Table 29 SSTP2- Day/Evening/Night Attendance at A&E (2013-14) Comparison with On-Going Admission to Hospital

	Day	Evening	Night
Admitted	n=217 (19.72%) (95% CI+- 1.75 [17.97, 21.47])	n=58 (12.18%) (95% CI+- 1.44 [10.74, 13.62])	n=75 (20.11%) (95% CI+- 1.77 [18.34, 21.88])
Not admitted	n=909 (80.73%) (95% CI+- 1.74 [78.99, 82.47])	n=418 (87.82%) (95% CI+- 1.44 [86.38, 89.26])	n=298 (79.89%) (95% CI+- 1.77 [78.12, 81.66])
Total	1126	476	373
Day vs evening	p=0.00058686 p<0.0167		
Day vs night	p=0.72400263 p>0.0167		
Evening vs night	p=0.00162164 p<0.0167		<i>Bonferroni Correction p=<0.0167</i>

5.4.6 Predicting Hospital Admission

In order to conduct binary logistic regression, SSTP1 data were cleansed and the first attendance for each individual taken for the period analysed, 01.04.10 – 31.08.15. Patients who ‘died in the department’ were excluded from the data set, and the remaining information was aggregated into ‘admitted’ and ‘not admitted’ resulting in

3,316 unique patient episodes. Of these, 76.80% were admitted to hospital. The model utilised the following variables: gender, in/out-of-hours, ethnicity, and referral source. The Wald statistic demonstrated that only 'referral source' made a significant contribution to prediction ($p < 0.005$). Nagelkerke's R^2 of 0.199 on a reduced variable model using only referral source indicated that there were other variables accountable for the majority of the variability in the data. The SSTP1 2013-14 data set returned an insignificant regression outcome with a low Nagelkerke R^2 value and did not add to the prediction of hospital admission due to the small data set.

For SSTP2 (17.01.11–08.10.15), the data were cleansed and aggregated as exemplified with SSTP1, the variables utilised in this model included gender, in/out-of-hours, and 'day/eve/night. As predictors of admissions, the Wald statistic, determined that 'day, evening or night time period' made a significant contribution to prediction ($p < 0.005$). Nagelkerke's R^2 of 0.46 on a multiple variable model indicated that there were other variables accountable for the majority of the variability in the data. The time period of admission being 'day, evening or night' was a fairly good predictor of admission to hospital in SSTP2 but 54% was accountable elsewhere. Further binary logistic regression analysis was run on the 2013-14 dataset. An equivalent criterion was used and demonstrated that 'day, evening or night time period' made a significant contribution to prediction (Wald Statistic $p < 0.05$). Nagelkerke's R^2 of 0.12 on a multiple variable model indicated that there were other variables accountable for the majority of the variability in the data. Limitations are acknowledged due to the small data set.

5.4.7 Recurrent Attender Analyses: the Cases of Patient's X and Y

An anonymised patient ID was provided by SSTP1; therefore, it was possible to analyse the number of attendances per patient. During analysis of the A&E attendance data it was noted that there were some case-managed patients who attended A&E on a number of occasions. For example, one individual attended A&E 92 times during the period 01.04.10–31.08.15 and this case was worthy of further scrutiny.

Unlike the patterns presented in the cumulative data set, Patient X presented directly to A&E 77.17% of the time (n= 71, 95% CI+- 8.58 [68.59, 85.75]), utilising the 999 emergency services for an ambulance transfer on only 21.74% (n= 20, 95% CI+- 8.43 [13.31, 30.17]) of occasions. Patient X also had a lower-than-average A&E conversion rate, having been admitted only nine times (9.78%, 95% CI+- 6.07 [3.71, 15.85]); he was discharged 78 (84.78%, 95% CI+- 7.34 [77.44, 92.12]) times and left without being treated on two (2.15%, 95% CI+- 2.98 [0, 5.15]) occasions. These data suggest this individual was attending A&E inappropriately.

As with SSTP1, SSTP2 had also provided a linking identifier, enabling patient level analyses. Patient Y was a male, 'Irish' patient whose age was not supplied by the Trust, who attended A&E 112 times during the period 17.01.11–08.10.15. When examining his reasons for attendance, the researcher noted that his presenting condition was left 'blank' in 40 (35.60%, 95% CI+- 8.87 [26.73, 44.47]) of his attendances. Interestingly, this male patient appeared to have attended four (5.56%, 95% CI+- 4.24 [1.32, 9.8]) times for 'Other specified non-inflammatory disorders of vagina,' and also eight times (11.1%, 95% CI+- 5.82 [5.29, 16.93]) for 'disorders of the male genital organs, unspecified' leading to questions regarding the accuracy of his diagnostic data. Similar to Patient X, but unlike the average case-managed patient, Patient Y was discharged more than he was admitted (n= 76, 67.85%, 95% CI+- 8.65 [23.49, 40.79]). Of the 36 (32.14%, 95% CI+- 8.65 [23.49, 40.79]) times he was admitted, the majority were 0 (66.66%, 95% CI+- 15.4 [51.26, 82.06]) day admissions.

5.5 *A Priori* Outcomes for Qualitative Studies

Studies one and two have provided key findings for further investigation in studies three, four and five in this sequential explanatory mixed-methods study. Creswell's (2007) method of qualitative data analysis included both deductive and inductive elements of analysis with the initial use of a codebook in the deductive phase. The codebook produced from the above findings is presented in Table 30.

Table 30 A Priori Codebook Produced from the 999 Callout Data (Study One) and A&E Attendance and Hospital Admission Data (Study Two) of Case-Managed Patients

	Brief code	Full description	When to use the code
1.0	Demographics- age, gender, geography	CCM patients 'experience of interaction with services in relation to age, gender, geography etc.	Use this family of codes when the participant discusses any demographics in relation to 999/A&E or admission experience
2.0	Time	Time CCM patients, carers or nurses interact with services	Use this code for any activity/experience related to day, time, month, year, recurrence of contact with 999, A&E or hospital services.
3.0	Attendance Method- 999, 111, Case manager, GP, self, other	Initial service interaction experiences	Use this umbrella code for any activity relating to initial contact with any service participant describes.
4.0	Outcome- convey, not convey, admit, turned around	Outcome of interaction experiences	Use this family of codes for experiences of outcome of interaction with services
5.0	Clinical reasoning	What was the reason for CCM patient, carer or nurse interacting with services	Use this umbrella code for description of all reasons for contact with services

5.6 Chapter Summary

The analysis of 999 callout data, A&E attendance and hospital admission data for case-managed patients, studies one and two, have accomplished several things:

1. Many different IT systems are used within the NHS to log patient admissions in the acute secondary care setting
2. A current position of lack of interoperability exists between acute secondary care and community care providers to track admissions for this patient group.
3. Legal data-sharing issues exist, hindering collaboration between trusts and services.
4. Admission data-collection highlights errors, inaccuracies and missing data in coding patient 999 callouts, A&E attendances and admissions to hospital.
5. Ethnicity coding and recording remains variable in accuracy within the NHS.
6. Studies one and two have described the pattern of A&E attendances, hospital admissions and 999 callouts for patients of the case management programme.
7. Case-managed patients calling 999, presenting at A&E and being admitted to hospital are generally 70 years and older and a greater proportion are female.
8. Falls, breathing problems, UTIs and chest pain were the main reasons for utilising services in the case-managed population.
9. A greater proportion of case-managed patients arrived at A&E via emergency services.
10. The A&E conversion rate for the case-managed population was higher than that of the general population.
11. For those A&E attendances converted to admissions, most lengths of stay in hospital were short in duration.
12. No out-of-hours versus in hours A&E attendance, 999 callouts or admission burden existed in the out-of-hours period for patients of the case management programme. Given that 70% of the time available is out-of-hours it could be expected that more people access services in that amount of time. In terms of proportionality, a disproportionate amount of case managed patients utilised services during operational hours.

13. However, case-managed patients presenting at A&E 00:00-07:59 hours were more likely to have ongoing admission to hospital than at other time periods.
14. SSTP1 found a significant result for referral source and SSTP2 showed a significant result for time of day as predictors of admission to hospital.
15. Presenting condition data represented the most inaccurate data field, yet could have been the most useful as a predictor of admission to hospital.
16. The production of an *a priori* codebook for the basis of the qualitative analysis in studies three, four and five.

Therefore, it can be concluded that this study met its aims and objectives. In order to explore these patterns, a triangulation approach of engaging with the key stakeholders for their perspectives was subsequently investigated in the qualitative portion of the study. Findings are presented in Chapter 6, and a debate of the findings of both the qualitative and quantitative data is undertaken in Chapter 7.

Chapter 6: Findings of Studies Three, Four and Five

Findings of the Exploration of Key Stakeholders' Perspectives on the 999 Ambulance Use, A&E Attendance and Hospital Admissions for Patients of the NHS Case Management Programme

6.1 Introduction

The investigation of 999 ambulance callout data, A&E attendance and hospital admission data for case management patients produced several key outcomes regarding this patient population, and the creation of an *a priori* codebook of key domains presented in section 5.5. This *a priori* data allowed for the ongoing exploration of key stakeholders' perspectives (patients, carers and case managers) using interviews and focus groups, which were analysed through Creswell's Spiral of Analysis (2007), using both deductive and inductive approaches.

The patient, carer and case-manager studies were analysed as independent studies, although brought together for presentation within this chapter in order to highlight the key commonalities and variances. The themes, subthemes and microthemes produced from analyses were formulated into a thematic framework. The findings of the qualitative studies are presented within this chapter but contain little discussion, unless necessary to explore key findings. A discussion of the quantitative and qualitative findings is presented in Chapter 7.

6.2 Context Setting

Studies three to five were conducted in one large NHS Community Foundation Trust within the same geographical conurbation from which the data for studies one and two were retrieved. The trust employs over 50 case managers, with a combined caseload of over 2500 patients. All patients and carers who were contacted partook, and a zero-attrition rate was attained. Table 31 provides details of the coding of participants for studies three to five and length of time of the interviews and focus groups.

Table 31 *Participant Codes for Studies Three, Four and Five*

Unit of Analysis	Identification Code	
Study 3- Patients interviews (p) Interview lengths: 30minutes to 76 minutes	n=19 P001 P002 P003 P004 P005 P006 P007 P008 P009 P010 P012 P013 P014 P015 P016 P017 P034 P035 P040	Female n=11 Male n=8 <70 years old n=7 >70 years of age n=12
Study 4- Carers interviews (c) Interview lengths: 35minutes to 80minutes	n=19 P011 P018 P019 P036 P037 P038 P039 P041 P042 P048 P049 P050 P051 P052 P053 P054 P055 P056 P07	Female n=7 Male n=12 < 70 years old n=7 >70 years old n=12
Study 5- Case manager focus groups (s) Focus group lengths: 63minutes, 57minutes and 75 minutes respectively	n=18 FG1 (n=8) P020-P028, FG2 (n=5) P029-P033 FG3 (n=5) P043-P047	Female n=16 Male n=2

The *a priori* codebook produced from the quantitative studies contained five key outcomes from the 999 callout, A&E attendance and hospital admission data: demographics, timing, attendance method, outcome and clinical reasoning. This codebook formed the basis of the deductive approach in initial analyses and was further developed through inductive methods to produce a thematic framework including the qualitative outcomes for all key stakeholders; patients, carers and case managers. In total, the thematic framework produced contains the five *a priori* themes, one emergent deductive theme, 15 subthemes and ten microthemes. Twenty-five

themes were common to all key stakeholders, two common to patients and carers, two common to carers alone, one common to carers and case managers, and one common to patients and case managers. The thematic framework is presented below in Table 32 and Figure 43. Each theme will then be presented in turn.

Table 32 *Thematic Framework- Key Stakeholders' Perspectives*

	Theme	Subtheme	Microtheme	
<i>a priori</i> themes (studies 1 & 2)	1: Demographics	1.1: Patient Age		
		1.2: Carer Age		
		1.3 Carer Health		
	2: Timing	2.1: Nighttime Service Interaction	2.1.1: Isolation	
			2.1.2: Personal Networks	
			2.1.2: Panic/anxiety	
			2.1.4: Out-of-hours Service Provision	
		2.2: Delay Seeking Help		
	2.3: Daytime Service Interaction	2.3.1: Case Manager Directed Admissions		
		2.3.2: GP Directed Admissions		
3: Attendance Method	3.1: 999 Emergency Services			
	3.2: Direct Admission CDU/MAU			
	3.3: Media Impact			
	3.4: Attendance Avoidance Efforts			
4: Outcome	4.1: Turned Around in A&E			
	4.2: Admission Decision			
	4.3 Length of Stay			
5: Clinical Reasoning				
New deductive theme (studies 3,4 & 5)	6: Wider Resources	6.1: Service Resource	6.1.1: Case Manager Resource	
			6.1.2: Communication	
			6.1.3: Community Resource	
	6.2: Human Resource	6.2.1: Patient Resource		
		6.2.2: Carer Resource		

Key

Black – Common to patients, carers and case managers, Green – Carer theme, Red – Carer and case manager theme, Blue – Patient and carer theme, Yellow – Patient and case manager theme.

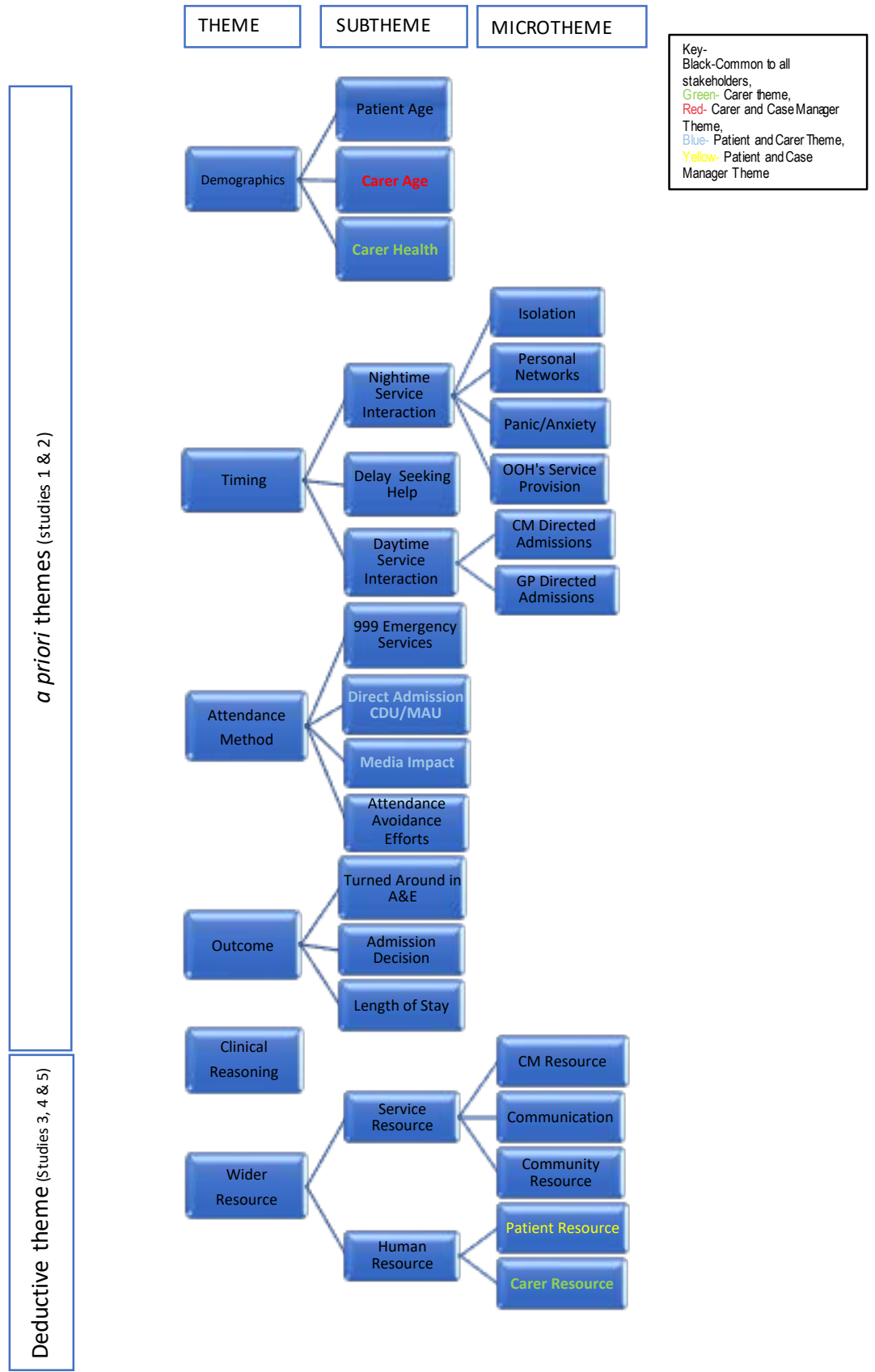


Figure 43. Thematic Framework- key stakeholders' perspectives.

6.3 Demographics

Population characteristics such as age and gender were identified as key outcomes from studies one and two; therefore, demographics was as an *a priori* theme used in the codebook for analysis. Figure 44 presents the pictorial representation of the theme and three subthemes: patient age, carer age and carer health. Patient age was described by all key stakeholders, carer age by carers and case managers and carer health was a theme emerging from carer perspectives alone.

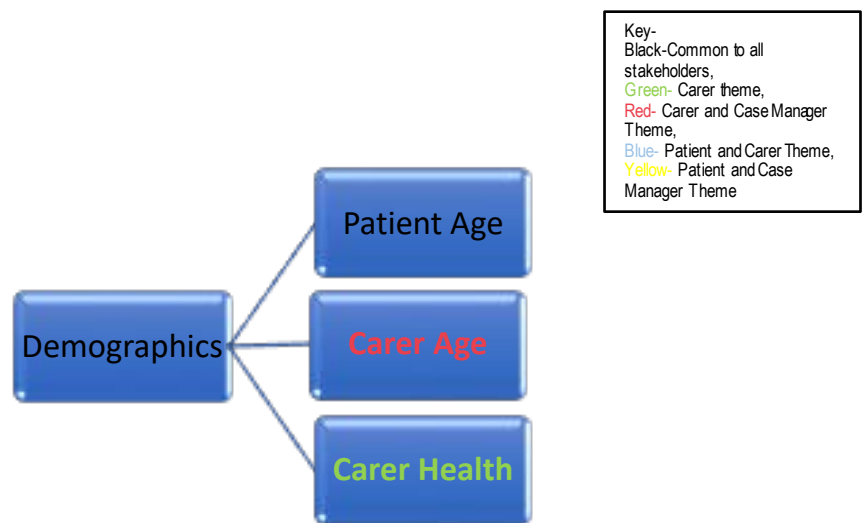


Figure 44. Thematic framework for the theme of Demographics.

Gender was an influencing factor from the findings of studies one and two, with a statistically significant amount of those who interacted with emergency services being female. Within the interviews and focus groups, there was no real discussion of gender as a factor for interacting with services by participants; therefore, this characteristic was not presented as a theme. Of the 19 patient interviews undertaken, 11 were female participants and eight were male. It was noted that seven carers were female and 12 carers were male, who were caring for 13 females and six male case management patients. A greater proportion of men caring for women was seen, which is in contrast to the UK wide figures, with 42% of carers being men and 58% women (Carers UK, 2016). Although not directly stated, gender was alluded to in carer narratives, relating

to the activities of caring work by the male participants, denoting the patriarchal expression of society gender position. Twelve patient participants were >70years of age and seven were <70 years of age. The profile of carers interviewed included twelve carers >70years old and seven who were <70years, substantiating the increasing age of the case management populace. In the area level, 18.9% of the population was reported as being >60 years of age, with an average mean age of 36 years (Office for National Statistics, 2011).

No discussions by any key stakeholders were held with regard to the geographical distance to the hospital affecting the way case-managed patients interacted with services. In combination with no data on this aspect of demographics, no physical binary issue of miles from hospital could be described in relation to urban affect or living closer to A&E as impacting upon A&E attendance. Location identity with place metaphysically was noted with patients and carers stating a preference for specific hospitals as P014 stated: 'I wouldn't go to **** if I was dying.... and there're too many people going in there, but I understand they haven't got enough facilities and money ...if I can help it I'd rather not go' (P014)(p). Case managers did not discuss the demographic of location.

6.3.1 Patient Age

Patient participants volunteered their ages and discussed age as related to declining health and the impact on their daily lives: 'I suppose it's getting old, isn't it? Eighty one, you've got to have something wrong with you' (P016)(p). Age was described as a reference point but their narratives alluded to physicality and health. Carers and case managers expressed the same sentiment about patients, as carer participant P018 and focus group three describe:

.. she's 91 so she's very frail and she has great difficulty in even walking with a Zimmer frame. (P018)(c)

I'd say 99.9 per cent now are over 70, 75... looking back and thinking, you got it, you understood, it was the vulnerable elderly... (P047/FG3)(s)

6.3.2 Carer Age

Particular to carers was their circumstances, as the majority were greater than 70 years old and often in poor health, struggling to care for case-managed patients. This theme related only to carer's and case manager's discourses. During the patient interviews, a few patients voiced the struggles they perceived their ageing carers having. Carer P055 noted that, 'And I'm 76 years of age and no spring chicken. To look after a 91 year old, I can't' (P055)(c). Increasing patient and carer age inevitably produces issues in coping and in the use and dependence on healthcare and social services.

Case managers directly stated the situation with regard to the ageing population: 'And you've got elderly looking after elderly haven't you?' (P029/FG2)(s). Further discussion in focus group two described some circumstances of patients and carers in the community and the difficulties of the elderly caring for the elderly they had encountered which were generating greater use of services across the spectrum of healthcare. The note of the health diagnosis as a key determinant of descriptions was evident in case manager accounts:

I've got a couple of guys I see very regularly. Both diabetics. My patient has got heart failure and COPD with diabetes, and her husband's got diabetes as well and he's partially sighted. And he's always been her main carer, and his health's deteriorating but she doesn't appreciate that his health's deteriorating, so... then we managed to put a package of care in with a huge battle, because he was her carer, she didn't want anybody else to go in...And then we managed to get district nurses in to do the insulin now because he's partially sighted and he was doing it and all her diabetes was so unstable. This is a lady that I see weekly, maybe more. (P029/FG2)(s)

6.3.3 Carer Health

Carers described the physical, emotional and psychological elements of their health and wellbeing suffering as a result of caring for case-managed patients, an inductive

theme relevant only to carer participants. A typology of how the issues of caregiving affect the health of carers of case management patients is given in Table 33.

Table 33 *Typology of the Issues of Caregiving that Impact Upon the Health of Carers of Case Management Patients*

Element of Health	Descriptor of impact upon health
Physical	<p>The effect of:</p> <ul style="list-style-type: none"> • advancing age • illness • tiredness • lack of respite • the constancy of caring • physical struggles attending hospital to visit <p>on carer health</p>
Emotional	<p>The effect of:</p> <ul style="list-style-type: none"> • relationship issues • worries about the care recipient • panic • isolation • dealing with medical emergencies <p>on carer health</p>
Psychological	<p>The effect of:</p> <ul style="list-style-type: none"> • stress • worry and guilt contacting emergency services • worry and guilt when patient is in hospital <p>on carer health</p>

Throughout the carer interviews, physical health was described as poor by many participants: ‘I had a triple heart by-pass ten years ago. And I’m a diabetic. So I’ve had...Some days it’s a struggle’ (P050)(c). All accounts detailed the medical

diagnostic labels given to carers by healthcare professionals in describing their physical health and ability to cope. Carer P042 described how her health affected her interacting with medical facilities and how this affected her desire for her husband not to go into hospital: 'I've got my blue inhaler, but then I've got my blood pressure tablets. And the only problem I've got when he goes into hospital, is I'm allergic to it, there's something in the air conditioning.... I can't go... so I don't want him to go.... it's a horrible dilemma' (P042)(c.) Participants related ill health on the part of the carer to the inevitability of the elderly caring for the elderly.

The declining emotional health status of carers was associated with looking for community social support to care on a day-to-day basis and gain respite; however, this provision was generally described as diminished:

Sometimes it would be nice if somebody could - because now he's getting worse - sort of like sit with him for a couple of hours, so...I could just go and do what I wanted to do or rest, I am so stressed and tired.. But it's not there...no help.... I mean, don't leave him alone. (P038)(c)

Lack of support and isolation were described as leading to more emotional strain on carers. Descriptions of stress threaded throughout the carer interviews with issues such as the constancy of caring, lack of sleep, worry, relationship issues, isolation, crises, dealing with medical emergencies and the consequences of carer illness (Table 34).

Table 34 *Examples of the Subtheme of Carer Health*

Participant	Quote
P041(c)	<i>'Because when it's dark and you're lying there, because he's got a very erratic heartbeat, and so the breathing, I instantly am awake if he stops breathing for a time, and I pull the duvet and he starts up again. Having terrible nights at the moment, but in the dark when you're lying there thinking, what if, what if, I always put my clothes out the night before, just in case I've got to leap into them'.</i>
P055(c)	<i>'[B]ut I did reach that point on Monday, I must say. I came this close, through desperation. But now, yeah, I think he...in his psyche somewhere, he realised, because I was crying, I just...I cried myself to sleep and he could see I was upset. And he was very quiet yesterday'.</i>

With regard to dealing with contacting services and hospital, carers defined an immense amount of stress regarding many elements. Carers P039 explained the stress involved in just contacting for help:

But madam upstairs, I say, I don't like...don't get phoning them, they've got other things to do. This is what I get off...So straight away I'm stressed because I'm thinking...they're telling me I've got to phone, she's, don't phone them, they've got other things to do. And I know what it is, it's because she doesn't want to go into hospital. But sometimes you have no choice. (P039)(c)

Stress when the case management patient was in hospital continued for carers, accompanied by emotional guilt and the physical struggles of getting to the hospital to visit, according to P056 and P041:

It's stressful. Because the wife then blames me because she doesn't want to be there. (P056)(c)

It's not that far but it's all traffic, so it's stressful. Then you've got to park....but walking form one end of the ward to the other, I can't do it. It absolutely kills me. (P041)(c)

The elements of carer's health were seen as delaying their contact with services, often leaving this till crisis point where 999 was contacted, frequently described as in the out-of-hours.

6.4 Timing

Time as a theme was included in the *a priori* codebook and was discussed by patients, carers and case managers at length. Further insight as to the significance of time and the creation of three subthemes and six microthemes were revealed from the inductive and deductive processes during analysis. Figure 45 presents the three themes for case-managed patients with regards to time of service interaction: nighttime service interaction, delay in seeking help and daytime service interaction. The thematic framework for the theme of time relates to all key stakeholders, patients, carers and case managers.

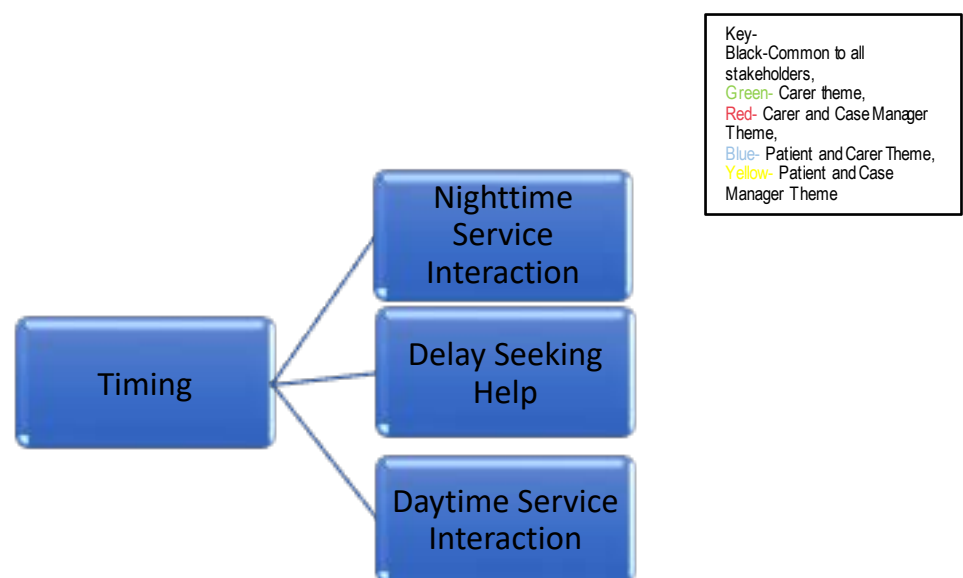


Figure 45. Thematic framework for the theme of Timing.

6.4.1 Nighttime service interaction

The out-of-service hours, generally regarded as anytime outside the hours of Monday to Friday 08:00-18:00 within the NHS, were noted as a period wherein case management patients experienced problems and often interacted with services. The time of 00:00-07:59 was identified in the data as having a higher likelihood of case-managed patients being converted to admission from A&E attendance. Patients, carers and case managers also reflected on a similar period as being challenging and a time that contact with emergency services was made when anxiety and panic often took a precedence, especially for patients who lived alone. Figure 46 presents the four microthemes introduced by participants with regard to the nighttime and early hours' time period: isolation, personal networks, panic/anxiety and out-of-hours service provision.

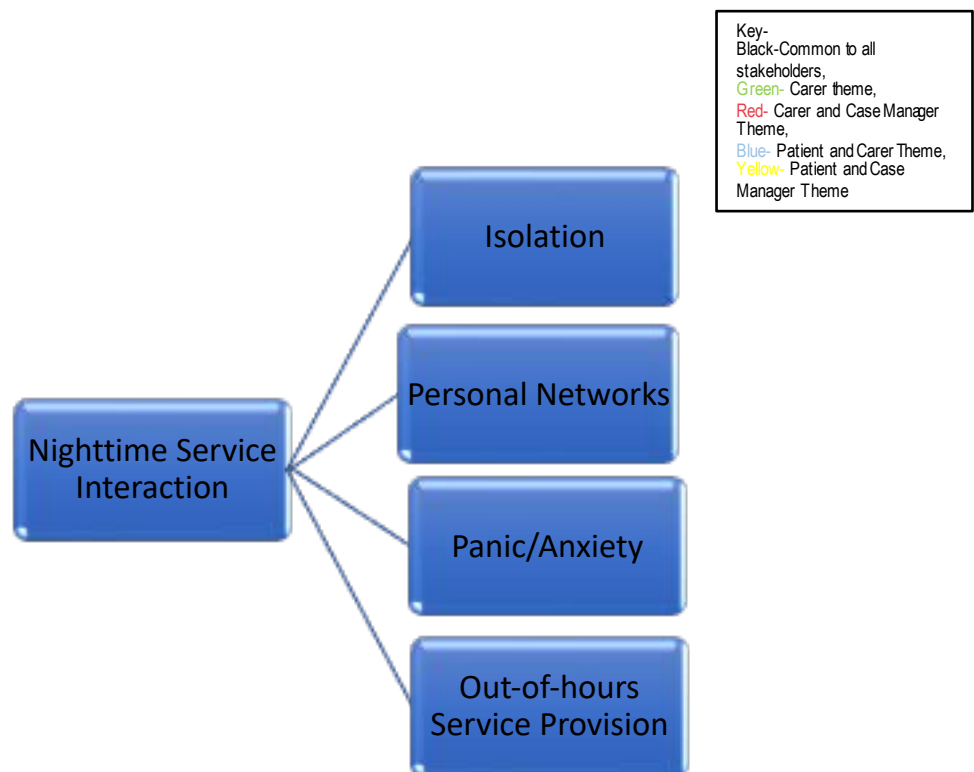


Figure 46. Thematic framework for the subtheme of Nighttime Service Interaction.

Patients recalled specific times in relation to their out-of-hours interaction with services whereas carers and staff related to a similar period but did not stipulate a time.

The nighttime period was not something dissimilar between participants, just described differently. Evidence of this can be seen in Table 35.

Table 35 *Examples of the Subtheme of Nighttime Service Interaction*

Participant	Quote
<i>P002(p)</i>	<i>'it was around about 4.30/5 o'clock'.</i>
<i>P036 (c)</i>	<i>'A couple of times during the night...it started to form a pattern actually, it was like first thing in the morning as if when she woke up, yes., we had to phone the ambulance straight away because she was really poorly'.</i>
<i>P024/FG1 (s)</i>	<i>'Oh, ambulance. I say night time. Ring for an ambulance in the night time. Yeah, or early morning'.</i>

In discussing some possible reasons for this contact in the out-of-hours, participants mentioned physical and emotional causative factors that were worse at night, with similarities seen between patient, carer and case manager dialogues. Patients with long-term conditions related to breathing problems presented with more physical and emotional issues at nighttime, and specific triggers were noted, particularly in relation to sleeping. The length of the period was expounded as a potential emotional causative factor for service contact. Illustrations are presented in Table 36.

Table 36 *Examples of the Subtheme of Nighttime Service Interaction*

Participant	Quote
P017(p)	<i>'it's always at night time.... sometimes, I think it's when I'm lying on my back, and more flat'.</i>
P048 (c)	<i>'Yeah, well it was early hours....I got out of bed and I heard.. [sounds of difficulties breathing]. Well it's mainly at night when she's in bed, she seems to have these attacks at night'.</i>
P043/FG3 (s)	<i>'But I think even of a night...it's just when they go to sleep, they're lying flat...anybody that's short of breath and the panic sets in...So I think whatever happens then, that is why they call, not just because they can't get us. It's because of the symptoms that they're having and because obviously how they're lying and how they're sleeping'.</i>
P031/FG2 (s)	<i>'It's a very long, lonely period isn't it? Twelve hours out of a normal day'.</i>

6.4.1.1 Isolation

Case-managed patients who lived alone described having minimum contact with others and feeling isolated as possible reasons for contact with services in the nighttime period: 'Yes, but it's mostly the nighttime. I don't feel worried about the day time, but the nighttime I worry I get bad at the nighttime, on my own and nobody round' (P013)(p). Often, patients summarised their feelings as worrying about contacting services in the nighttime and having no one to ask for advice; as P006 explained, 'It's frightening when it's dark and you're on your own. And you don't want to trouble anybody like so I...999' (P006)(p).

Some carers expressed issues of isolation during the nighttime period which also created uncertainties over contact with services; however, this phenomenon was not as common as with patients living alone: 'Okay, first time he was unable to breathe and he asked me to ring 999 because he was scared... and I was scared... I didn't know who to ask.. so 999' (P041)(c).

Generally, carers demonstrated more control, knowledge and confidence in making service contact decisions even when they felt isolated.

As with both carers and patients, case managers identified isolation as a reason for accessing services in the nighttime period. The following example from focus group one demonstrates the consensus of discussions: 'I think it's the same for any illness. It's always worse at night because there's not so many people around, lonely. It's a reassurance [999], isn't it?' (P026/FG1)(s). Case manager participants described 999 contact as an almost innate reaction in connection to isolation, and conjectured that the current drive for care closer to home, the ageing demographic and relatives living greater distances away resulted in more elderly people domiciling in their own homes alone.

6.4.1.2 Personal Networks

The personal network was described as the main decision maker in contacting services or not. Patients who had regular, frequent access to others, e.g. family, friends or professionals, to support their health and care needs often chose to contact this individual first before immediately phoning 999 in the out-of-hours period. This was often to gain reassurance or advice and appeared to produce a delay in telephoning emergency services. Accounts of the personal network assisting in avoiding admission and attributing their ability to be at home due to their personal networks was manifest as P002 explains:

*I woke up in the night short of breath, not feeling myself. And, I rang *****, because she doesn't live so far away as my other daughter does. I said, I'm not too good. And, she said, we'll be round mum. So, they came round, and she decided what to do....ambulance or not. I wouldn't be at home if it wasn't for *****. (P002)(p)*

Equivocally, for carers, if they had further networks, had another avenue to check with and assisted in avoiding 999 contacts at night, illustrated by carer participant P038:

‘I’ve got good friends and family....There’s always somebody I could go to in a crisis at any time even night, as you do.... before panicking and calling (999)’ (P038)(c).

Carers unanimously spoke of their role as the decision maker and advocate in contacting services at nighttime, in common with patients who stated they waited for their carers to make the decisions. Carers spoke of reacting proactively and in the patients’ best interests:

Well, my mum phoned me up about half past ten, quarter to 11 on the night; I said good night to her, ...then about ten minutes later she said, I can’t breathe and we’ll have to call an ambulance....I come up here with my wife and we dialed 111. (P051)(c)

Case managers noted the discussions of patients and carers. Those who did not have personal networks or decision makers were felt to be hastier in contacting services, a point which focus group three raised: ‘And at nighttime they can’t phone anyone to reassure them or talk to them and say, look, you know, this is what you’ve got to do, so its 999’ (P044/FG3)(s).

6.4.1.3 *Panic/anxiety*

During the nighttime period, key stakeholders discussed panic and anxiety that often came on suddenly and initiated a response to contacting emergency services. Patients and carers described panic whereas case managers defined these feelings more clinically in terms of anxiety, which were heightened during nighttime periods.

Patients who described panic as playing a role in their long-term condition appeared to respond by contacting services quicker, reacting to this instinctively. Dealing with emergencies and sudden onset symptoms during the night also caused panic for carers. Passionate discussion throughout all focus groups revealed how case managers perceived anxiety playing a key part in service interaction and admission to hospital during the nighttime period for their caseloads. Table 37 summarises discussions from all key stakeholders.

Table 37 *Examples of the Microtheme of Panic/Anxiety*

Participant	Quote
P001 (p)	<i>'When it gets really bad it can go into a panic as well...and there's a line between a panic and something being...somebody being ill, I found is it can be blurred because the panic attack has similar...Takes over and I said, you're...why are you panicking, you've got to calm yourself down, but then my eyes started to go and then I just called an ambulance straightaway and they...I think with your breathing it's more the panic, isn't it? especially at night I panic.. When you can't breathe it's terrible'.</i>
P036 (c)	<i>'I mean when she was first ill I mean the noise during the night was quite loud. Well, you don't know what's happening do you. Well, you lie awake thinking, waiting, panicking like...deciding like if to call'.</i>
P043/FG3 (s)	<i>'Because during the day she's absolutely fine because the carers are coming in, he's there and keeping her going. It's the night time. You can guarantee every week she's in and out of hospital. And it is the anxiety side of things. And we've sat down and had continuing healthcare come in. She's got a full package of care at the moment, but we were thinking whether if they can provide extra funding should we be thinking about a night sitter or something like that. But they won't fund something like that. Whereas something like that would keep her out of hospital. As you say, having care in the night that would have... He sleeps very soundly and he won't wake when she's anxious, so she gets more anxious'.</i>

6.4.1.4 *Out-of-hours (OOHs) service provision*

The fourth microtheme that emerged within the subtheme of nighttime service interaction was the issue of how and who to contact in the out-of-hours period. With

the case management service unavailable overnight, access to services was confusing for patients, often resulting in an emergency services contact as an innate response. Patients' experiences of contacting 999 in the out-of-hours periods was positive with regard to responsiveness and described it as feeling of being rescued (Table 38).

Table 38 *Examples of the Microtheme of Out-of-Hours Service Provision—Patients*

Participant	Quotes
P005(p)	<i>'999 at night, 999 I'd say. Quicker. Take you where you want to go'.</i>
P014(p)	<i>'You don't know what to do at night, who to call, you're absolutely bricking it. So, the next thing is bang, three 9s. So...'</i>

Carers portrayed a greater acknowledgment of the standard operating hours of the case management service and whom to contact out of these times, demonstrated by carer participant P038: 'They work 'til about...I think the on-calls one work - I think, I'm not sure - 'til about ten. And then after ten, you have to phone 111 or 999' (P038)(c). The automatic response of calling 999 at nighttime was not mirrored as instinctively by carers, who often called after direction from 111 or only because they felt they had no other option. Carers also recalled excellent, responsive experiences of 999, a trusted service, patients and carers know they can rely on in the out-of-hours period. Again, P053 provided a worthy example:

There has been night time ones when I've had to call them out on the night time. I just have to I had no choice...and the ambulance men, they're marvellous...rescuers. (P053)(c)

Case managers acknowledged the lack of awareness among patients regarding whom to contact when; according to focus group one, 'And she won't phone after six o'clock because she thinks... Everyone's gone home from work, yeah.. so it's 999.. she doesn't understand who to call' (P028/FG1)(s). They believed the first response of patients and carers in the out-of-hours was to contact 999, a somewhat innate and automatic reaction. A case manager in focus group two corroborated the instinctive reaction further:

I think people hang onto that 999 in that they know someone will come and someone will come quickly, and there is that voice on the end of the line. Offering reassurance. And...it's at night. (P031/FG2)(s)

The alternative in the out-of-hours period was the use of 111, which generally was not evaluated by patients, carers or staff. Case management patients who had experienced the 111 services had variable outcomes which dictated their future use of the service. For the majority, they stated 111 had advised for an ambulance to be sent out, as patient participant P004 illustrated: 'I phoned 111 at midnight actually and I spoke to a few people on there. Then the doctors rang me back and it was them that advised the ambulance crew to come out to me' (P004)(p). Numerous case management patients like P014 also did not see the value for their long-term condition(s) to interact with 111:

No, wouldn't use it. No, never tried it. Be a total waste of time for me, by the time I phone them I could have died.....when I've got a life and death you know,? So, I wouldn't even entertain, not in my position anyway..999..at night. (P014)(p)

In relation to long-term conditions, management carers had more issues using 111, possibly because they had tried this option more than patients, but the end result was often also deferral to 999. The time taken was not to their satisfaction (Table 39).

Table 39 Examples of the Microtheme of Out-of-Hours Provision-Carer Interaction with 111

Participant	Quote
<i>P049(c)</i>	<i>'we dialled 111 late one night – went through all that, and they decided that she needed an ambulance and go to hospital. A lot of it is the questions that they ask are not called for'.</i>
<i>P038(c)</i>	<i>'I rang them for dad. And they phoned back, it took them well over an hour to phone back it was one in the morning by then.. They spoke to me for about 20 minutes first. Then they spoke to him. Well, he could hardly talk at the time. And then he said, well, it's going to be two or three hours before I can get out. So he said, forget it...So I don't think I'll be phoning them again. Next time I'll just, if I have to, phone 999, if I have to'.</i>

Clearly, 111 was not evaluated as useful by most patients and carers, a fact mirrored by focus group two: 'If they've not had a good experience they've wanted to ring 999 afterwards. Definitely not got the information that they wanted. Or they're often advised to phone 999. Mine won't use it, it's 999 at nighttime' (P030/FG2(s)). Thus, the default reaction of 999 was seen by all participants as the quickest, easiest and safest option in the out-of-hours period.

6.4.2 Delay Seeking Help

Although some case-managed patients used out-of-hours alternatives, several patients purposely delayed seeking access to healthcare in the out-of-hours period. The apparent stoical nature of this client group and the absent care provision of the case management service at nighttime led many patients and carers deferring accessing care until the daytime hours.

For patients, not wanting to contact services and bother people in the out-of-hours period resulted in obvious delays in seeking assistance. Patient P015 explained he wouldn't call anyone out at nighttime: 'You don't get them out in the middle of the

night.... Yeah, till the next day, in case it clears up. You don't know do you?' (P015)(p). This was reiterated by other patients: 'Yeah, or if I could struggle on until the next day, the morning, to make the phone call for the case manager, or whoever's on, do you know what I mean?' (P005)(p).

Waiting until morning to seek help was a phenomenon echoed throughout the carer interviews, with patients often not telling the carer they felt unwell till daytime hours::

It's like I just said to you, she never tells me in the night, she waits until the morning and I say, are you all right? Oh I'm a bit crap today... she's holding on 'til the morning for the case managers to come out. (P048)(c)

No examples were given by carers of exactly how this group of patients managed until the morning or the skills they utilised to do so.

Case managers similarly noted some patients holding on until daytime service hours, usually until they arrived:

Sometimes they wait 'til you get there... That's it, because they know that you're coming. Yeah, and they hang on....and they get worse waiting for you. Because I knew you were coming.... Turn up at 4 o'clock and they're, like, I've been like this since 2 o'clock this morning [laugh]they know that we've booked a visit for that day, so they'll... Yeah, they'll wait for you [laugh.]. (P043/FG3)(s)

Case managers described this as making them feel guilty when they did arrive.

Patients associated hospital avoidance behaviour and delays seeking help until daytime with feeling nothing could be done for their long-term condition:

It's not going to change anything (going in). It wouldn't make that much difference anyway because they'd bang me on antibiotics straightaway anyway basically, you know? So, you're probably getting the same antibiotics at home

*you would do for the pneumonia as you would anyway. So, I don't usually bother, I'll wait for ***** (CM). (P034)(p)*

A number of patients mentioned the idea of going against medical/nursing advice on admission to hospital; however, they often admitted having to seek help at a later point, as P008 explained: 'Because I was feeling...I'd been to see the doctor the day before and he said, I think you'd be better off in hospital., and I said, no thank you. After we'd left, I went...I'd say downhill, I deteriorated...so it was 999 that night' (P008)(p).

6.4.3 Daytime Service Interaction

The operational hours of 08:00-18:00 service interaction and admission to hospital was discussed throughout the interviews and focus groups and arose as a subtheme with two further microthemes emerging. Participants spoke of admissions in the daytime that were guided by either the GP or the case management service. Little inclination was given to accessing 999 or 111 services in the daytime as a first choice; some contact was generally made with community services as a first contact. All participant groups noted the subtheme and two microthemes, which are illustrated in Figure 47.

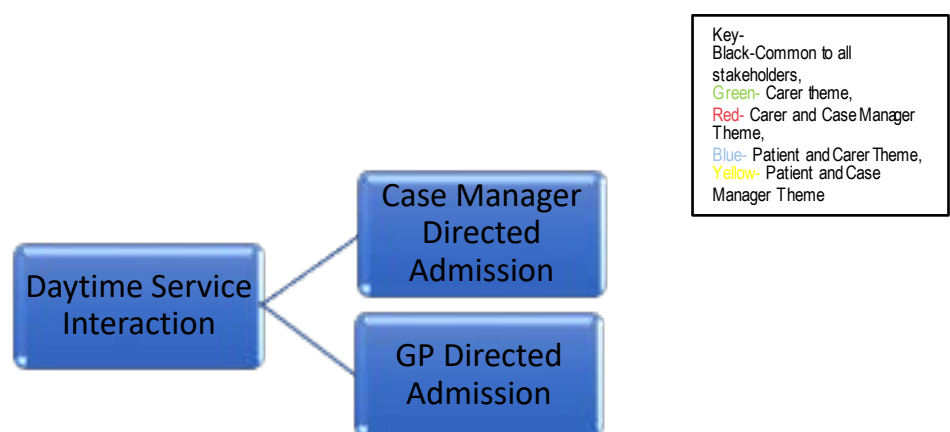


Figure 47. Thematic framework for the subtheme of Daytime Service Interaction.

6.4.3.1 Case manager (CM)-Directed Admission

Admissions to hospital initiated by case managers was one of the two main routes patients generally arrived at secondary care in the daytime period. Patients and carers noted that the service was commonly their first contact, due to case managers. Table 40 highlights the experiences of patients and carers in contacting the case management service.

Table 40 *Examples of the Microtheme of Case Manager Directed Admission-Patient and Carer Experience Accessing the Case Management Service during Service Hours*

Participant	Quote
P009 (p)	<i>'...anything wrong in the past, you'd got to go to the doctor's; now if anything's wrong, just ring them and somebody's out, aren't they, straightaway, and checking you over, and...Definitely more used to me, and I should imagine a lot of people in my position feel the same as well. But ***** is very good, if I do need anything if she can get it for me she will, so she's looking after me'.</i>
P051 (c)	<i>'It's a relief not to have to call the paramedics out every time. You know, some people don't feel comfortable calling paramedics out, but I think they'll feel more comfortable calling the case manager out....I mean, ***** will come and visit now and then as well, and then if she finds out Nan's not well, she's down immediately and here almost every day'.</i>
P042 (c)	<i>'Yeah, and I always phone *** before phoning the doctors or 999, cause that's who I've got the confidence in'.</i>

For patients who did require emergency treatment or admission, shared decision making emerged as an active process for most participants:

Yes, there's been occasions when she's told me I've got to go into hospital because I didn't want to go on a lot of occasions and the doctor tried to get me into hospital and I wouldn't go. Then the doctor went and we sat talking and

she said, she pointed out everything to me all the problems that I'm going to have and things like that and she said it's better to prevent them than to suffer them, if you know what I mean. I let her call the ambulance, it was bout two o'clock then. (P014)(p)

Furthermore, case manager-directed admissions to a medical admissions unit (MAU) or clinical decisions unit (CDU) were included under the theme of attendance method domain and are described in section 6.5.2.

6.4.3.2 General practitioner (GP)-Directed Admission

The second route of admission described by stakeholders in service hours was via the GP. GPs were viewed by patients and carers as much quicker at advising them to contact 999 or admit them to hospital. Case managers echoed this phenomenon, seeing GPs as quicker to admit than themselves and having little incentive to avoid admissions. Table 41 conveys samples from participants.

Table 41 *Examples of the Microtheme of GP-Directed Admissions*

Participant	Quote
P013 (p)	<i>'I can't take a breath, so I sent for my doctor and she sent for the ambulance and they took me in'.</i>
P039 (c)	<i>'They come on, they say what's this with ****, has she got a temperature? Yeah, blah, blah, blah. They go through the routine. Don't bother. We won't bother coming out. We'll phone an ambulance for you'.</i>
P043/FG3 (s)	<i>'I think that was a bit of a bug bear some of the surgeries where I worked before that often you'd be killing yourself trying to keep the patients out and then you'd have a message that the GP had sent them in, and I can remember having a conversation with one of the GPs and she actually said in a meeting, more or less saying that it got them off their backs to send them in...they had no incentive to keep them out. They didn't seem to have QOF points or anything that they got penalised if they got sent in. Mostly I think the GPs will admit quicker than we will'.</i>

Access to and continuity of GPs was discussed by patients and carers throughout the interviews as affecting quality of care, service interaction decisions and management of their long-term condition. Participants viewed the inability to get through via telephone or to request a home visit and the increasing locum workforce as causative factors for more GP-guided admissions in the daytime. Case managers discussed examples of GPs lessening home visits and recommending 999 contact, potentially causing daytime admissions. Focus groups two and three highlighted scenarios experienced:

Like, one patient, she was bouncing in and out of hospital., and when she's ill she tends to ring the surgery first and ask for a home visit, when she can see herself going down....And obviously, she'd had to go through the whole phoning system, when she gets through they'll just say, well, just ring 999. And sometimes she just needs an opinion...she needs to be spoken to and by the same doctor so they know her.... They can't even get past the receptionist. (P046FG3(s))

And it's that not being listened to again. The patients get five minutes if they can get to the GP to be seen by a locum who doesn't know them. If they request a house visit then it's scrutinised as to why, when, who. So you're back to that whole, no one's listening and state of.....so call us or 999.. but they want to see their GP. It's not fair. (P029/FG2)(s)

6.5 Attendance Method

The action of going to hospital and the way of going there was a key outcome from the quantitative studies with a large proportion of case-managed patients contacting 999 and being conveyed to hospital via ambulance. Only a small proportion of case-managed patients direct walked to A&E. Questions as to why this phenomenon could be happening were explored during interviews and focus groups, producing much debate and rich data. Inferences in this theme refer not just to attendance method but also to influences of how case management patients avoid attendance. Analyses of qualitative work focused around the production of four main subthemes. Direct

admissions and media impact themes not discussed by case managers during the focus groups remained particularly important to patients and carers alone. Illustrative representation is given in Figure 48.

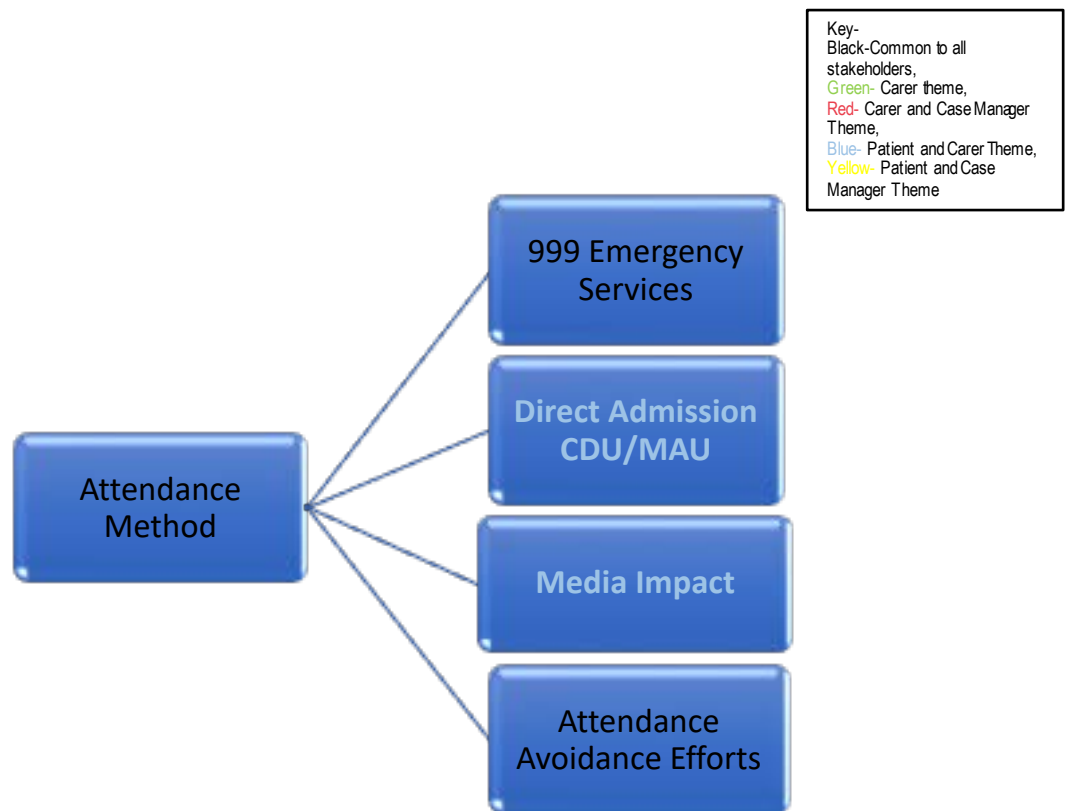


Figure 48. Thematic framework for the theme of Attendance Method.

6.5.1 999 Emergency Services

A recurring notion common to all interviews and focus groups was the use of ambulance services to attend the home, treat at the scene and convey to A&E. Studies one and two established that the majority of case management patients attended A&E via 999 emergency services, and, as discussed earlier, many patients utilised 999 emergency services in the out-of-hours period when other services were not in operation. No patients, carers or staff discussed experiences of presenting directly to A&E, possibly due to their age, housebound status, frailty and need for physical transportation and/or the decline in locally available personal networks. Contact was described as a somewhat involuntary response for some patients and carers in the out-of-hours period, and a conscious clinician-led referral by case managers or GPs in

service hours. A summary of why case-managed patients contacted 999 was given by focus group two: ‘they come immediately and act... patients trust 999’ (P030/FG2)(s).

Much emotion was evident for participants explaining their contact with 999 and emergency treatment at the scene. Descriptions of genuine clinical incidents needing frontline emergency treatment by 999 were unmistakable, verifying for them the justification for calling 999. Case managers noted that many COPD patients on their caseloads often called 999 for emergency treatment (Table 42).

Table 42 *Examples of the Subtheme of 999 Emergency Services*

Participant	Quote
P034 (p)	<i>‘But when I was in the ambulance they were setting drips up and monitors and everything else. I said they don't just rush you off anymore. Yeah. He said you were there 20 minutes, half an hour...they're saying no, we'll have to take you to hospital’.</i>
P038 (c)	<i>‘they treated him upstairs first. They wouldn't move him first. No, then they took him in. They treated him at home for about an hour. They put drips in him and everything. And then once they'd got him stabilised, they put him on a chair to come down, and then stuck him in the ambulance’.</i>
P033/FG2 (s)	<i>‘but some of them have definitely said, because I feel better when I get a nebuliser, that's why I've called a paramedic, because they give it me straightaway Paramedics will come along, put them on a nebuliser, they go to A and E and they put them on a neb’.</i>

The 999 conveyance rate to A&E for the case management population in study one was seen to be higher than that of the general population. No joint decision making or patient-centred care was evident in accounts of participants, patients and carers who stated that they did not feel involved in decisions regarding conveyance to A&E or admission to hospital. It was a purely medically led decision, as P014 noted: ‘I mean I didn't want to go in. I hate hospitals. I didn't want to go in but they kept putting me

in....I had no choice, yeah, I had no choice in the matter and it was always the same thing' (P014)(p).

Case managers spoke of the difficult position paramedics were in making decisions and the possible reasons for their caution in deciding to convey case management patients to A&E as focus group two summarised:

And I do think from the paramedic's point of view they're judging there and then. They're seeing a breathless patient possibly living on their own or a frail elderly other who's not able to cope and it is safer that that person is elsewhere being looked after than struggling at home. So from a paramedic point of view I think they've got less opportunity to go you can try this, this and this. ...I think they'd sooner take them in. (P029/FG2)(s)

Staff opinion in the focus groups also viewed that the majority of transfers by 999 must be for a genuine reason because of the outcome of ongoing admission; as P028 noted,

Yeah. Off the top of my head I can't think of any that have been taken in at night that have come back out again. Or even the ambulance have pitched up and they've left...said see whoever in the morning. Generally if someone's called at night they've gone in, and they've gone in and stayed in. Must be genuine. (P028/FG2)(s)

Falls that were described as having no injury or associated symptoms were the only medical example given by carers as a reason not to convey to hospital by 999. As P041 explained, 'once it was when she fell in the bath, and once she fell out of her chair, and no, they didn't take her in, they assessed everything and left her' (P041)(c). In comparison, no case management patients noted being left at home alone after a fall. The presence of a carer or personal network may influence this circumstance.

6.5.2 Direct Admission MAU/CDU

Patients and carers described an attendance method whereby A&E was avoided, and they were taken directly to an admission unit within the hospital, organised by their case manager or GP. Such units are called either medical admissions units (MAU) or clinical decisions units (CDU) and take direct, medically expected referrals from GPs or advanced nurse practitioners. Participants noted some positive outcomes from this admission route but this was not a common phenomenon. Most case management patients described entering hospital via A&E and ambulance. Table 43 describes the positive experiences of patients and carers.

Table 43 *Examples of the Subtheme of Direct Admission AMU/CDU*

Participant	Quote
<i>P041(c)</i>	<i>'But she came and she managed to get him a bed in MAU. To avoid going into A and E, yeah: Yeah, so we didn't have any waiting that time, she sent a letter with us. She was marvellous. There was no hint of emergency'.</i>
<i>P036(c)</i>	<i>'Since she has been going directly into there (CDU).... That's really helped....it's a big help, it saves about three or four hours in the waiting room'.</i>

6.5.3 Media Impact

With regular media coverage regarding the NHS, how such stories influenced case management patients' attendance behaviour was identified as a subtheme from patient and carer participant discourses. Whether the intention or not, this elderly population were affected, expressing attitudes of delaying contact and worrying about contacting emergency services from what they had heard. Patient P004 and carer P051 explained their hesitations in calling an ambulance:

Then they reckon that if you phoned an ambulance unnecessarily that is if it isn't really important you end up getting fined £80. That's what's been said. it's just been said by various people in this block of flats. In the community, sort of thing, yes. You have to either have had a heart attack or something similar to having a heart attack or something like that before you can ring an ambulance otherwise you're fined £85...£80. I don't know how true it is, I really don't, but that's what's been going around [in these parts ..I don't know but it's put a lot of people off from ringing. Well, that's probably what they're trying to do. Because they're worried about getting fined, you see. (P004)(p)

I've heard it's £135 to call an ambulance out. Yes, and you've got people phoning up for things that aren't necessarily emergencies. To me, it was like my Nan said, a battle. We don't know what to do. but I can also imagine it would cost a lot for a paramedic to come, oh, you've done something here.... I mean, I watch the news and I know there's an absolute bedding crisis with the NHS. (P051)(c)

Participant P006 concurred, adding her anxiety about accessing services and by which route:

Yeah. I don't like calling the ambulance, because it puts a lot of stress onto the NHS. There's so many people in my opinion use it needlessly. For silly, stupid things. And I don't like calling them, it puts me off calling and going and I worry, and I don't think I would've on Sunday night, I really didn't know what to do, who to call.. but I was frightened, if you can understand what I'm saying. (P006)(p)

The negative press had altered P035's outlook of the NHS, reinforcing his delaying behaviours: 'Yeah, you're down to shillings and pence now. You're being dehumanised into a balance sheet... You're a number, yeah, you are....how much you're costing. I mean it's all down to money, it's all down to money now, no one cares'. In addition, he noted, 'they don't want you, and you don't want to be there

either, so [laugh] it works both ways, I won't call unless I'm dying, I won't go' (P035)(p).

Participants noted media images of long waits in A&E before being transferred to a ward bed, discussing intensely throughout the interviews as influencing attendance behaviour. P002 explained how he would rather wait than attend: 'I see the TV, I ain't going down there, sitting in a corridor, I'll wait or tell the GP' (P002)(p). The participants who had used a direct admission unit had found this helpful to avoid perceived A&E issues as P003 clarified: 'I watch all the soaps and the news, I see the queues... puts you off... I'm too ill... It worries you... that UCD (admission unit) was quicker. I'd go via there next time if I needed to go.. I would' (P003)(p).

Many carers assumed that, if they attended by ambulance that they would avoid A&E waits, an opinion represented by P039: 'The problem is if you're going in your own car you get to A&E and you sit outside for two hours like in the news, ambulance and you're in quicker I think' (P039)(c). This is a possible contributing factor for the elevated attendance method by emergency services for this patient group.

6.5.4 Attendance Avoidance Efforts

In addition to participants talking about how they attended A&E via emergency services, many participants also talked about how they attempted to avoid A&E, hospital admission and interaction with services. An echo throughout the study was an expressed reluctance to go into hospital by some patients when the 999 crew were in attendance; an example of this is from participant P010: 'I said, I'm not going. No, I didn't want to go. I just thought I'd be alright if they left me, you know, like, I had no choice, but never mind' (P010)(p). Carers noted that this cohort of case management patients did often try to avoid admission, and, when decisions to convey were made, some persuasion was needed as P038 clarified: 'Well, if you don't really want to go, then they can't force you. But nine times out of ten, he does get persuaded to go. But after the last lot, I don't think he will again' (P038)(c). The only scenario when patients and carers were consulted on the decision to convey to hospital was when the patient refused to go, expressing direct attendance avoidance opinions. Poor

person-centred care and a lack of shared decision making resonated throughout many of the participants' accounts.

Avoidance tactics were often related to not wanting to go into hospital for various reasons, such as fear and misconceptions of dying as P009 illustrates: 'Because I don't want to go into hospital. I've got this thing with hospitals that I don't like them; they might be good places for some people, but I just...they don't agree with me; people go there to die, and I ain't ready to do that yet' (P009)(p). Avoidance may have been a way of avoiding the deeper questions of their mortality and of the end-of-life processes for some patient participants. Patient participant P007 cited the inhibition of normal activities as an avoidance reasons: 'But, I don't like going to hospital. Because I can't have a smoke' (P007)(c).

Avoidance strategies were interpreted by carers in that they discerned the patients did not want to go into hospital for various reasons such as phobias, not receiving care and not being comfortable leaving home. Carer participant P053 related her husband's avoidance efforts:

****** doesn't like going into hospital and he'll do everything he can to...he'll even say that he's not feeling that bad, you know what I mean.... There's nothing wrong with me.... And I have had ***** literally point blank refuse to go in, where the ambulance men have had to go. They cannot force him to go if he doesn't want to go. As I say, he can be very stubborn like that. (P053)(c)*

Attendance avoidance efforts were also noted on the part of the carer. According to P041, 'Yes, I'd do anything to keep him out. I think they have to be tough to go in hospital, to be honest; some of the things that happen to you I'll do what I can to stop him going' (P041)(c).

Experiences in the past were noted as triggering patients and carers' attendance avoidance efforts, ultimately affecting the way they consequently interacted with services. Staff spoke of their caseloads having altered in attitude over the past few years, with many now avoiding admission at all cost due to poor past experiences.

Hospital was not seen as the favourable option it previously was by this older adult cohort, suggesting a general shift in social attitude due to current pressures in the NHS. Interviewees told often-distressing stories (Table 44).

Table 44 *Examples of the Subtheme of Attendance Avoidance Efforts*

Participant	Quote
P005(p)	<p><i>'Anyway, ambulance came and I'm on the bed gasping for air. These two guys come ambulance man, you know the way one's sort of in charge? You can tell the one that's in charge. He's the one bent down and doing everything.....asking questions, and everything, and they're doing all different things and they gave me a neb, and what have you, and oxygen, and what have you. Then I know...I can't remember but I know that they are going to take me to hospital and then all of a sudden the guy turns round and he goes, next time, if you wake up like, you know, in the middle of the night, early hours, and you need to ring us, could you make sure that you're downstairs? When you ring up...I swear, honest to God, this is the God's honest truth, this is...and I'm not lying, this is on all my children's lives, I am not lying, and...I literally looked at him and I went, why? It was such a stupid thing to say and the answer I gave...well the response I gave him was ridiculous, why? He literally said to me... and he went, well it means that we've got to carry you downstairs now. So, I looked at him and I went...I felt embarrassed that I was putting them out because, like I said, I hate bothering people, and I went, oh, don't worry about that, love, I said, I will get down somehow, I'll shuffle down on my bum, and he went, no, you can't because we're here now, so we'll have to carry you. It was horrible. I thought, well I didn't actually pick when to have a breathing attack. Now I feel really...I hate .. I think twice since then.. (calling 999) So, that was that... That was like the worst experience I've really had. ... Yeah, but I felt terrible....I won't go to bed...I can get upstairs but I've never gone back to bed since that ambulance man said that to me. I swear to God, and that, on my children's life, I've never been to bed since'.</i></p>
P039(c)	<p><i>'I also have a card so that when these ambulance people come sometimes they're a little bit stand offish because they think you're telling them their job. I have been informed by other people when the ambulance people come tell them that this is the oxygen you want, and I've had arguments... I have had arguments galore: er, you don't have to tell us our job, sir. I say, no, I do. Pardon? Because you don't know my wife. Just one moment, that's what I've been told to give you. Oh, I see. I say, now, you do your job, but I've been told before you do anything that's the oxygen she's on ...which she has to be on. Okay. Then there's certain things she can't have because it would affect her in other ways. So some of them, nine out of ten are fine, but you just get the odd one that thinks you're trying to tell them their job. So you don't get off on the right foot, you get off on the wrong foot, it puts me off calling really does. I put off calling cause of the thought of having to argue with them'.</i></p>

In conjunction with the patient characteristics of stoicism, attitude towards the prognosis of their long-term condition was noted as validating admission avoidance efforts for some case management patients. Patients accepted that the likely course of their medical condition was poor, so they avoided contact with services, as P006 noted: ‘I mean people like me, I mean we haven't got anything. We're just...I call it God's waiting room, you know, no point going in, that's a nosier waiting room [laughs]’ (P006)(p).

This opinion was echoed by carers, with explanations such as not wanting to die in hospital alone in relation to how prognosis affected the attendance behaviour of case-managed patients. According to P057:

He says to me, I want to die at home, I don't want to go to hospital. So when he's really been bad, it's took a lot for him to go to hospital because he doesn't want to be.... I think because his sister went there and she passed away in hospital and she'd got nobody with her. (P057)(c)

From the case-manager perspective, their role was to succeed in attendance avoidance. However, they proposed that, in order to succeed, a whole system approach to attendance avoidance was required. New modes of working arose, but they often brought about new difficulties and didn't always benefit patients. Focus group one explained one such example:

They still take a lot, I think most of them. I've only ever known the paramedics not take one of ours, and then put a call through to the SPA saying could the case manager go out, but then I went out and they were really ill, and really low, and they did need to go in, so it's difficult, but obviously maybe that patient deteriorated, I don't know, in that time.. sometimes it doesn't work does it. (P022/FG1)(S)

Positive ideas and efforts in trying to support the attendance and admission avoidance agenda were debated in the focus groups. Shared examples of good practice included, ‘If the notes are visible, you do get crews that do ring you if they're at the house.

Maybe you could have a card though, that says you've got a case manager, maybe.... I think a card would be...maybe a bright fluorescent...something that stands out. Might make them think' (P021/FG1)(s). Joint and collaborative work was suggested by case managers as a necessity for the attendance and admission avoidance agenda.

6.6 Outcome

What happened to patients following engagement with services was a key finding from the quantitative data from studies one and two. The high A&E conversion rate indicated that the majority of case management patients experienced ongoing admission to hospital. Three subsequent subthemes emerged from the key stakeholders perspectives (Figure 49).

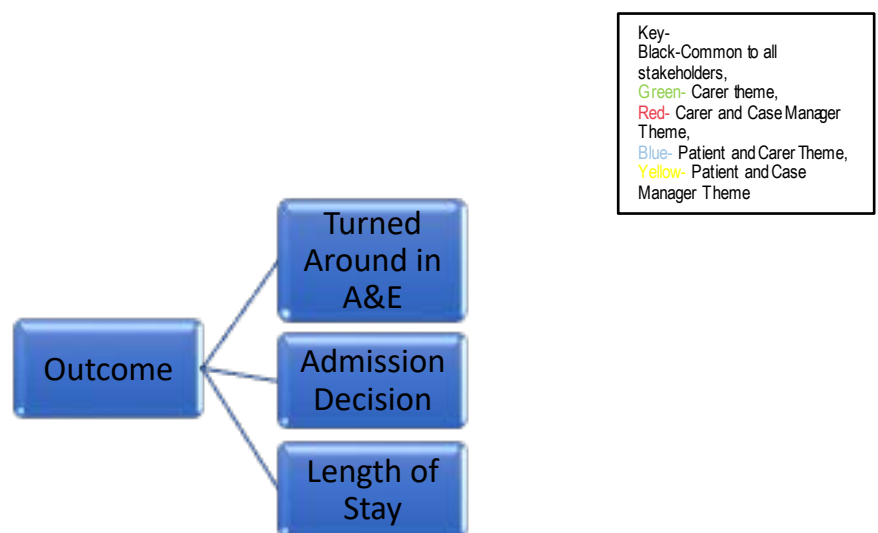


Figure 49. Thematic framework for the theme of Outcome.

6.6.1 Turned Around in A&E

Attending A&E and subsequently being discharged home was described as an infrequent occurrence for case management patients. Limited examples from patients of being turned around at A&E appeared to involve a request to go home by the patient themselves due to a particular circumstance. As patient participant P002 stated, 'And,

I asked to come home, because my grandson, my only grandson, my first grandson, was being christened on the Sunday, and I didn't want to miss it' (P002)(p).

Patient participant P009 related requesting discharge from A&E due to his prognosis, feeling no further admission would help him:

No, what happened, because of what I've got, I've got COPD, heart failure, she said they could keep me in and tests, but because of what I've got I've already been told that I couldn't have no operation, no nothing. And I felt as though I didn't want to be messed about with for them to come and say well, blah-blah-blah, but I'm sorry there's nothing we can do. So I just started to come home, I asked to go. (P009)(p)

As with the data from study two and the content of the patient interview study, very few carers reported being discharged from A&E. Only a few incidents were discussed by carers with the reasons for discharge being the loan of equipment, patient request and having a carer at home. All other carers reported ongoing admission. Carer P041 described her experience:

Yes, that's the reason I was able to come home, because I thought I'd know how to do it. Yeah, as long as I promised to take it back. They were going to admit him, and I said, do you have to, you've mentioned a nebuliser, we could cope with that at home, and so on the understanding that I deal with that, he was sent home, so we didn't have to be admitted. Took a long time, but we weren't admitted that time. (P041)(c)

Case managers discussed a few instances where patients had been sent home from A&E. Conversely, they deemed this practice inappropriate as they had sent patients in for a second opinion which had not been gained or felt patients had been unsuitably discharge in the early hours of the morning. No note was made of only discharging if carer support was at home. Focus groups two and three noted that:

but even then, I don't know what they're doing when they're assessing these patients. I sent somebody.... I was on call two weeks ago, I sent somebody in with tachycardia chest pain, clammy. And he was literally bounced straight back home again. They said to him that there's not much that we can do for you here and you'll end up kind of more unwell than you are, so you're better off going back home. And I thought, well, you don't send them in until you really feel that there's nothing can be done community wise for this gentleman. And I think, you know, it's not the way that I would perceive secondary care to be. (P045/FG3)(s)

They do. I've been appalled at some people who've been sent out at one o'clock in the morning. Yeah. Elderly, live alone and kind of just dumped at home. What? That was just horrendous...but it's not that common, most stay in. (P029/FG2)(s)

From the case manager's perspective, the only conversions home from A&E deemed appropriate were ones who had community input and liaison took place before this happened, when the case managers visited the department to mediate. Focus group one represents this dialogue:

*We used to turn quite a few people around in A and E up at **** * hospital., because we used to go down to **** *, and we used to pick up patients and then once they'd been seen by the doctor, what's the plan, because this person's got a case manager in the community, what are you wanting to do, can we not do that at home. (P022/FG1)(s)*

These practices were few, and, as the data corroborated, case managers felt most patients were converted to admission.

6.6.2 Admission Decision

Study two found that the majority of case management patients were admitted for ongoing hospital care on attendance at A&E and had a high A&E conversion rate in

comparison to the general population. Consensus amongst the three participant groups regarding the outcome of A&E attendance was onward admission. The majority of key stakeholders felt case-managed patients were admitted with no part in the decision-making process and felt like it was an automatic reaction. Little or no shared decision making with patients or carers was evident and age was cited as a reason to admit, supporting previous data findings. Case managers also appeared to have little idea how decisions were made and did not feel the patient/carer played a part. Case managers described the process as elusive, unpredictable and with no clear rationale. Table 45 displays examples of the subtheme from all key stakeholders.

Table 45 *Examples of the Subtheme of Admission Decision*

Participant	Quote
P008 (p)	<i>'No, I haven't made the decision. The decision to stay in hospital I mean...the doctor at the hospital makes the decision'.</i>
P048 (c)	<i>'No, I think it was afternoon and then we were there for hours and hours, and then I asked them I had to ask and they said I think we will keep her in. So I'd been there all that time and they decided that they'll keep her in'.</i>
P020/FG1 (s)	<i>'They obviously come and do the obs, then being seen by a medic ..., so you feel there must be something, some reason. And then it's not as if they turn him around. He does stop there. It's a mystery to us. Generally, especially if he's called at night he's gone in and stayed in.. is it cause their older, age? I don't know?'</i>

6.6.3 Length of Stay

Key stakeholders discussed short stays, long stays and readmissions as outcomes of service interaction and admission to hospital. The time spent in hospital for the majority of case management patients was classified as short stays of fewer than five days in data study two. Patients and carers corroborated this length of stay from their experiences in the majority of cases. Case managers felt the length of stay in hospital for their caseloads was generally reducing in timespan and, although anecdotal, they

felt there were some concerns with this practice from their experience. Examples from the dialogue are presented in Table 46.

Table 46 *Examples of the Subtheme of Length of Stay—Short Stay*

Participant	Quote
P015 (p)	<i>'Yes. I went into hospital with a chest infection, and they give me antibiotics. I was in for four days. I came out the fourth day'.</i>
P036 (c)	<i>'She was never in more than a week, I think probably a week was the longest one, but the others were three/four days or five days, you know'.</i>
P021/FG1 (s)	<i>'I think it's less than it used to be for mine, I think it's like three days, three or four days seems more of an average than it used to be. I'd say it used to be a week, and I know that's anecdotal., but I'd say there's a couple of days'.</i>

Longer stays were classified by patients, carers and case managers as admissions of over two weeks in length, due to complications once the case-managed patient had been admitted. As the minority occurrence, P040 and P051 described their experiences:

I was supposed to be in hospital for three days, but I was in about three weeks...because it was so bad, and the cellulitis I got after was so bad. They couldn't get it down. (P040)(p)

She was in about three weeks or four weeks. Because they made a mistake, she was still on Warfarin. And they wanted her to have a biopsy on the lung, so she had to wait another week. (P051)(c)

Many stakeholders discussed the experience of readmission to hospital within 30 days of discharge. Possible reasons for readmission included being discharged too early, pressure on the NHS and missed diagnoses. Case managers reported being readmitted within a short period of discharge and having to readmit many patients on more than

one occasion. Table 47 shows examples of the subtheme of Length of Stay—Readmission.

Table 47 *Examples of the Subtheme of Length of Stay—Readmission*

Participant	Quote
P005 (p)	<i>'I went in on 6th and I was discharged on 13th and [pause] but.. they never gave me anything to go home with and I said, that's why it's pneumonia again and I was back in'.</i>
P037 (c)	<i>'The time before last she went in and she was out within four days but she was back in within 24 because it was double pneumonia, nobody picked it up'.</i>
P033/FG2 (s)	<i>'Because they kept bouncing him back out and he was really, really unwell. I get they are pressured and need the bed but this was unacceptable, at 89'.</i>

6.7 Clinical Reasoning

The medical problem or reason case management patients interacted with services was developed as an *a priori* theme from the data studies, highlighting the sometimes poor and inaccurate clinical coding across NHS IT systems. Key clinical reasons varied from breathing problems, falls and heart attacks to urinary tract infections, spelt and documented in differing manners, with the use of acronyms. When participants talked about reasons for service interaction, attendance and admission, they described them in relation to what they perceived to be a genuine clinical need. Exacerbations of long-term conditions and acute emergencies were described in detail with great emotion. Table 47 demonstrates valid illustrations.

Table 48 *Examples of the Theme of Clinical Reasoning*

Participant	Quote
P016 (p)	<i>'Yeah. I had...is it a GI bleed? I've had two pulmonary embolisms'.</i>
P034 (p)	<i>'Yeah. I'm just trying to think what it's called. Pneumothorax'.</i>
P051(c)	<i>'[E]ssentially, my Nan had an MI. And she had it for quite a few hours...emergency ambulance out. Did an ECG and then about 15 minutes later, she was having stents in the coronary artery. Yeah. Really quickly'.</i>
P053(c)	<i>'He used to smoke. Well of course, being on oxygen 24/seven, he's not supposed to. Well he blew himself up....it was just up his nose and his face. But...and he had to go in to hospital obviously'.</i>
(P027/FG1) (s)	<i>'She was really going in because she was going into type two respiratory failure and needed IV antibiotics'.</i>

Falls were noted in 6.5.1 as one of the few clinical reasons that often did not require conveyance to hospital after contact with emergency services. Patients described being unable to re-mobilise or being worried about the consequence of a fall. Those lacking personal networks also had no other option than to contact 999 emergency services. Carers also described feeling forced to call 999 for assistance due to being physically unable to help after an elderly case-managed-patient had a fall. Falls featured highly in the clinical reasoning data from studies one and two, corroborated by the subsequent patient and carers interviews as a clinical reason for emergency services interaction, exemplified by patient participant P012:

Also my legs were filling with fluid, especially the knees and because I couldn't bend my knees I couldn't get up. Yes, there was a couple of occasions when the paramedics had to come out and help me up off the floor. Only once they took me in. (P012)(p)

6.8 Wider Resources

The newly developed theme from deductive analysis of studies three, four and five refers to the collective support assets intertwined with case management patients' interactions with services at the meso- and macro-levels of healthcare. These additional factors were perceived by participants as influencing exchanges and service use and comprised two new subthemes and five microthemes, presented in Figure 50. The service resource subtheme relates to all key stakeholders and comprises case manager characteristics, communication and community resource microthemes. Human resource factors in relation to patient characteristics were presented by patients and case managers and the carer characteristic, a microtheme emerging from carers and case manager stakeholders' experiences.

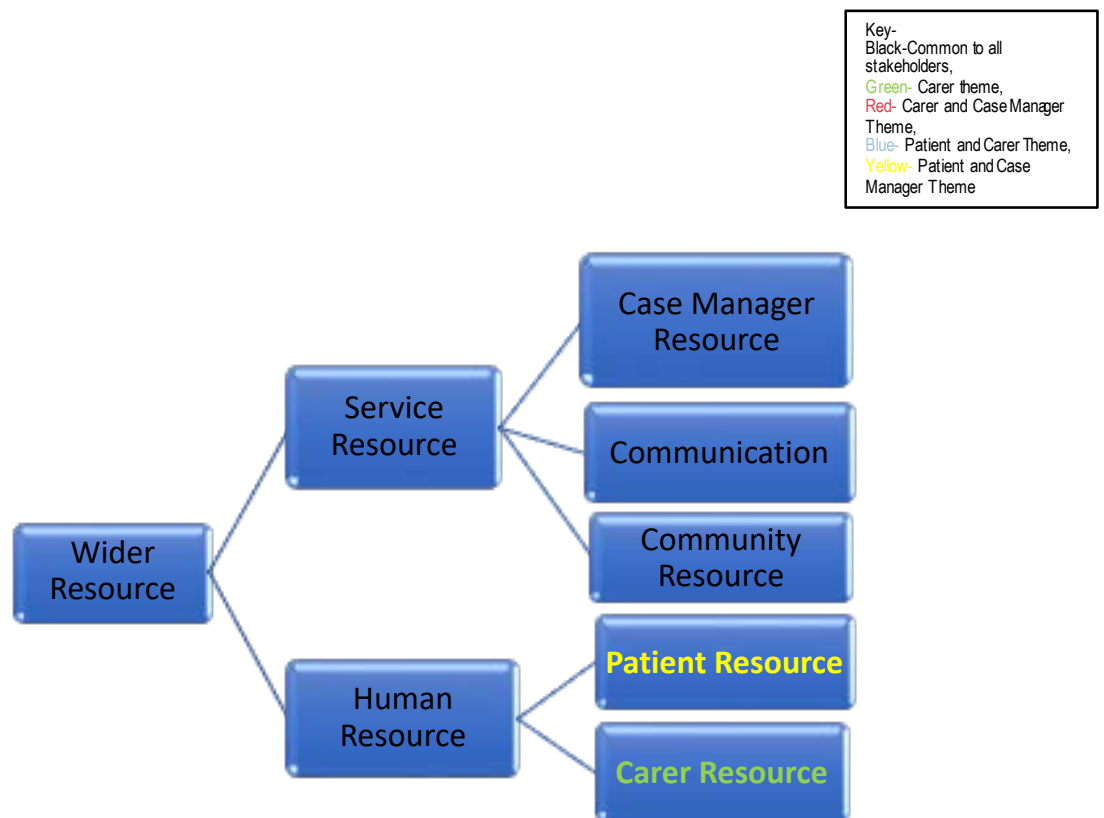


Figure 50. Thematic framework for the theme of Wider Resources.

6.8.1 Service Resources

Health and social care support that can be drawn upon when needed or its lack was seen as influencing case management patients' use of services. Case management service characteristics were perceived by participants to assist in unnecessary emergency interactions and admissions, but examples of poor communication and the lack of community social support were postulated as influencing final service interactions and admissions for this patient cohort. The three microthemes presented—case manager resource, communication and community resource—refer to all key stakeholders. Figure 51 presents the thematic framework for the subtheme of service resource.

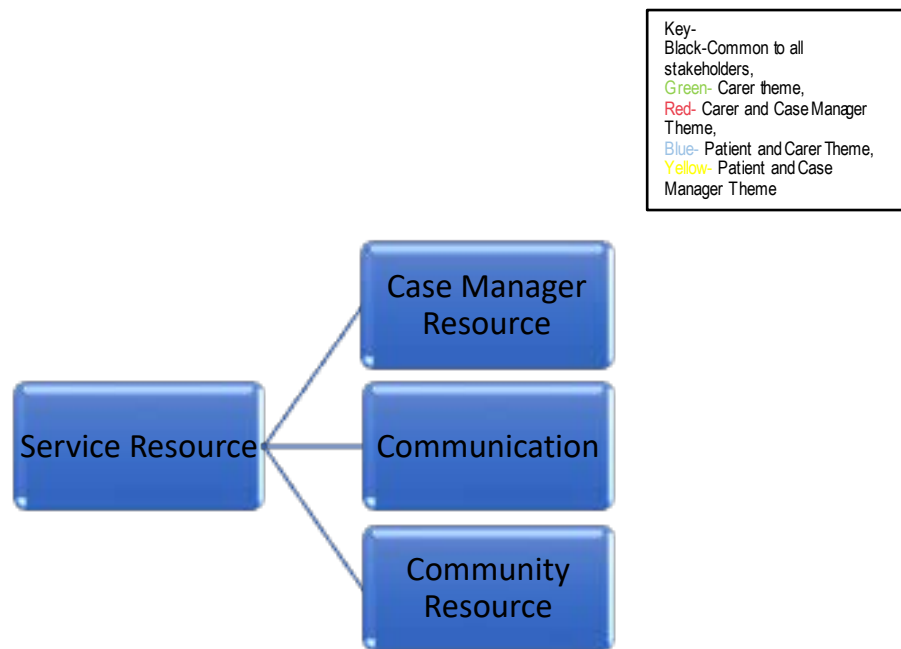


Figure 51. Thematic framework for the subtheme of Service Resource.

6.8.1.1 Case Manager Resource

The clinical skills, educational resource and reassurance offered by case managers emerged as important facets for participants. Confidence in the case managers' skills was discussed with passion by patient and carer participants. Knowledge of medical, social, emotional and practical issues were presented, demonstrating why patients and

carers made the service their first contact during service hours and did not talk of contacting emergency services during this period. Case managers did not boast about their clinical skills, and conversation mainly focused on their ability to form good interpersonal relationships and their ability to keep patients out of hospital. Table 49 highlights key examples from discourses.

Table 49 *Examples of the Microtheme of Case Manager Resource—Skills*

Participant	Quote
P003 (p)	<i>'She's like a doctor isn't she? And she knows if I've got a chest infection, she'll give me a prescription, and she takes it to the chemist for me and she brings it back. She's really golden. She stops me going to hospital or seeing the one up there [GP] She gives me a good examination better than him. She said, you're not wheezing, but as soon as you start phone'.</i>
P051 (c)	<i>'That's another thing, because ***** can write a prescription for Nan without getting the doctor down And because *****can check away with a stethoscope, because she can do these assessments, and because – this may sound a bit mean to doctors – but because she's got the nursing skill to it, it's better, if you know what I mean. She has kept Nan out and stopped me worrying about it'.</i>
P030/FG2 (s)	<i>'And if you think about what we've all talked about is knowing these people, knowing their families, knowing their buttons to press to stop them pressing 999 and call you. Knowing how to go in, examine them and whatever and in ten minutes completely restore calm and reduce that anxiety, it's a big part of our job'.</i>

Education was seen as an important parameter by patients: the more armed with information and skills, the more they felt they could self-care and avoid hospital admissions. Carers agreed that the educational support offered by the case management service avoided unnecessary contact with services. Participants P034 and P041 summarised the role of education:

Definitely. She's also taught me a lot about self-management, if that's the right word. (P034)(p)

*...and now I'm a bit more on top of his conditions and what to look out for, thanks to her explaining things so well, its educating me. So I contact *** not 999. (P041)(c)*

An aspect for case managers, per the focus groups, was the concept of reinforcement and reassurance. For this client group, they felt this was an important method of avoiding unnecessary contact with services. Patients and carers did not discuss the need for this but were noted as appreciating the regularity of visits. Constant regular contact in the day time helped manage service use and avoid admissions; focus group one's discussed this microtheme:

I think it's a lot of education and support. Lots of education.. lots of reassurance...regularly... reassuring all's ok and that sort of thing.. they contact you not 999. But if you haven't got that at night time then I suppose. (P027/FG1)(s)

Avoiding unnecessary hospital admissions was one of the aims of the case management programme. Anecdotal evidence presented in the literature review postulated that patients and carers thought their case manager had prevented them from being admitted to hospital; however, this was difficult to quantify. Patients in study three and carer participants agreed that input from case managers had decreased their use of emergency services and ongoing admissions. Table 50 presents the service impacts.

Table 50 *Examples of the Microtheme of Case Manager Resource – Admission Prevention*

Participant	Quote
P036 (c)	<i>'I think that she pre-empts things so that it doesn't get to that stage.... Because she's in such close contact and visits really regularly, and in between those visits if I need her, we've been able to keep out of hospital thanks to her. She's kept her out of hospital now since February'.</i>
P027/FG1 (s)	<i>'I had a GP who actually congratulated me at our last meeting. I'd kept one of the patients out for nine months and I'd saved him something...he'd worked it out, it was hundreds and thousands. I don't know. I was even surprised that he'd actually worked it out. He'd sat at...he'd actually sat down and worked it out just how much my visits had saved their practice on this one patient, and even the husband commented as well. He says, oh, do you know how much you've saved me in parking tickets? [laughter]'</i>

With regards to the political landscape of the admission avoidance agenda in the NHS, case managers spoke of the pressures to prove cost-effectiveness without audit data, retain caseloads and remodel ways of working. The constant drive for change to become reactive instead of proactive was a burden felt by case managers, which they noted would dissolve the ethos of case management. The political agenda was felt as bearing on their ability to be proactive, influence and prevent unnecessary emergency service and hospital use for their populations. Focus group one noted the consensus opinion:

*Yeah. And if we're saying primary care doesn't work very well for the older patient or the chronically ill patient, I should say, because of the five-minute time slots or maybe ten minutes on a home visit then A&E doesn't work because it's in and out and no one listens, then, like ***** said, we are the only ones that do listen, do take it on board and do something with it, follow up on what we say, follow up on what they say. And the risk is that services can be pulled I think we're hanging on to proactive. I think the danger is the*

powers that be even possibly internally want us to be reactive. Well, to me that isn't case management. It's rapid response. Not case management, so it will just be assess, admit or leave. How does that avoid admissions? They will increase. (P022/FG1)(s)

6.8.1.2 Communication

The imparting or exchange of information between services and patients, thus preventing unnecessary admissions and manage community case management patients was perceived by participants as influencing when, why and how service interaction functioned. Communication as a microtheme was discussed by all key stakeholders and separated into verbal, written and information technology (IT) modalities.

Verbal communication

The sharing of information between healthcare services via speech was highlighted by stakeholders as variable, often demonstrating deficits in collaboration and joint working. The consensus was that, at initial contact with services, little interaction took place between 999 and the case management service. Participant P015 noted, 'Yeah, I did tell them I had a nurse. And they didn't take any notice of it, or know what it was. Well, they were more concerned with getting me to hospital. And getting me sorted' (P015)(p).

During service hours, verbal communication improved, and patients and carers perceived that a combination of community, primary care and acute services assisted with their ability to avoid admission: 'Well, I'm not a hundred per cent...it's a bit of a combination I think between the case manager, the hospice and the doctor, because one of them on their own can't do it' (P009)(p). Some excellent examples of clinicians' joint working to avoid admissions to hospital for case management were described by patient participant P034:

*Well, the case manager and the doctor and guy at the hospital have all got together So they thought instead of stopping and starting [antibiotics], keep me on...a maintenance dose. And then if anything comes in the meantime then **** or the GP calls the consultant and they talk...all this keeps me out, I am so happy about that really. (P034)(p)*

These examples were, however, not widespread for all patients and were a minority experience. Poor community teamwork was asserted as a causative factor affecting case-managed patients' service interactions. Lack of communication between multiple services left patients confused and contacting 999 emergency services. According to focus group three:

Communication is just really poor, whether it be secondary care to primary care, or whether it be internally within primary care. Sometimes, you know, unless you are actively working with the GPs and sitting them down and kind banging their heads against each other, and the respiratory teams, the diabetic teams, you've got to really sit down and kind of get them all to sit there together. And if you're not able to do that time and time again, there is lack of communication and one service does not know what the other service is doing, the other service don't know what the third service is doing. So the patient doesn't have a clue and its 999. (P043/FG3)(s)

Case managers acknowledged it was part of the role to link with acute care: 'Part of the original role, the remit of the original role of case manager, we were meant to have some link into...with secondary care, weren't we?' (P027/FG1)(s). However, the current busy climate had affected the ability of communication both ways, and the case managers had low expectations of how this could be improved for patient benefit. Case managers felt a hindrance upon going into wards, as focus group two discussed; no one ever contacted them to ask advice or inform of discharge: 'And I've rung wards before now or gone up and left my phone number and asked them to ring me once they know what's happening and all the rest of it. Nobody's ever got back to me' (P029/FG2)(s).

Focus group three spoke passionately with regard to their need to go into hospital and advocate for their patients and gave many good examples of joint working. One example was given where inappropriate discharge was prevented, and palliative care had a better outcome:

So when I sent him in, I was really quite worried about him. And I rang the next day and I said, how's so and so. And they go, well, we're going to discharge him home. And I said to the ward sister...I said, excuse me, did I hear you right [laugh], you're going to send him home. I said, well, actually, he hasn't eaten for a week, he was clearly dehydrated and he needs a package of care at least for six weeks until he can get back on his feet. Because he lives alone, his partner's in a wheelchair and there's no way he's going to manage, he's going to come back straight in. And she said, oh, no, the consultant...I said, excuse me, have you talked to the patient. She said, well, he's getting up and having a wash. I said, have you talked to the patient to ask him...how he's managing, will he be able to get himself something to eat. And she said, no. And she was a band six sister of the ward. So I said, look, you know, I'm not really very happy with this. And he stayed in another ten days. (P044/FG3)(s)

Multidisciplinary team meetings with representatives from acute and community care are not a new concept for improving verbal communication. Many specialists use these as opportunities to joint manage complex patients and ensure care is provided in the right place. Only one such area spoke of their involvement with these in hospital, again only in connection with the respiratory directorate; focus group one explained a valuable involvement:

*I mean, we've been involved in the ** hospital; we've had a lady who was a frequent flyer, so we went to an MDT meeting with Dr ***** in the respiratory team, and it was amazing really, because Dr *****, he didn't know a lot of things about this patient although she spent a lot of time in hospital. She told him a totally different story than the actual story itself, so the MDT meeting was really beneficial. (P028/FG1)(s)*

The experience for the majority of case managers was requesting to attend multidisciplinary team meetings and never getting invited as case manager P032 observed: *'And I would ring the ward and say look, when are you getting an MDT, please invite me along, I can give you the social picture, the home picture, and nothing would ever come back the other way. (P032/FG2)(s)*

Case managers discussed examples which typified the effect of poor communication of safety netting advice to their patients and how this affected delayed interaction with services. Case managers discussed causative anxiety and avoidance behaviour as focus group one noted:

...because we've got a lady that...she has been in and out quite a bit, but she's been told by the consultant that...she can't come back into hospital.... I[I] she's ill, she has to go into a nursing home, she's not to come back into hospital, and she's really taken it on board ...we had to force her... she was screaming to the paramedics no no no don't take me, I can't go. (P022/FG1)(s)

Written communication

The outcome theme of communication involving use of the written word was discussed in abundant detail. Patients and carers demonstrated faith in the systems and believed the hospital communicated well with their GP and case manager and had 100% confidence in the NHS systems. This echoes the preliminary work of studies one and two. Per patient participant P005:

Yeah, they always send information to my doctor...they have to let the doctor know. Your doctor usually knows when you've been in. Oh, aye, he's got it all on record, yeah. (P005)(p)

When asked about the communication the hospital had with the case managers, patients and carers were unaware of the processes of what happened or if anything

happened unless they had been privy to an occurrence. According to P001, 'I don't think there's a direct line between the case manager and the hospital., is there? No, there's not, no' (P001)(p).

Specific acute specialist teams were noted as having improved written communication in the past few years. Focus group one observed that:

*It's the exception rather than the general sort of thing that happens. The respiratory team do, and I always get cc'd into Dr *****' letters. The respiratory team are good, but they'll document in the notes saying, please let the case manager know when they've been discharged, but the ward never does. (P025/FG1)(s)*

Discharge letters not reaching GPs were highlighted by case managers as continuing to be a problem, despite the electronic age and patient faith in the system. Focus group three exemplifies the discussions and the outcome of readmission due to not getting GP follow-up from miscommunication:

You can't blame the surgery because they don't have the discharge letter, they're not even aware the patient went in. So obviously, if this has happened because the daughter's gone in, she's very short of breath, she's just called an ambulance, you know, and then you think, well, how is this going to be realistically followed up unless they get the letter or we were not going in, but we don't get any communication at all. (P044/FG3)(s)

Complex multimorbidity often has poor prognostic trajectories and end-of-life issues arise for many case management patients and carers. Patients spoke about their admission avoidance behaviour due to feeling there was nothing that could be done in hospital and wanting to remain at home as discussed in 6.5.4. Carers furthered the discussion to include the issues of Do Not Attempt Cardio Pulmonary Resuscitation (DNA CPR) decisions and how this affected interaction with services. Case managers also noted DNA CPR as being problematic when contacting 999 and being admitted in

to and discharged from hospital. As one focus group noted, ‘That's one of the problems that I'm finding, that a lot of patients are going in and are having DNACPRs in hospital., and they come home and that's not followed up, we're put in very awkward positions.. **** had to resuscitate that patient and call 999’ (P043/FG3)(s). The lack of interoperability between secondary and primary care affects case-managed patients’ interactions with services.

IT communication

The sending or receiving of information via computer technology was a theme devised from the focus groups. Systems and process were seen as hindering, not helping the interoperability agenda, and changes were not seen as inter-service wide, which only added to communication problems. The introduction of IT for 999 crews produced a reduction in communication for case managers as focus group three clarified:

If paramedics go in now, they don't leave a yellowsheet.... No, because it's a hand-held device now. I had that with my patients when they've been in, they haven't left anything.... I said, because obviously this gentleman's got a family, got an advocate they can tell me, but some of my patients haven't and I don't know what they've gone in for in the night. So I think that's really bad really, because we've got no information now, their IT may be better but it doesn't help the community staff. (P047/FG3)(s)

Case managers described how the systems and processes were still not in place to aid primary and secondary care electronic communication and assist in case management admission avoidance. Lack of interoperability was felt to affect the decision to admit, the patient journey and the outcome of admission, as focus group two explained:

Yeah, but, I mean, really if you're looking after patients that are going into that particular hospital, surely they should give you some form of access to their systems.... And surely they should see GP and RIO systems. Even if it was only, like, limited, that we could see when they were in, what they were doing and

the outcome...we could intervene...we don't...and it effects the outcome for the patient. (P021/FG2)(s)

Flagging IT programmes has been used to highlight case-managed patients on A&E/999 systems. The data received in study one and two were retrieved via this method. Case managers were aware of the system but discussed how it was no longer used in certain areas, noting the loss of that service interaction and inconsistency. Focus group one explained the benefits:

*it's just flagging up who the CM is involved. Its beneficial for all involved, but the ** doesn't use it now and ***** hospital don't send the emails now. **** never used it... it's very sad... progress then decline.... [I]t will mean we don't know patients are in... we can't intercept now. (P024/FG1)(s)*

The accuracy of diagnostic codes in the data from studies one and two was noted as poor with little consensus the coding system used. Many errors and multiple codes were identified, and it was not accurate enough to use as a predictor of admission via statistical tests. Case managers noted instances of where diagnostic coding contained errors and how they were in agreement with the findings of studies one and two. Table 51 contains examples.

Table 51 *Examples of the Microtheme of Communication- IT*

Participant	Quote
P026/FG1 (s)	<i>'every patient of mine, whatever they go into the ** with, they come out with a diagnosis of exacerbation of COPD, whether it is or it isn't. It's very misleading.... I had somebody who went in with a fall, and the diagnosis was exacerbation, and that's wrong'.</i>
P029/FG2 (s)	<i>'I had somebody go in; she's very much white UK, and she came out as black something. And I thought oh my god, she'll freak if she sees that. I just thought how hilarious. So somebody's just hit the wrong button. And that'll probably stick. That'll probably come out on the next one as well'.</i>

6.8.1.3 Community Resource

Unavailable or declining health and social care resources within the community enabling those with long-term conditions to remain at home was a microtheme uncovered from all key stakeholders' experiences. Carers viewed the consequence of diminishing community support as producing an increased dependence on the health system when a crisis point was reached; it was the only option offered, as carer participant P055 explained: 'my doctor suggested him going into hospital. But I said, why should he go into hospital and block a bed.... He's not ill...for some seriously ill person? But that's my conscience telling me, that's wrong.... I just... need... something... help' (P055)(c).

The recent decline in support available from social services, the NHS and the third sector was a key issue for case managers. Case managers expressed concern about the lack of specialised support for the elderly and inappropriate care. Examples are given in Table 52, highlighting the reasons why this ageing demographic may be required to use emergency services or interact with services differently due to lack of alternative support available in the community. Issues included carer crises, dementia care, night sitters, twenty-four-hour care, lack of domiciliary visits, anxiety support, mental health service access and hospice care.

Table 52 *Examples of the Microtheme of Community Resource*

Participant	Quote
P024/FG1 (s)	<i>'I think in some sense we have patients who we go see and there's a crisis, and the crisis is usually around either carer breakdown or some kind of dementia issue that we should have some...be part of or have access to some kind of fast track service where we can get these patients into like a safer place of care, or assessed quicker, if that makes sense otherwise they just end up in hospital; it's not the right place for them either it makes the dementia worse'.</i>
P044/FG3 (s)	<i>'...her sons panic and although they say they can cope when she comes out, they really can't. I've got carers in four times a day but that's not sufficient, so she'll end up back in again. We have very few options for any sort of respite, don't we? You can't get respite through social services anymore unless they're self-funding. And then palliative you've only got St ****'s, which has been reduced in terms of how often someone can get there and mostly more cancers not COPD'.</i>

Other participants identified problems when contacting out-of-hours alternatives, as highlighted by carer participant P057: "Then he's got a prescription and it's, like, 12 o'clock at night, how am I supposed to get this? Do I wait? They sent him...in the end... as he needed it' (P057)(c).

The inability to provide overnight service in the community also resulted in admission for patient participant P010:

But it was a bit of a comedy really, because I had a serious chest infection, I'd got no nebuliser at home, I'd only got inhalers, I hadn't got the oxygen then or anything; and I was told at the surgery, you can come in and use our [nebuliser] any time you like. So I said what do I do after six o'clock when the bloody surgery is closed?... they said I needed to go in then... comedy really [laughter]. (P010)(p)

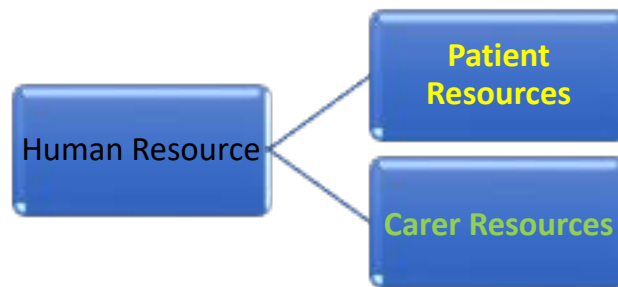
For patients with chronic long-term conditions, equipment is often needed at home to maintain independence, avoid admission and prevent further morbidity. Patients and carers described scenarios of difficulties in getting equipment, delays in discharge and often numerous admissions until equipment was put in place. Taking matters into their own hands, carers also described making adaptations at home to accelerate the outcome of discharge. Table 53 denotes some relevant cases.

Table 53 *Examples of the Microtheme of Community Resource*

Participant	Quote
P014 (p)	<i>'Last year, oh my God, it could have been five or six times easy. Yeah, easy. I've come out...I come out and go straight back in again, you know? literally within a couple of days, in and out straightaway, but they never...I couldn't stabilise.... but, you see, they know the problem...but it takes so long to put these things into process that they send you out.... Now the last time I was in he said, you're not going out until we've got it... sorted this time. because we don't need you back in again within five minutes. So, I mean he was very good. My last consultant, he was very good and he sorted the home oxygen, and everything, out for me from the hospital. Since I've had that I've not been in once, touch wood'.</i>
P050 (c)	<i>'Three times she went, didn't we and then they said, she could have it the third time. And that's all we needed really, was the oxygen'.</i>

6.8.2 Human Resources

Participants noted that the characteristics of patients and carers were important facets with regard to service interaction, use of, and avoidance of services. The emergent microtheme of patient resources defines characteristics emerging from patient interviews and case manager focus groups. Carer resources addresses issues discussed by carers alone. Each microtheme is discussed in turn and presented in Figure 52.



Key-
 Black-Common to all stakeholders,
 Green- Carer theme,
 Red- Carer and Case Manager Theme,
 Blue- Patient and Carer Theme,
 Yellow- Patient and Case Manager Theme

Figure 52. Thematic framework for the subtheme of Human Resources.

6.8.2.1 Patient Resources

Patient attitudes and behaviours utilised as a support in managing their long-term condition were addressed during patient interviews and staff focus groups. Patients discussed their often-stoical attitude to their situation and how they used self-care skills to delay or avoid hospital admission. The overwhelming opinion among patients was that they did not want to go into hospital.

Patient’s rationalised their feelings about their long-term condition via their ability to cope with activities of daily living and having experiences and insight which assisted in decisions to access services. Patient participant P015 represented the overall opinion: ‘I know I've got emphysema and it's a progressive illness and you do die of it eventually. It takes you longer to die of it but these poor people that have got cancer and they know they’ve only got weeks to live or months to live. I can’t keep going into hospital, this could go on for years’ (P015)(p).

Having a stoical attitude and feeling like a burden was seen as contributing to the delay or avoidance in contacting services. For instance, P009 was candid regarding a stoical attitude on accessing services: ‘And I don’t like bothering people, burdening; I hate it

I'd just, no, no, you're not ringing, no, there's nothing wrong, I'm not going anywhere. [Laugh]...I wait till.... they'd probably have to drag me out screaming' (P009)(p). Similarities emerged from case managers' stories about their caseload: 'So yeah, she never phones. She doesn't like to call anyone because she thinks she's being a nuisance, even though we've explained. She's so stoical and quiet' (P029/FG2)(s).

Many case management patients identified some self-care skills in their decision-making processes in contacting services. Participant P014 attributed his skills at monitoring his oxygen levels as avoiding numerous admissions but conversely, often leaving it till the last minute when it was an emergency in contacting services:

I mean I would have been in so many times because I know roughly how low it'll go and how long it'll take to come back but when you haven't got that cushion you can watch it go down, you think, oh my God, you know, how low can it get, you know? So, I mean you're watching it go down to 84/82 and you're thinking, oh my God...by 79 you are absolutely bricking it, yeah?... So, the next thing is bang, three 9s. (P014)(p)

Medication management was also an important facet of case management patients ascribing this self-care technique, as patient P034 relates: 'It revolves around tablets and nebulisers. I mean I supposed to have.... I rallied and I stayed rallied and "out" because I think I've got the right balance of nebulisers, oxygen, antibiotics. I mean I'm on antibiotics three times a week, you know?' (P034)(p).

Many patient participants including P035 associated competent knowledge in self-care with hospital avoidance: 'Yes, I normally see that it's coming on, the warning signs. Well, I've read, I've read up on things. I like to know what's going on with my body, I do ask questions when I'm in hospital and to the case manager, it keeps me out and that's what I want' (P035)(p).

In contrast, case managers discussed the lack of self-care skills of patients on their caseloads and identified high anxiety, medication and equipment management, along

with lack of self-awareness of their condition, as inevitably leading to contact with services. An illustration from focus group three explains:

.. it's those ones that you'll find that'll go in. It's the ones really that are not adhering to what they could do and they could do more to stop having that anxious feeling, or how their symptoms are..., you know.. it's mostly, mismanagement, not managing their condition properly. (P045/FG3)(s)

Providing rescue packs of medication to aid self-care was valued by patients, which they attributed to decreasing their hospital admissions. Case managers, however, felt that the issuing of rescue packs was now causing the problem of overuse, although possibly reducing admissions for their caseloads. Focus group three honestly discussed miscommunication's role in the serious overuse of rescue packs. Examples from participants are presented in Table 54.

Table 54 *Examples of the Microtheme of Patient Resources*

Participant	Quote
P017(p)	<i>'Because a couple of nights, I went to bed, and I was really tight chested. And that's why I made up my mind, actually, I'm gonna start taking them, 'cause I didn't want to get too bad. it's doing the right thing, it's preventing it getting too bad, so you don't have to end up in hospital'.</i>
P031/FG2 (s)	<i>'My lady today, from March till now she's not had, touch wood, any antibiotics and steroids or been in. Prior to that she was on them months. I do think they stop 'em going in'.</i>
(P023/FG1)(s)	<i>'Yeah, and I've got a lady who's just got a fracture of her T5 and when she went in they're saying it was steroid use, and unfortunately I thought she'd.... I didn't think she was having steroids very often, because normally when they ask for a rescue pack on system one, it will be in the new journal entry, doctor... for this lady, and I read all that, so I'll say, oh look, she's not had a rescue pack for ages, but I didn't realise that the GP had put it on a repeat prescription, so she was ticking for them, but because I hadn't looked in the repeat template, I didn't know, and she was having steroids at least once every three weeks, and now she's got a fracture of her spine. She's now terrified and has said she'll never take them again, but the point is, I didn't know that, so for me, that's been a learning exercise'.</i>

6.8.2.2 *Carer Resources*

Carer characteristics were seen as influencing the way case management patients interrelated with services. Traits of carers such as attitude toward their relative's long-term condition, their stoical attitude and self-care skills emerged as important constituents of how, when and why interactions with services arose.

Living with a long-term condition is known to take a psychological and emotional toll, and carers noted the stoical attitude in asking for help and accessing services. Interviewees described both their own and their relative's attitude, which may be related to the age of those caring, with the elderly caring for the elderly as described by carer participant P055: 'But I feel so guilty about having to call people out.... Well, it's just this thing that old folks do, it's causing problems for people, I'm sorry to be such a problem, how many people say that to an ambulance guy.... I do.... I don't like to call unless I am desperate' (P055)(c).

Carers discussed such skills as the ability to care, assist with medication, deal with emergencies and know what to do for the long-term conditions were skills. Participant P038 explained how they could tell when their relative was becoming unwell: 'what we call the traffic light thing, which is a little thing we've got,... temperature, see how she is, if she's breathing badly or whatever, it helps me decided to call or not and who' (P038)(c). Taking objective measurements was a common occurrence in self-care for carers. As carer P042 explains, 'Well you can tell by his weight, 'cause we do his weight every day and he'll sit up and I can tell, cause I tend to rub his back, because if I rub his back, I can feel the crackles and I know I need to ask for help then' (P042)(c). Feeling confident and educating themselves regarding their relative's condition appeared to be on a greater level than a patient's knowledge base.

As with patients, carers voiced the benefits of rescue packs for emergency use and demonstrated sound knowledge on when to administer them. This system was seen to prevent admissions to hospital from the carer's perspective, corroborating that having carers and active personal networks improved self-care and assisted in the appropriate use of services. As carer participant P036 noted,

go onto the emergency pack. Yes, so we know how to start them up, so basically every time she does have an infection we get it quick enough to... which is obviously what's keeping her out of hospital., like, you know. (P036)(c)

An emerging theme particular to carers was the impact upon them when their relative was in hospital. Topics included insurmountable issues of guilt, stress and the want to get them home. Analysis uncovered a hidden burden and stress for carers while patients were in hospital. Carer participant P039 related his narrative:

And then I come home here and I think I'm that stressed then I can't sleep, and I'm thinking I wonder if she's coming out tomorrow, and then your mind's going over, and I'm waking up at three and four o'clock because she ain't there. I'd rather have her where I know she is and then I know she's in her own comfort zone if you like. But there are times when I know that ain't going to work. I know there's times when she is going to have to go in but It's stressful. Because the wife then blames me because she doesn't want to be there. She's just... She would rather be at home. She doesn't like it in there, and I don't like her in there. It's worse actually. I know this might sound daft, but I do all I can to stop her going and I know she does. (P039)(c)

Carers discussed the need to advocate for their relative during hospital admissions regarding care, treatment, communication and discharge. As main carers, they described feeling excluded and judged as interfering. Patient distress was described as producing carer stress and encouraging future admission avoidance behaviours. Table 55 presents some examples.

Table 55 Examples of the Microtheme of Carer Resources

Participant	Quote
P038 (c)	<p><i>'Well, I went up to the desk when I was still there, and he wanted a wee so his daughter went and got him a bottle. But then when he was having a wee, he turned around and said, I need to go to the toilet. Well, John's one of these, when he needs to go, he's got to go straightaway. So I went up to the desk, because we didn't know if we could bring the commode thing out of the bathroom, because of germs and stuff. And he said, my husband really needs the toilet. We can't do anything yet, we're in the middle of changeover. So I went back, he said, I'm absolutely busting, he said, I can't wait. So I went back, I said, he's desperate. And she turned around and she said, I've just told you, I can't do anything now, we're in the middle of changeover. Do you want me to be blunt in what I said? So I turned around to her and I said, well, if he shits on your floor or on your bed, you can get it up because I'm not. The next thing, they're wheeling him out. **** won't go in again, full stop, don't blame him after that'.</i></p>
P036 (c)	<p><i>'You have got to keep explaining, every time we went in I had to meet different doctors, tell them this complete story and I don't think you'd get the story completely right.... I's interfering... Oh its stressful for me hospital; we'd rather not be there, so much easier when **** comes in'.</i></p>

6.9 Chapter Summary

Studies three, four and five have accomplished their objectives and produced the following key findings:

1. 999 emergency services were often utilised in the out-of-hours period out as an innate response and due to a lack of knowledge of other out-of-hours service options.
2. During nighttime periods, panic, isolation and a lack of personal networks contributed to the instigation of interaction with services.
3. Patients and carers noted little shared decision making in conveyance and admission to hospital decisions.
4. Patients, carers and case managers corroborate the high conveyance and A&E conversion rates examined in the data studies.
5. Case-managed patients demonstrated admission avoidance tactics and often delayed seeking help. The majority of key stakeholders stated that they did not want to go to hospital if at all necessary, preferring home treatment, describing the burden they felt on services.
6. During daytime hours, case-managed patients contacted case managers and GPs as a first option, and daytime admissions were generally GP or case manager initiated.
7. A preferable alternative to A&E was a clinical decision unit (CDU or MAU) admission, directed by either the GP or case manager in day time hours.
8. The media was seen as influencing case-managed patients' utilisation of services.
9. Previous service experiences were noted as affecting future service use for case-managed patients and carers.
10. Self-care skills and rescue packs were as a method to avoid hospital admissions by patients and carers; only when self-care failed was contact with services made.
11. The case management service was described as a valued service for assisting in education and the imparting of self-care skills, and it was proactively felt by patients to assist them in avoiding contact with other services and in admission prevention.
12. Only a minority of patients and carers reported being discharged from A&E; most described ongoing admission to hospital.
13. The majority of patients and carers described short admissions.

14. All key stakeholders acknowledged the ageing demographic of the case management population and noted the impact this was having on carers.
15. Key stakeholders reported genuine clinical reasons for interaction with services.
16. Verbal, written and IT communication were seen as affecting case managers' ability to conduct admission avoidance work.
17. The incoordination of services between primary care, community care and secondary care and lack of collaboration affected case-managed patients' journeys through the NHS, inciting admission, delaying discharge and influencing readmission.
18. All key stakeholders described attending A&E via 999 emergency services, no direct attendances were recalled or discoursed.
19. The further development of the *a priori* codebook formed a thematic framework combining the findings from all five studies and including new deductive themes.

The exploration with key stakeholders has enlightened the study objectives in triangulating evidence to form an overall picture to explain the 999-emergency service use, A&E attendance and hospital admission patterns for this complex, multimorbid patient group. The key findings from Chapters 5 and 6 will be explored in greater depth in the discussion chapter.

Chapter 7: Discussion

7.1 Introduction

This mixed methods study identified that case-managed patients calling 999, attending A&E and being admitted to hospital were generally 70 years or older and a greater proportion were female. Both patients and carers noted their advancing age, and case managers noted they were serving a very vulnerable, elderly population. With 9.8% of those over 65 years having more than four long-term conditions in 2015 and the projections expected to reach 17% by 2035 (Kingston et al., 2018), the NHS case management programme is currently serving the ageing demographic and those most at need of intense management within the community. Therefore, the case management programme can be seen as meeting its original objectives identified by the DOH (2005a), in serving the top tier of the Kaiser Permanente model: elderly, vulnerable, high-intensity users with multiple long-term conditions. (DOH, 2005a, b, c).

An analysis of the literature in Chapter 2 identified gaps in the knowledge of when, why and how case management patients utilise emergency services and are admitted to hospital. In some cases, hospital admission could not be objectively quantified over a twenty-four-hour period and little understanding was evident regarding the aspects affecting decisions with regard to contact, attendance and admission to hospital from patients and inside the NHS. This research, therefore, aimed to understand the patterns of 999 ambulance callouts, A&E attendances and hospital admissions for patients of the NHS case management programme in a mixed-methods sequential explanatory process. The objectives of the research were to:

1. Measure and examine the patterns of 999 ambulance callouts for a defined case management population.
2. Measure and examine the patterns of A&E attendances and hospital admissions for a defined case management population.

3. Explore the factors key stakeholders perceive as influencing the patterns of 999 ambulance callouts, A&E attendances and hospital admission patterns for a defined case management population.

The purpose of this chapter is to critically interpret the findings in relation to the literature and understand what contribution this research has made. In doing so, this chapter will present a previously unknown understanding of case management patients' distribution and use of 999 emergency services, A&E and their admissions to hospital. From this new understanding, the proposal of a conceptual model will aid the understanding of service use for this vulnerable cohort of case-managed patients. Limitations and challenges of the research will be examined in light of the findings.

Three main domains have been formulated from the convergence of the quantitative and qualitative data in order to provide in-depth insight into the main objective of the study. The domains presented with regard to emergency service use, A&E attendance and hospital admission patterns for patients of the NHS case management programme are:

- Push factors and underlying delaying factors for service interaction
- Pull factors for service interaction
- Avoidance opportunities

Each will be addressed in turn, describing the further issues relevant to that domain. Domains will be looked at in relation to the micro-, meso- and macro-levels evolving from the findings. The micro-level refers to factors pertaining to the patient and carer level with regard to service interactions, meso with regard to case management and community level service issues and the macro to the wider NHS agenda. Pictographic representation is provided in Figure 53.

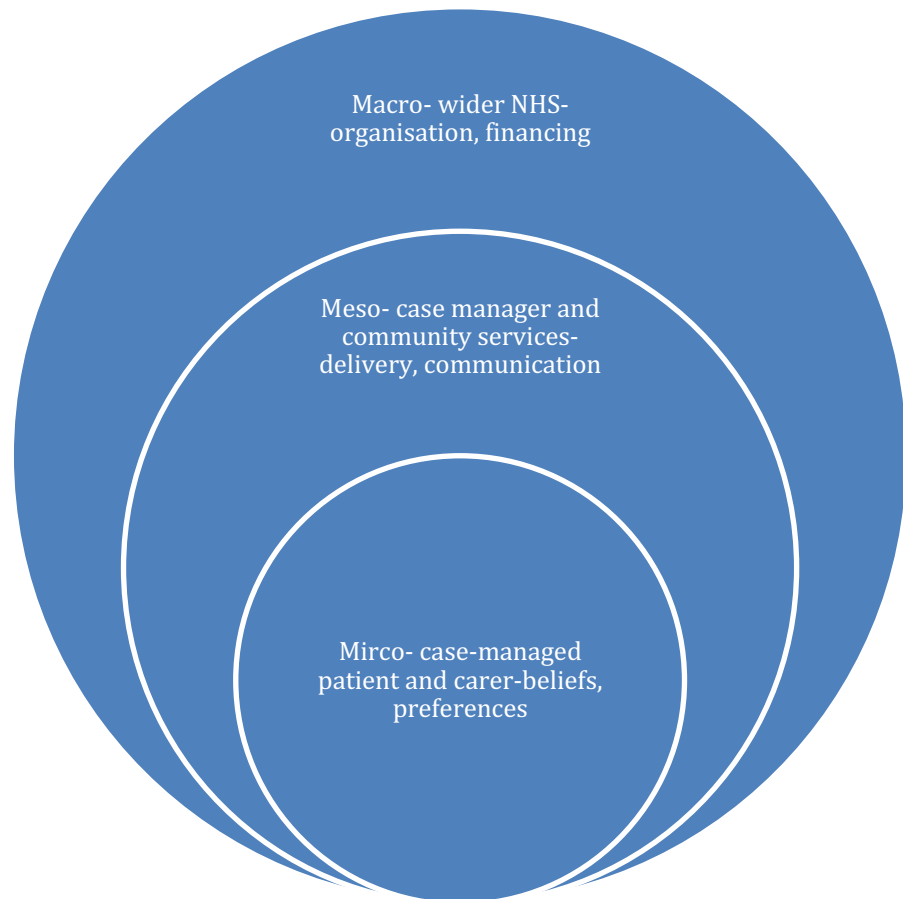


Figure 53. Levels of service interactions of case-managed patients in light of doctoral findings.

7.2 Push Factors and Underlying Delaying Factors for Service Interaction

Exploration with key stakeholders identified a number of factors that revealed service interaction patterns. Push factors can be described as circumstances or behaviours that were driving case-managed patients to make contact with 999 or A&E or to be admitted to hospital. Patients were often doing all they could to manage their long-term conditions; however, other extraneous issues affected service contact. The following factors will be considered in turn: failed self-care and genuine clinical need. Media impact and previous service experience were underlying delaying influences affecting contact with services. The delay in contacting 999 and A&E could then be seen to be a push factor for increasing the chances of admission to hospital. The two underlying factors were seen to influence admission to hospital but not contact with

999 and A&E services. The inter-relationship of the push factors is demonstrated graphically in Figure 54.

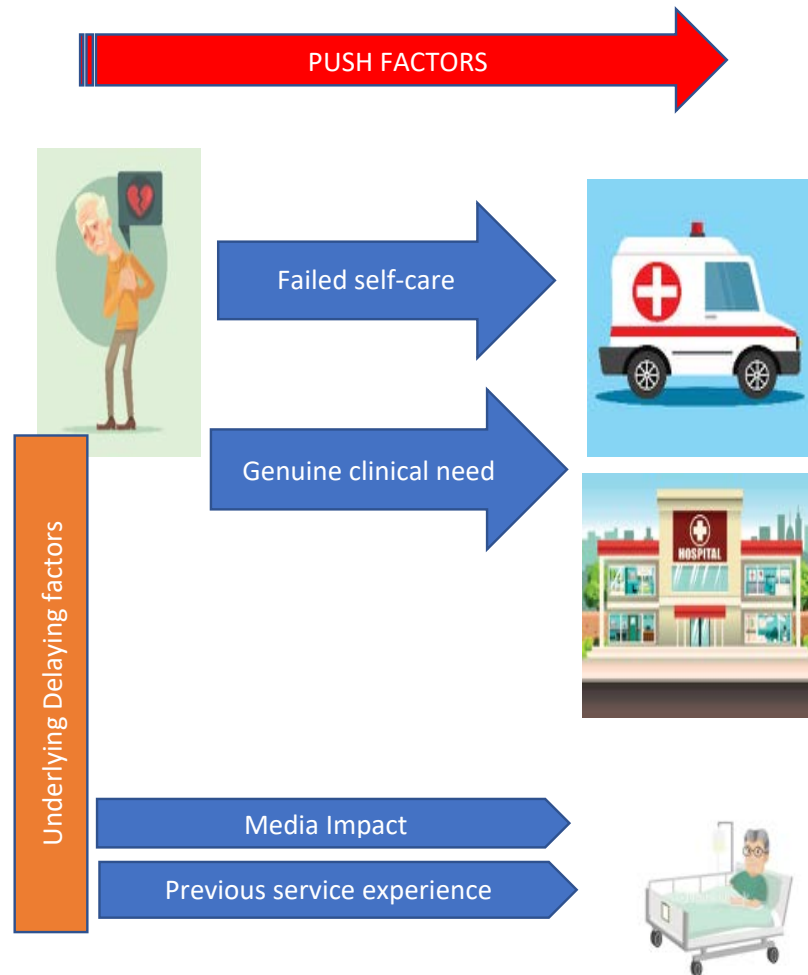


Figure 54. Push factors and underlying delaying factors for 999 callout, A&E attendance and hospital admission for patients of the NHS case management programme.

7.2.1 Media Impact

A new deductive domain that emerged was the influence the media had on patients and carers' interactions with services. With regular coverage in the media regarding the pressures and strains on the NHS (Johnson, 2015; Triggler, 2015; Donnelly, 2017b,

2017; Colvile, 2018), the waits in A&E (BMA, 2016; Kings Fund, 2017; Hammond et al., 2017; Morris et al., 2017), bed-blocking (BBC, 2015; Donnelly, 2017c) and the elderly attending inappropriately (BMA, 2016), case-managed patients appeared to use and process this information when deciding on interaction with services. Expressions of worrying about contacting 999 due to receiving a fine was recounted as an example, which was indeed a national proposal by the then-Secretary of State for Health, whereby an £85 fine could be issued for the inappropriate use of 999 (Johnston, 2011; Sheldrick, 2017). Hence, the media influence served to delay the time until case managed patients contacted 999 and/or A&E. Theoretically, without the negative media stores, contact with emergency services would be in the first instance and it is a contact with services either way. However, because the negative media stories applied to those categories of service, they were not seen to deter contact with case managers or GPs. The delay in contacting 999 or A&E could be seen as a push factor for increasing the chances of admission to hospital.

The media frequently cover health-related topics and so are targeted by those who aim to influence the behaviour of patients, usually in a constructive way (Freemantle, 1994). Media campaigns can produce positive outcomes in health-related behaviours across large populations (Wakefield et al., 2010) and are documented as improving health knowledge, beliefs and attitudes (Noar, 2007). Moreover, according to Agha and Meekers (2010), there is a reported dose-response relationship: a higher intensity of exposure to the media is associated with more positive outcomes. Grilli et al. (2002) concluded that media should be considered a tool to encourage the effective use of services.

However, the reverse may be true in negative media campaigns. Moorhead et al. (2013) identified some limitations of the media as a tool for health promotion, noting issues around quality and lack of reliability. When the media is reporting on health without a structure and in a negative way, the potential for harm is higher. As evidenced within this study, the case-managed population demonstrated a distinct hesitation and avoidance of calling 999 or attending A&E, leaving it until a crisis point when their condition had potentially deteriorated. Little research is available to critique the impact of the media on service use among the elderly and those with

multimorbidity who are high-intensity consumers. The accuracy and reliability of the media in reporting on healthcare could also be questioned.

The delaying behaviour in accessing services due to negative media influence was furthered by case management patients' opinions of the circumstances in A&E from what they had seen on TV of waiting in corridors and patients dying after lengthy waits in corridors. Patients and carers also stated they felt dehumanised and just a number, feeling that no one cared for them. This is in agreement with recent reports that acute urgent care is failing older people (BMA, 2016) and that A&E can be a very bewildering place for older people (NHS Confederation, 2015). The behaviour patterns demonstrated by case-managed patients as a result of negative media impacts could be viewed as a social construct of how patients and carers viewed their value within the healthcare system. According to Conrad (1992) and Bourdieu (1993), patients within the structure of healthcare often feel undervalued and unrecognized as individuals. Beisecker (2009) also observed that, even though patients feel they should challenge authority within healthcare, few patients ever do, sensing a lack of power. Contextual factors predisposing individuals to the use of health services documented in the Andersen Behavioural Model (1968) include the social composition of communities and collective and cultural norms. Babitsch et al. (2012), in revisiting the model, called for further primary research to understand the complexity of healthcare utilisation. At the macro-level of healthcare systems, this adds a new contextual factor of media impact to previous sociological health services models.

The impact of media campaigns on redirecting the public to other services had a negative underlying delaying effect on the case management populace's use of 999 and A&E within this study. Patients and carers avoided or delayed contacting services due to perceived repercussions, until a crisis point was reached and the delay was seen to be a push factor for increasing the chances of ongoing admission to hospital. The media could also be seen as influencing the lack of power and control felt by case-managed patients and carers, sociological concepts intricately linked to the underlying factor of previous service experience.

7.2.2 Previous Service Experience

Dissatisfaction relating to aspects of a previous encounter is a common problem in health care according to Erriksson and Svedlund (2007). Experiences in the past have triggered the way in which case-managed patients interacted with services. Inextricably linked with media impact, the underlying factor contributed to the postponement contacting 999 and A&E services, increasing the chances of ongoing admission to hospital due to the delay in contact. Similarly, to the media impact, previous poor service experiences of 999 and A&E documented did not deter case managed patients from contact with case managers or GPs, or indeed final contact with 999 and A&E when crisis point was reached, it served to delay contact. Pushing towards possible admission as a result.

Resistance strategies due to poor past experiences and previous stigmatisation was noted in a qualitative study concerning patients with sickle cell disease by Maxwell et al. (1999). Albeit in a different population of patients with long-term conditions, correlations could be seen in the qualitative data where stakeholders recalled previous negative experiences with 999, A&E, 111, safety-netting advice and poor communication as resistance factors. In contrast, many published studies report high satisfaction with ambulance services worldwide, albeit reported delays and the resolution capacity of emergency services (Persee et al., 2002; Bernard et al., 2007; Mason et al., 2007; Hadsund et al., 2013; Garcia-Alfranco, 2018). However, it could be seen that treatment seeking is a social action influenced by social context and individual meanings and experience, and not simply a straightforward individual response to the experience of physiological symptoms as suggested by Maxwell et al. (1999). In agreement, Serjeant (1995) noted that most published research tends to ignore both the experiences of individuals who manage their condition in the community and the influence of non-clinical factors on treatment-seeking behaviour.

Case managers recounted how previous safety-netting advice, imparted negatively, left patients fearful to go back to A&E because they had been told not to come back. According to Morphet et al. (2015), many people link their healthcare service experience to the quality of the communication with staff, and that dissatisfaction was

high when communication was poor. Doyle et al. (2013) noted that patient experience was directly linked to previous access outcomes and affected future resource use. Although this study was for a wide range of ages and patient groups and was not specific to the elderly population, it highlights that extra care and understanding may be needed for this mostly elderly and multimorbid case management population when they do interact with services. Poor previous service experience had created numerous problems for staff in trying to admit patients for genuine clinical reasons in service hours and left patients and carers in a vulnerable and confused position, especially in the out-of-hours. Likewise, Erriksson and Svedlund (2007) had noted patients' fear of being troublesome in a study of service dissatisfaction in Sweden. Such an observation correlates to the lack of power felt by patients in the work of Beisecker (2009), with participants avoiding challenges to previous safety netting advice and poor communication and instead delaying and resisting healthcare access until a trusted clinician was available. This may add some clarity as to why the majority of service access remains in service hours.

Care givers as well as patients need positive human encounters in healthcare utilisation (Erriksson and Svedlund, 2007). Carers noted previous negative experiences in hospital and expressed a desire to avoid hospital admission. Morphet et al. (2015) also noted carer participants were dissatisfied with the care provided to their family member when staff failed to communicate with them or recognise the role of the carer. Feelings of guilt with regard to admitting their relative and needing to advocate for them if they were admitted were issues that put further strain on carers and has been acknowledged in a recent publication from the NHS Confederation (2016). Plank et al. (2012) further noted that communication skills and an empathetic attitude are needed when conversing with care givers in acute settings to avoid distress. Negative previous experiences and poor past communication influenced service interaction and contributes to carers contacting only at the emergency point, which could assist in the explanation of the high conveyance rate for case-managed patients.

Previous experiences of 111 by participants, who often recommended 999 conversion or A&E attendance, deterred case-managed patients and carers from contacting this service on subsequent occasions. Likewise, Knowles et al. (2014) documented that the

use of 111 was often problematic for older adults and those with long-term conditions. However, Knowles et al. (2014) gave no indication as to why this was. All patients and carers who mentioned 111 contact documented referral to 999 for varying reasons. No data field was available to indicate the number of conversions to 999 from 111 within the quantitative studies however, nationally the figures demonstrate that 20-22% of 111 calls are still converted to 999 and A&E due to adverse risk (Turner et al., 2013; Dayan, 2017); 111 was mostly described as being utilised by the case management population out-of-hours when other services were not available and may add another explanation to account for the increased proportion of A&E attendances in the 00:00-07:59 period. Given the nature of the symptoms, a higher proportion of case-managed patients could be referred to 999 following engagement with 111 due to the risk-aversion nature of the service as highlighted by Turner et al. (2013). Particularly in relation to exacerbations of a long-term condition such as breathing problems and chest pain, the challenges for clinicians in managing multimorbidity was highlighted by Sondergaard et al. (2015), who noted the lack of confidence felt by clinicians in trying to make decisions on care when faced with complicated multiple conditions. Within the case management population, this meso-level adverse risk factor may have deterred subsequent 111 use. Positive memories of human encounters as described by Erriksson and Svedlund (2007) were not always experienced by the case management populace, adding to the negative media impact on delaying behaviour and resistance strategies. Delaying 999 and/or A&E service contact may result in symptom deterioration and a subsequent push towards acute admission to hospital.

7.2.3 Failed Self-care

Self-care or self-management refers to taking responsibility for one's own behaviour or wellbeing (Clements, 1995). However, the ability of the case management population to self-manage long-term conditions was identified as a pertinent factor in predicting contact with services. According to Backman and Hentinen (2001), self-care is not a separate part of older men's or women's lives but is closely associated with their past, as well as linked to underlying factors such as media impact and previous service experience. Failure or breakdown in the ability to self-manage

appears to push people towards 999 contact and is thus seen as increasing the likelihood of service interaction. In general, the capability of the elderly to self-care has been questioned by the King's Fund (2005), in that age, social support, severity of disease and level of education are factors influencing the ability to self-care. At the micro-level, in describing how self-care skills were used to delay or avoid contact with services, case-managed patients and carers discussed their age, social support networks and an often-stoical attitude to their situations. In contrast to the King's Fund (2005) report, level of education was referred to in an indirect way by case-managed patients, whereas severity of disease was not highlighted in relation to the breakdown of self-care. Nonetheless, with regard to the reasons for failure in self-care, the present study's findings could be relevant to the general elderly population due to similarities found to those of the King's Fund (2005).

Patients and carers noted monitoring physiological observations in order to aid decision-making processes, and they used this information to understand when their ability to successfully self-care had been reached. However, Corben et al. (2005) noted that older adults often struggle to monitor signs and symptoms. Difficulties within the case management population may arise because they are elderly, for, in the quantitative findings, it was recorded that the majority of case-managed patients were 70 or older. Despite emphasising the importance of self-care in elderly patients, studies have reported that the self-care status of elderly patients is poor (Raziyeh et al., 2012). In this regard, Soderhamn et al. (2000) showed that the self-care ability of home-dwelling patients in Sweden decreased for those over 75 years old. However, in a study of older adults and assisted technology in Flanders, the elderly continued to attempt monitoring, even when it was difficult or tiring (Roelands et al., 2002), a phenomenon illustrated by the case-managed patients, wherein increasing age could be seen as a factor influencing their self-care abilities, in that abilities decline to a certain level.

In addition, for many patients or carers, their abilities reach a certain level, in the fact that they are only able to attain a certain level, and they then require further assistance (Rogers et al., 2005). Education is the basis of self-care (Kennedy et al., 2007) and is an element of care case management that patients should receive regularly as part of

the service (DOH, 2005e; Sargent et al., 2007). Therefore, it may be hypothesised that education may be a less important factor in the case management population as they will be generally well informed regarding their long-term conditions. However, the findings indicate that reaching a threshold in level of education affects the ability to self-care and could be attributed to breakdown or failure in self-care for case-managed patients.

For some case-managed patients who lack a personal network, self-care appeared to fail more rapidly, which is verified in the Kings Fund Report (2005); hence, for the general elderly population, lacking a social network is an important element in self-care breakdown. Roelands et al. (2002) documented increased feelings of loneliness when self-caring because of the decreased help from other people. The relevance of these finding to outside of the geographical boundaries of case management are due to the similarities with the wider older adult population. Lack of social support significantly predicted the ability to self-care and increased mortality risk in a US study of community-dwelling older adults (Blazer, 1982). Such findings are also in line with a study from the USA that predicted that isolated elders were four to five times more at risk of hospitalisation and had fewer self-care strategies (Mistry et al., 2001). Panic and anxiety also play a key role in the failure of self-care skills for those without personal networks as well as those expressing feelings of being alone and frightened. Likewise, a study in Iran examining concordance to self-care activities in diabetic patients revealed that perceived social support, anxiety, and depression were key constructs of self-care (Alavi et al., 2018). The loneliness and panic displayed by some isolated case-managed patients in this study reinforces the work of Mistry et al. (2001) who concluded that anxiety in isolated older adults was a significant predictor in admission. Patients and carers with personal networks had support and someone to help in a self-care decision, often to gain reassurance and reduce panic. This an important factor in avoiding or delaying telephoning emergency services. In contrast, those without personal networks at the micro-level were seen as contacting services to assist with a care decision when self-care had reached its maximum capability and panic was playing a key role. Hence, isolated and socially unsupported case-managed patients may contact emergency services, especially in the out-of-hours periods and

have a greater likelihood of A&E conversion during the time period 00:00-07:59 hours.

The concept of the elderly caring for the elderly, advancing age of carers and struggles with the care burden increased carers' likelihood of failed self-care and contacting services for assistance. Caring for someone with a long-term condition is known to be associated with increased rates of both mental and physical conditions in the carer (Schultz and Sherwood, 2008). Carers associated the constancy of caring, lack of sleep, worry, isolation, crisis management and dealing with medical emergencies with failed self-care. Likewise, Burke et al. (2014), in examining carers' role in heart failure care, described carers as encountering role strain and reaching a point where expectations of the role exceed their abilities. Carer strain and failed self-care have an impact upon service interaction, as cited by the British Medical Association (BMA) (2016) and Carers UK (2016), noting that carers often had no other alternative and felt pushed to access services. Failure, breakdown and reaching a threshold of skill level in self-care for carers of case-managed patients and carers appeared to instigate contact with services. Booker et al. (2014) noted that carers often default to the most immediate response available, which is usually emergency services. For the case management populace, even when social support was available from carers, carers also had a threshold in ability to self-care, furthering the Kings Fund report (2005). In a case study by Annerstedt (2000), the risk of burn-out and crises amongst carers was directly correlated with the number of hours caring and the number of diagnoses. However, a paucity of research regarding the impact of multimorbidity on carers has been documented (The Academy of Medical Sciences, 2018). The concept of the ageing demographic of carers and multimorbidity in the failed self-care of carers, as well as its impact upon service use, adds an alternative dimension to previous work. A lack of community support leading to failed self-care at the meso-level will be addressed in section 7.3.4: uncoordinated community response.

The structure of healthcare as sociologically described by Bourdieu (1972) could be seen as contributing to how patients described how they felt: powerless as an agent of self-care. Bourdieu described *habitus* as the relational structure within which individuals' experiences become embodied (Bourdieu, 1993; Willis et al., 2016),

capital as the symbolic and material resources that individuals use to make choices and act (Moore, 2008) and *field* as the mechanism through which various capitals are produced (Moore, 2008). Understanding healthcare as the field enables investigation of how individuals make choices and how knowledge is shaped by past experience (Willis et al., 2016). The symbolic nature of patients and carers understanding their positions in the community and healthcare system, as well as their place in the field structure, is demonstrated in their narrative accounts of capital as having a poor sense of identity and attitudes of burden and fatality, potentially influencing their ability to self-care. Fear of being a troublesome patient was also apparent. Moreover, it could be argued that the field was not constructed for the individual case management patient to self-care and take control over his or her own health, in contrast to Orem's self-care agency model (Orem, 1991) which contains elements relating to the individual which can be utilised in self-care (Carter, 1998). Here, the environment of health care affects self-care agency, infringing on independence and not just acting as a concept (Younas, 2017). To enable patients to be agents of their own health and make decisions, the system and structure of healthcare need to value patients and be designed around patients, acknowledging patients' experiences of self-care and that the choices made to contact services when self-care fails are based on such experience and the availability of service.

It has been described that failed self-care pushes case management patients and carers to contact services; however, the apparent delay they took to get to the point of failure in self-care is significant. Cowling et al. (2018) suggested that some out-of-hours attendances and admissions were not avoided but were rather delayed per an observational study looking at GP access and admission within the general population. The likelihood of delaying a decision to be hospitalised was more than five times higher amongst those with anxiety and depression in a USA study of heart failure patients (Odds ratio, 5.33; 95% CI 2.14-13.28) (Jiayan et al., 2018). Backman and Hentinen (2001) viewed self-care as based on a person's desire to listen to his/her own internal voice. This could be seen in the admission avoidance behaviour noted by case managers, patients and carers alike, who described an overwhelming desire among patients to stay out of hospital and not contact services. Contrary to the belief that elderly patients often attend A&E inappropriately (BMA, 2016) and place an

increasing pressure on secondary care (Bankart et al., 2011), the majority of participants of this study fervently described not wanting to go into hospital unless it was critical.

Although some patients did use out-of-hours alternatives, a number of case-managed patients purposely delayed seeking out-of-hours care at the macro-level in favour of waiting until the case manager or GP could visit (meso-level). Likewise, Coster et al. (2017) noted that different population groups had different views and used services differently and for different reasons. For example, older people were distrustful of telephone services and preferred to see a familiar clinician than to contact ambulances or out-of-hours services (Coster et al., 2017). Not wanting to contact services, struggling and utilising all possible self-care skills due to wanting to be seen by the case manager represent some of the stoical attitudes displayed. Satisfaction with the case management service due to trust and confidence in the case managers' skills were cited as reasons to why they often held off till the case manager was on duty. Such findings are in agreement with Lyndon (2007) and Clegg and Bee (2008), whose early studies highlighted high patient satisfaction with the case management service, as well as with Banning (2009) who documented high levels of patient trust due to the expertise skill level of case managers. Given patients' trust in the service and their delay in seeking out-of-hours provision, the greater number of in-hours service admissions, therefore, may have been instigated by case managers and GPs at the meso-level due to self-care being exhausted and genuine clinical necessity. Unfortunately, no data field was available to note who made the original referral which would have confirmed this referral source within the daytime. However, patients and carers stated the case manager or GP was always their point of contact in-hours and did not mention calling 999 themselves. The findings of this study reinforce the high patient and carer satisfaction with the service, conversely adding a new perspective that this may contribute to the delay in contact in the out-of-hours, leading to patterns of daytime admission due to exhaustion of self-care skills and a clinical decision to admit.

As verified by Holden et al. (2015) barriers to and breakdowns in self-care often stemmed not from single factors but from the interaction of several components.

Failure or breakdown in self-care, reaching the threshold of self-care skills, age, educational level, lack of personal networks, isolation, lack of power as an agent to self-care and delaying behaviours due to service preference, have been proposed as reasons why self-care is not always successful and pushes patients to interact with 999 and A&E and being admitted to hospital.

7.2.4 Genuine Clinical Need

Whilst there was evidence of the severity of medical need in the classification of the clinical reasons for 999 callout, A&E attendance and admission to hospital (i.e. falls, breathing problems, urinary tract infections and chest pain), the majority of records were classified as ‘medical other.’ This general code was inadequate for predictive modelling. The Capita Health Report (2014) noted the variability of the accuracy of clinical coding in the NHS, with similar errors and inaccuracies as demonstrated within this study. The quantitative data studies, however, identified a high utilisation of 999 services for patients of the case management programme in comparison to the general population (NAO, 2013, 2017a) and a higher-than-average green 2 and red 2 life threatening emergency 999 callouts (NHS England, 2014c). Snooks et al (2004) accounted falls among the most common clinical reason for non-conveyance which carries a lower category of call than those seen in the case management 999 callout data. The higher level of call category could suggest a genuine clinical need for case-managed patients contacting 999.

Patients in the general population who call emergency services for primary care problems often have misconceptions of the alternatives available (Booker et al., 2014). In contrast, the case management callout priority categories in the quantitative data were higher in acuity and may not be considered primary care problems. In addition, the GP- and case manager-led calls could indicate that primary care solutions had already been exhausted prior to emergency service referral, indicating a genuine need identified by a clinician. Moreover, a higher-than-average proportion of case-managed patients are then admitted from A&E than the standard population (NAO, 2013). Paucity of research in this area limits contextualising this finding; however, the use of policy is applied where appropriate.

Many participants recalled emergency treatments at the scene which necessitated conveyance to hospital, a phenomenon exemplified in the 999-callout data, where a slightly higher proportion of patients were taken to A&E and not treated at the scene. This was in comparison to the general population who had a lower conveyance rate (NAO, 2013, 2017a), indicating a clinical need for further assessment and treatment in A&E for case-managed patients. However, Miles et al. (2018) noted that paramedics make accurate conveyance decisions but are more likely to over-convey than under-convey; therefore, decisions made are always safe but may not always appropriate. Risk aversion and safety, especially in an elderly multimorbid populace, could plausibly increase the conveyance of case-managed patients by ambulance services. As suggested by Jones (2016), patient and case manager definitions of safety differ; therefore, patient and 999 crew definitions of safety differ in decisions to convey. Patient safety and professionals' risk aversion may contribute to genuine clinical reasons in this populace and amplify further the over-conveyance effect seen in general population by Miles et al. (2018). Snook et al. (2004) concluded that there is a lack of evidence to indicate a clinically safe approach to identifying patients suitable for non-conveyance; likewise, Miles et al. (2018) suggested that paramedics need to feel supported in making non-conveyance decisions. Therefore, a systemwide approach to identifying genuine clinical need and pathways for conveyance and non-conveyance decisions may be required.

No case-managed patients described direct attendance at A&E throughout the qualitative work, corroborated by the A&E attendance data with low self-referral rates. This is in contrast to the higher direct referral levels seen within the general population (NAO, 2013). LeCalle and Rabin (2010) noted that the younger general population directly present to A&E out of convenience and an inability to access primary care services at their time of choice (Agarwal et al., 2012). Older patients and those presenting at less busy times were also most at risk of admission (Hayward et al., 2016), possibly indicating a genuine need for emergency 999 assistance in the case management population or, in contrast, plausibly and practically requiring 999 services due to age, housebound status, frailty, physical need for transport to A&E or

lack of local personal networks. However, no participants stated the need for calling 999 for transportation and only for perceived genuine clinical need.

Once at A&E, this study documented a higher-than-national average conversion rate to admission and higher average length of stay for case-managed patients (NAO, 2013; NAO, 2017a). Little is known about the factors that influence admission decisions, and research is sparse. A US study noted that the decision to admit was affected by objective measurements of the patient's disease state and by workflow-related pressures within the department (Gorski et al., 2017). Due to the current pressures within A&E's in England (Bankart et al., 2011), the conversion rate would be lower within the case management population. However, a multimorbidity sub-group analysis of a case management population by Stokes et al. (2017) concluded that some complex patients may legitimately require hospitalisation in a robust quasi-experiment. Therefore, genuine clinical need may outweigh system issues and/or other factors may be affecting admission decisions. Hunter et al. (2016) noted that many non-medical factors were also considered in admission decision in the USA, such as lack of information, inadequate access to other services and need for tests. For the case management populace, many other factors may be influencing decisions to admit; however, these were often unknown to participants. Consideration of genuine clinical need and complications as discussed by participants, as well as the complex multimorbid picture of this cohort of elderly patients, along with possible safety and risk-aversion decisions could be proposed as assisting in the explanation of the higher conveyance, conversion and length of stay rates within the quantitative data, offering a new perspective on the service interactions for case-managed patients.

Williams (2018) demonstrated a rise in zero-day admissions, in which patients are admitted and discharged on the same day. This phenomenon was not seen in the case management populace data, which demonstrated longer admissions than comparison populations, possibly signifying necessary genuine clinical need. Many zero-day admissions are considered unnecessary; however, there is insufficient understanding of why zero-day admissions are rising and how to classify unnecessary admissions (BMA, 2016; Williams, 2018). The purpose of the case management programme has been to avoid unnecessary admissions, and there must be genuine clinical need evident

when this patient cohort are admitted to hospital. However, as suggested by Hunter et al. (2016), there may be non-medical reasons involved in admission and discharge decisions that are related to social and community care factors such as bed blocking and delayed transfer of care, social care and community service provision. The term *bed blocking*, often used in the media, describes patients who are medically fit but are in hospital due to problems arranging care in the community (Donnelly, 2017c).

It must be noted that there may be a possible reluctance to expedite discharge in the elderly multimorbid population who may also have social care constraints that require organising prior to discharge, thus extending lengths of stay, a widely reported delaying factor for discharge from hospital (Iacobucci, 2015; Monitor, 2015). There is a cost of more than three million bed days lost between 2010-2016 at a cost of £910 million, due to a lack of social care provision for people being discharged from hospital (Age UK, 2015). In 2017, a 42% increase was seen from 2016 in the delays discharging people as a result of the pressures on social care (Donnelly, 2017c). Hence, case-managed patients may be sitting in hospital for no medical need and other social factors may be contributing.

Inadequate social care affects secondary care as reported by the GMB (2016) who highlighted that nearly a quarter of bed blocking in England was due to delays in providing residential or nursing home placement. Social care and admissions could be considered inextricably linked, and delayed transfers of care are rising, presenting an increasing challenge for healthcare systems, due to the rising number of A&E attendances and use of acute services (NAO, 2013; Monitor, 2015). While the effect of care home capacity on delayed transfer of care was found to be modest (Gaughan et al., 2014) and so may not significantly contribute to the reason for admissions, this isn't clear for the capacity of social home care provision. Consequently, admissions for case-managed patients are either clinically genuine or respond to a gap in the social needs of the patient. If it is too unsafe to be at home case management conveyances and admissions are necessary. Hence, if admission was not instigated or extended, then readmission may result, acting as a form of preventative healthcare in a system that may be inadequate for case-managed patients. Risk and patient safety (Miles et

al., 2018) appeared to take precedence in decision making regarding conveyance, admission and length of stay decisions.

Considering the genuineness of clinical need catalyses the debate of unnecessary or inappropriate admissions in the context of current service health and social care provision. If case-managed patients aren't so unwell that a hospital admission was clinically necessary, but sending them home would be unsafe, then does this constitute 'necessary'? Thwaites et al. (2015) described the terms 'inappropriate' and 'unnecessary' as difficult to conceptualise in the general population of hospital users. Such labelling of 'unnecessary' and 'bed blocking' with their negative connotations may therefore be unjust as this infers patient responsibility rather than system responsibility. These terms are often explicit in media portrayals of the NHS. If we stop labelling attendances and admission as unnecessary and consider that patients may be using services appropriately, then the terms used may need revising so as not to offend people and affect service use, especially among the elderly as seen within this study.

Patients, carers and case managers qualitatively described acute exacerbations of their conditions and emergencies such as type two respiratory failure, heart attacks, pneumonia and falls as the medical reasons services were contacted—from their perception, genuine clinical need. Patients described themselves with diagnostic labels given to them by healthcare professionals, and, indeed, case managers described patients with these disease labels. Such medical control reveals healthcare professionals maintaining authority by dictating how the system expects individuals to behave, as a 'patient' and a 'diabetic.' Sociologically, these extend concepts introduced by Peräkylä (2010), who noted that patients displayed an orientation to the healthcare professional's ultimate authority in the domain of medical reasoning. This is particularly pertinent to this elderly cohort of patients who demonstrated guilt when contacting services for assistance, acknowledging the hierarchy and structure within which they were expected to conform.

7.3 Pull Factors for Service Interaction

Forces drawing case management patients in the direction of contact with emergency services and hospital have been conceptualised as pull factors. These are things out of the control of patients, pulling them towards to 999, A&E and hospital. The factors discovered to pull case-managed patients toward service interaction include insufficient out-of-hours service provision, inadequate shared decision making, uncoordinated and underfunded community resource and lack of data transparency, offered in Figure 55.

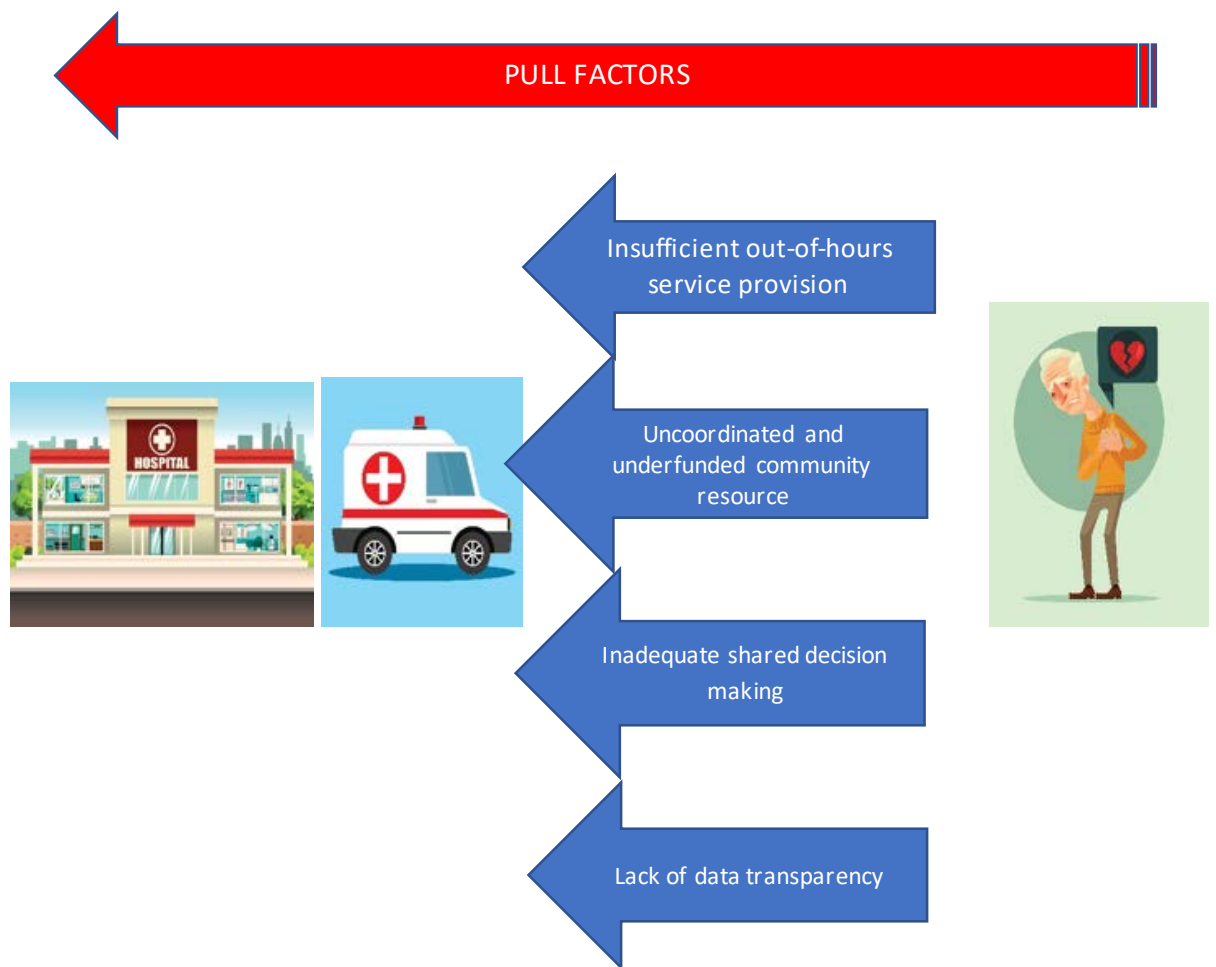


Figure 55. Pull factors for A&E attendance and admission to hospital for NHS case-managed patients.

7.3.1 Insufficient Out-of-Hours Service Provision

Out-of-hours is defined as any time outside the service hours of Monday to Friday 08:00 to 18:00 hours. The quantitative data studies demonstrated the conveyance,

attendance and admission burden remaining in service hours for case-managed patients. Given that 70% of the time available is out of hours it could be expected that more people accessed services in that amount of time, however proportionality wise, a disproportionate amount of case managed patients utilised services in hours. These findings refute the earlier work of Ross et al. (2011) and Boaden et al. (2005) who noted that ‘most’ emergency admissions involving case-managed patients happened out-of-hours, a time when case managers were unavailable. However, the increased likelihood of conversion and admission during the 00:00-07:59 could indicate the out-of-hours provision for case-managed patients is insufficient possibly pulling them in towards acute services, supporting the work of Ross et al. (2011) and Boaden et al. (2005) in explaining the patterns of attendances and admissions across the twenty-four-hour time spectrum for the case management populace.

Hayward et al. (2016) noted that older patients and those presenting at less busy times, for example during the night, are most at risk of admission. Studies of the general population note that emergency admissions at weekends are older and more functionally dependent than those admitted on the weekdays (Hamilton et al., 2016). During the weekdays, case-managed patients may have access to other services that are able to intervene earlier and direct to emergency care for genuine clinical need earlier if necessary. Conversely, at the night time and the weekend, patients may try and hold on until the case management services open, but are then unable to, resulting in A&E attendance and being more acutely unwell, necessitating admission. The sicker patients shown in Hamilton et al. (2016) could draw similarities with the patients in this study who are also older and experiencing multimorbidity. Anselmi et al. (2017) also noted that those patients arriving by ambulance at night time and weekends are in fact more severely unwell than those arriving by ambulance at other times.

Knowing how and whom to contact in the out-of-hours was passionately discussed throughout the qualitative work. Within this study, participants knew that the case management service was unavailable overnight; however, access to out-of-hours services was described as confusing for patients at the meso-level. Scantlebury et al. (2015) suggested that knowledge of how to contact out-of-hours service was

inadequate within the general population, although no association was made for age groups of participants or level of multimorbidity. Deeny et al. (2017) likewise suggested that reducing fragmentation and the complexity of services in the out-of-hours may assist more in reducing the number unplanned attendances and admissions. Evidence in England suggests that the rise in A&E attendance and unplanned emergency admissions are caused by inadequate support in the out-of-hours (Milton et al., 2012; O'Brien and Jack, 2009). Therefore, emergency services may have been contacted as an innate response due to a lack of alternatives out-of-hours or indeed a lack of awareness of out-of-hours provision in the case management populace. Calnan et al. (2007) further suggested that out-of-hours admissions for case-managed patients may be due to the lack of awareness of alternatives to admission by out-of-hours staff.

In the qualitative work, case managers noted that the out-of-hours night time period and early hours of the morning period were often a problem for patients, and a time when they would contact 999 emergency services. At the micro-level, patients and carers also overwhelmingly noted the early hours of the morning as when panic, anxiety, loneliness and lack of personal networks exacerbated problems and instigated contact with services. These findings are in agreement with work by Mistry et al. (2001) in the USA who demonstrated those living alone without a personal network demonstrated a greater amount of panic and possibly speedier reaction to contacting emergency services. Coster et al. (2017) observed that patient anxiety was strongly related to healthcare-seeking behaviour, linked closely with the reassurance that patients obtained from ambulance services. In addition, 999 was seen as a quick, trustworthy and known service to contact for case-managed patients. Hunter et al. (2013) also noted that having no choice was a reason why the general population of those with long-term conditions may use out-of-hours emergency services. At the macro-level, previous negative responses with 111 with time delays in response and with outcomes prompted further reliance on 999 for out-of-hours service interaction. Worth et al. (2006) also highlighted the challenges that patients with multimorbidity face in this period when they are not known to an out-of-hours service provider, often experiencing a lack of clarity and personal knowledge about their conditions, which becomes a barrier to making contact. Exhausting alternatives and unsuitable alternatives were other facets in the out-of-hours provision for case-managed patients.

The stakeholders described the out-of-hours contact with services in terms of the sociological concepts of agency and structure in line with the work of Bourdieu (1972). The personal facets of isolation and panic were presenting the lived experience of case-managed patients through a lens of the individual within the system. However, the insufficient out-of-hours provision and lack of personal networks within the structure could be compounding their lack of control and power within the healthcare system, possibly making patients feel more anxious and isolated as a result of the structure and lack of accessibility of healthcare. Case-managed patients noted poor ability to control their health within the system confines of a structure that was not built around patients. The system was therefore not performing for the individual, thus raising questions of service design and delivery for case-managed patients, as addressed in 7.4.1.

The majority of out-of-hours service interaction for case-managed patients was described by patients, carers and case managers as via 999, in contrast to the daytime when case managers and GPs were generally always the first contact. The ageing, possibly more unwell and isolated population of case-managed patients may be using out-of-hours services for genuine clinical need. Nevertheless, the lack of community service provision at the meso-level and being unaware or unsatisfied with the alternatives in the out-of-hours were therefore seen as pull factors for service interaction, explaining the data findings of the increased contact in the early morning time period for the case management population. The out-of-hours use and provision entailed an entire system breakdown, at the micro-, macro- and meso-level.

7.3.2 Uncoordinated and Underfunded Community Resource

The parts of the NHS system that are failing to work well together for the benefit of the patient could be defined as uncoordinated. Coordination for this complex group of multi-morbid case-managed patients was one of the original remits of the case manager role (DOH, 2005c) and one which patients and carers evaluated well (Boaden et al., 2005a; Goodman et al., 2010; Ross et al., 2011). The higher-than-average population 999 conveyance and A&E conversion data within this study are supported

by the qualitative findings, suggesting little interaction with other services at the meso- and macro-levels to discuss how situations may have been better managed within other settings or admission be avoided, pulling case-managed patients towards acute care due to uncoordinated interactions and in contrast to the positive coordination elements of previous studies (Armour, 2007; Banning, 2009).

The consensus of stakeholders was that little interaction took place between 999 and case managers, and between A&E and case managers, perhaps due to many of the service interactions being largely in the out-of-hours. In a qualitative study by Hammond et al. (2009), clinicians viewed communication difficulties between community and secondary care as an influencing factor in the decision to admit and delayed discharge, possibly due to the lack communication with community services over the twenty-four-hour period if they are not available and not aligned with acute services. Hence, the increased A&E conversion rate during 00:00-8:59 could be due to an inability to communicate with community services during this time. Mytton et al. (2012) noted that high-quality integrated decision making at the admission point must be instigated and that views must be changed that a hospital is the default setting. General agreement with regard to the older adult population is needed that, when deciding whether to admit a patient or not, health professionals from different parts of the system should be trained and supported to work in a coordinated way (Thwaites et al., 2015). Some patients and carers indicated they told 999 and A&E staff they had a case manager, but a lack of understanding of the service or when or who to contact hindered coordination; moreover, individual decisions to convey and admit were made in silos, pulling patients towards secondary care. Sinnott et al. (2013) also found that challenges for GPs in managing those with multimorbidity included healthcare system-related issues such as fragmented services. Vieze (2016) also considered that poor communication between community and secondary care compounds the unsatisfactory treatment of patients with long-term conditions. In contrast, time at scene for 999 has increased nationally (NAO, 2017a), indicating that 999 could be looking to alternatives rather than to instinctively convey patients to hospital.

The diminishing resource of social care was also seen as influencing case-managed patients' use of emergency and hospital services, reporting it as a pull factor for

interacting with services. The tendency for conversion by 999 and A&E, especially in the out-of-hours, was supported by case managers who noted that no other option was available to paramedics attending to vulnerable, isolated and elderly patients. Such a finding is congruent with the NHS confederation report 'Growing Old Together' (2016), which noted that many older people were being directed to A&E due to inadequate alternatives to hospital care. Oliver (2016) noted that the elderly and those with long-term conditions are disproportionately affected by the lack of twenty-four-hour community services, thus often admitted and delayed from being discharged out-of-hours. Case managers also noted the decline in social care and night sitters which they felt had previously assisted in admission avoidance. The BMA (2016) corroborated this finding, they reported that vulnerable, older people were being left to fend for themselves because of care being scaled back over 25% between 2010 and 2015. Arber and Venn (2011) further highlighted the struggles of care-giving at night and the need for assistance, by outlining the invisibility and physicality of nighttime caring. The underfunding of twenty-four-hour social support was a factor in pulling patients towards secondary care in the out-of-hours and may help explain the increased number of admissions during the hours of 00:00-07:59.

The consequence of diminishing community support also highlighted the issues of carer crisis, carer burnout, dementia care, anxiety support, access to mental health services and access to hospice services as key problems case managers were facing. This is supported by a recent BMA report highlighting that only a small percentage of older people with depression seek help, and services remain inadequate within the community (BMA, 2016). Case managers referred to a reduced number of services and specialised support within the community, a contributing factor to the overuse of acute secondary care often at crisis point due to a lack of alternatives. One carer participant noted how she was advised by her GP to take her 92-year-old husband to hospital when she could no longer cope with his dementia and no social care support could be found for her. Her conscious, stoical attitude and moral stance of not wanting to block a bed prohibited her from this action. However, she was then left with no support over a whole weekend. A qualitative study of carers by Carers UK (2016) revealed that there were not enough alternative services and that carers often had no option other than to take elderly relatives to A&E. Reported figures suggest that one

in four of carer-instigated A&E attendances could have been prevented (Carers UK, 2016). Triggles et al. (2013) also noted that 2.3 million overnight stays could be prevented were there better organisation of services to prevent patients getting to a crisis stage of requiring hospital admission.

From a carer's perspective, the consequence of underfunded community support produced an increased dependence on health systems when a crisis point was reached. The risk of burn-out and crisis point amongst carers was directly correlated to the number of hours caring and the number of diagnoses (Annerstedt, 2000), pertinent to those with complex multimorbidity such as carers of case-managed patients. Caring for someone with long-term conditions is associated with increased rates of both mental and physical conditions in the carer (Schultz and Sherwood, 2008; Adelman et al., 2014; Mori, 2017) and with increased mortality (Schultz and Beach, 1999). Mason et al. (2014) reported that, in the last year of life for patients with multimorbidity, caregivers noted that a lack of coordination and continuity of care increased stress levels. These findings are consistent with Gill et al. (2014) who also found that carers frequently expressed frustration due to a lack of coordination of care from health services in caring for patients with multimorbidity. The typology of the issues of caregiving that affect the health of carers of case management patients presented in 6.3.3 offers a new conceptualisation of the issues faced by carers, thus highlighting the issues contributing to service use and pulling case-managed patients towards acute care: an effect of the inevitability of caring, the elderly caring for the elderly demographic and underfunded and uncoordinated service provision.

Within this study, a greater proportion of men were seen to be caring for women, verified in the data with a greater proportion of female case-managed patients attending A&E and being admitted to hospital. Caregiving has previously been considered women's work (Dalley, 1996, 1998), and caring has typically been considered through women's experiences (Gollins, 2005); however, this study sheds additional light on the role of the male carer. Male carers in this study described themselves as carers, unlike in previous studies (Gollins, 2005) where they saw caring as activity. The long-term trajectory of multimorbidity and the inevitability of caring was expressed in relation to their duty to care for however long was necessary, which

was even evident in the grandson looking after his grandmother. The patriarchal societal expectations of men being strong (Applegate and Kaye, 1993) may have influenced the reluctance of male carers to contact services and not be a burden. Social structure and gender roles may also have contributed to the invisibility of male carers, making them feel less inclined to contact services until a crisis point was reached.

Case management cannot be implemented in isolation of other related service, requiring spanning of the three NHS sectors, social care and the third sector, interacting at the micro-, macro- and meso-levels (Masterson, 2007; Abell et al., 2010; Smith et al., 2013). Within this study, stakeholders described the increasingly difficult and complex attempts to navigate current systems and carve out new pathways for patients due to financial austerity and constraints. A position well documented for the general older adult population and applicable to the case management populace is a system that lacks focus on the wider aspects of health and wellbeing (BMA, 2016). The consequence of uncoordinated and underfunded community support was seen as producing an increased dependence on acute services and could assist in the explanation of the increased rate of A&E conversion for the case-managed populace.

7.3.3 Inadequate Shared Decision Making

Shared decision making (SDM) is the process by which professionals and patients work together, reviewing all the evidence in order to make decisions jointly (DOH, 2011, 2012b; Health Foundation, 2012; NICE, 2012; NHS England, 2013d). ‘No decision about me without me’ (Health Foundation, 2014) heralded a change in culture within the NHS whereby clinicians no longer make decisions alone and patients are assisted in reviewing and exploring options available and participate actively in decisions about care. The majority of case-managed patients in studies one and two were conveyed to A&E by 999 and a large proportion were then admitted, pulled to hospital at the micro-, meso- and macro-levels. Nevertheless, the qualitative work revealed the admission-avoidance behaviour of case-managed patients and a distinct lack of desire to be in hospital voiced by patients and carers. Questions must therefore be asked as to how case-managed patients end up in hospital and how actively they were involved in the process. With this apparent contradiction evident, further

information was analysed from the qualitative data to attempt to explore and explain the data findings.

Despite recommendations to actively ensure patients are engaged in decisions regarding care (NHS England, 2013d), case-managed patients and carers noted little experience with decisions to convey or decisions to admit to hospital. In a study by Taylor et al. (2014) regarding cancer care, patients had limited opportunities for input or to influence decisions regarding care. A study from Canada within primary care highlighted that, despite growing recognition that shared decision making is central for person-centred care, adoption by clinicians remains limited in routine practice (Menear et al., 2018). Beisecker (2009) suggested that, even though patients feel they should challenge authority within healthcare, few patients ever do due to sensing a lack of power. Conversely, case managers noted the difficult position 999 services were in when deciding to convey a patient to hospital or not, especially in the out-of-hours. The difficult decision of leaving a vulnerable elderly patient at home struggling with little knowledge of what support services they had, placed the emergency services in a dilemma. Boulding et al. (2011) also noted that safety was often the main clinical driver in decision making for 999 ambulance services. Similarities could be drawn to the position of A&E staff in this study regarding admission decisions. In addition, case managers felt confused as to how the decision to admit was made and felt no patient or carer involvement was actioned, although they surmised that clinical reasoning and safety must have been at the root cause of conversion. The majority of participants of this study felt they were conveyed and admitted with no part in the decision-making process; the decision was clinically led.

Patients and carers noted that their preferred first point of contact during service hours was their case manager or GP, which concurs with the experiences of other case-managed patients as reported by Wright et al. (2007) and Downes and Pemberton (2009). However, when case-managed patients and carers did access GP services, they noted GPs were quick to refer to emergency services and hospital with little joint decision making evident. Discontinuity of care from an increasing locum workforce and decline in home visits was noted by patients and carers as increasing referrals to emergency and acute care and decreased shared decision making. This experience is

supported by Barker et al. (2017) who noted higher continuity of GP care was associated with lower emergency admission rates, which disproportionately affects adults aged over 65 years (Tammes et al., 2017). However, Hull et al. (2018) found that patient experience of GP continuity did not predict A&E use. Case managers also observed that GPs were quicker to admit than themselves, seeming to have little incentive to avoid admission or emergency service contact. Such a finding is in line with Cowling et al. (2013) who described increasing pressure in primary care as a factor affecting A&E attendance and admission rates. Sinnott et al. (2013) also found that one of the challenges in managing those with multimorbidity was delivering person-centred care and sharing decision making in the busy primary care environment. Hence, GPs could be struggling to manage the multimorbid case management population and make more in-hours referrals. A primary care system that is increasingly fragmented, in which neither patient nor staff feel strongly connected to, provides the setting for increased 999 use and A&E attendances.

Inadequate shared decision making with case-managed patients was evident at both the meso- and macro-levels of the healthcare system, affecting both in- and out-of-hours service interactions, pulling patients into the system and towards acute services, often against their choice. Safety could be conjectured as one of the reasons for inadequate shared decision making, additionally the lack of medical information available to emergency and hospital staff and lack of integrated data systems could also be suggested.

7.3.4 Lack of Data Transparency

The ability to easily access and work with information no matter where they are located is defined as data transparency (Intellect, 2013). Data interoperability refers to the ability of computer systems to exchange information (DOH, 2013), and data integration is the process of combining computer systems (Intellect, 2013). In the context of NHS IT systems, methods of working and communication via information technology within the NHS affected case-managed patients' care journeys, pulling them towards hospital when the integration of systems and data transparency for clinicians were lacking. The introduction of new IT systems by 999 ambulances

services to create electronic patient report forms (ePRF) was felt by case managers as hindering data transparency as they gained no information on a 999 callout anymore in contrast to the old paper-based system which was left in the patient's homes. Patients and carers also noted that the majority of 999 crews did not look at their paper-based records before making a decision to convey to hospital. Currently, many community services still also use a paper-based note system (Dunhill, 2017; QNI, 2018) hindering data integration. It has been noted that this new 999 system communicates with A&Es and GPs but does not include community staff (Crumb et al., 2017). Improving IT in one domain of care or in a local pocket has been noted as a common phenomenon within the NHS, but a systems-wide, macro-level approach has not been adopted (Institute of Healthcare Management, 2017).

It could, therefore, be hypothesised that clinicians are having to make decisions regarding case-managed patients' care with little or no medical information, especially in the out-of-hours. Gallagher et al (2012), in study exploring continuity of care in the out-of-hours for patients with long-term conditions, concluded that shared record systems and improved communication were required. Consequently, without information, decisions may be made for safety reasons and could be contributing to the increased conveyance and admission rates for this complex multimorbid populace. There can be serious cost to patients when the NHS doesn't share medical records between the professionals treating them, including medication and treatment errors and near misses (Boseley, 2016; Donnelly, 2017a). Other studies corroborate the current stance of the lack of a joined-up system is negatively affecting patient care and safety within the NHS (Boseley, 2016; Hurst et al., 2016; Ashbridge and Davies, 2017).

Lack of data transparency was also seen as affecting case managers' day-to-day role and admission-prevention activities. Reilly et al. (2010) noted that the different record and information systems used by services were incompatible and suggested compatibility was required in order to enhance practice and prevent admissions. Case management studies noted the need for good communication between services, data transparency and the need for access to IT systems (Masterson, 2007; Russell, 2009; Smith et al., 2013). However, in this study, thirteen years since service instigation, this

has not been demonstrated as common practice, and obstacles such as difficulties in accessing acute hospital and GP systems and inability to access social care and 999 IT systems were still being encountered. The preliminary work for studies one and two revealed that many different IT systems were in operation within the NHS to log case-managed patients' service interactions in community, primary and acute care. Little interoperability was noted between care sector systems, and a current position of lack of integration was seen. Inevitably, this leads to a lack of data transparency for all clinicians, possibly hindering conveyance and admission decisions. Compatible documentation systems supporting the reliable exchange of relevant patient information would enhance case management practices (Romagnoli et al., 2013). Moreover, a true system-wide approach to data integration is required as recommended by the Richmond Report 'My Data, How Better Use of Data Improves Health and Wellbeing' (2017). The case management model of care could be delivered and evaluated more effectively if data were linked across all sectors which would allow population profiling, stratification of needs and admission tracking. Data transparency could also help clinicians see a more holistic picture of patients and their needs, which could, in turn, aid decisions on whether a patient was safe to stay at home or requires admission to hospital.

In contrast, patients and carers discussed full faith in NHS systems and believed the acute sector communicated well with their GP and case manager, exhibiting high levels of confidence that information was shared with all those involved in their care. They did not believe this had impacted upon their care or been a cause and effect reason for conversion or admission. This is in agreement with a large-scale national survey of NHS service users reporting a high level of trust in NHS systems (White et al., 2016). This was analogous to the opinions of the patient and public involvement discussions presented in section 4.3 whereby service users believed data were already being shared adequately and viewed the NHS as an entire system and not as distinct separate providers. This faith and confidence in the NHS is verified by Ross et al., (2005) who noted that patients' knowledge of the complexity of NHS systems was deficient.

Flagging case-managed patients' records on 999 and A&E IT systems enabled transparent data availability for studies one and two and aided communication between services by highlighting patients to staff they encountered. This system is noted within the literature as forming a fundamental part of the virtual ward process of case management to aid integrated working; nonetheless, it was not utilised in research examining the unplanned admission of virtual wards (Lewis et al., 2011, 2013; Jones and Carroll, 2014; the Health Foundation, 2014; Healthcare at Home, 2016). However, services not operating in this manner and via an MDT model do not use this flagging system, often due to data-protection issues between separate NHS Trust providers. Legal issues of data sharing were also highlighted and attributed to the lack of interoperability in reviews undertaken by the Care Quality Commission (CQC) and National Data Guardian (CQC, 2016; National Data Guardian for Health and Social Care, 2016), akin to the legal data-sharing issues between NHS Trusts uncovered in the preliminary work of this doctoral thesis. Case managers described being aware of the flagging system, noting it was no longer used in certain areas. They felt it had enhanced communication and data transparency for those who had experienced it, assisting in avoiding pulling patients into hospital due to a lack of information. Case management patients interact with numerous services across the NHS and social care; therefore, a true systems-wide interoperability will be required at the micro-, macro- and meso-levels. As suggested with the NHS digitalisation agenda (DOH, 2013; Intellect, 2013; National Advisory Group on Health Information Technology in England, 2016; Mikk et al., 2017), data transparency and integration will assist in the multiservice approach to admission prevention in the case-managed population.

A further issue that did not affect the pull effect to A&E but provided valuable insight into NHS data transparency issues was poor quality data reporting. Case managers noted inaccuracy of coding with numerous examples given which were upsetting to patients, including errors in coding regarding ethnicity or diagnosis on discharge reports. Misreporting is also pertinent to quality of care and patient safety; as Saunders et al. (2013) noted, NHS data were found to have a variable degree of misclassification errors within regard to routinely collected ethnic groups. This study, for instance, relates the example of Patient Y who was male yet attended A&E for 'Non-

inflammatory disorders of the vagina' on four occasions. Case managers also highlighted issues of admissions being attributed to a patient's long-term conditions, when, in fact, this had not been the reason for admission on many occasions. Other studies have revealed poor quality data reporting within the NHS (Walker, 2006; O'Dowd, 2010); however, generally no numbers are publicly available to quantify the errors being made due to the complexity of systems involved (Shahid and Tindall, 2013). In a recent study by Mahbubani et al. (2018), more than half the records they examined had incorrect coding, costing the Trust NHS £39, 215.

7.4 Avoidance Opportunities

Avoidance opportunities are a time and set of circumstances that make it possible to do something differently. Opportunities presented from case-managed patients' service interactions within the wider NHS meso- and macro-levels that are currently not being addressed. The issues of service availability and coordinated resources have been conjectured in this study. At the micro-level, the provision of self-care and person-centred care arose from opportunities currently lacking for the case management populace.

7.4.1 Service Availability

The provision of case management and community services in the out-of-hours, when patients of this study were often seen interacting with emergency services, may be considered an avoidance opportunity. Case management services are traditionally operational 08:00-18:00 hours and, as noted, the appeal for twenty-four-hour service availability has been called for on numerous occasions (Singh, 2005b; NPCRDC, 2006; Patrick et al., 2006; Sledge et al., 2006; Waddell, 2007; Cotton, 2007; Downes and Pemberton, 2009; Randall et al., 2011a). However, this was not substantiated by statistical data demonstrating a greater usage of services in the out-of-hours. Boaden et al. (2005a) offered the single quantitative study noting that most emergency admissions occur in the out-of-hours. Key stakeholders in the qualitative studies described patients accessing 999 and A&E in the out-of-hours period. However, the

quantitative data studies demonstrated no clear out-of-hours service burden, and case-managed patients were still admitted in the daytime via their case manager or GP.

Given that 70% of the time available is out-of-hours it could be expected that more people accessed services in that amount of time, however proportionality wise, this was not the case. Nonetheless, a greater likelihood of conversion to admission in the 00:00-07:59 time period was seen. In comparison to the area- and provider-level populations, case-managed patients appeared to have an increased need for service provision within this time period. Likewise, Oliver (2016) noted in a qualitative survey of service experience that the elderly and those with long-term conditions are disproportionately affected by the lack of twenty-four-hour community services who are often admitted out-of-hours. These definitive quantitative and qualitative data supersede previous qualitative studies who only conjectured that case-managed patients are often admitted when the service is not available (Masterson, 2007; Ross et al., 2011; Grange, 2011). Hence, having a twenty-four-hour case management service could negate the need for an acute admission if appropriate clinical care could be provided earlier at home. Cost effectiveness could also be improved if community care was replaced by costly 999 callouts, A&E attendances and admissions (NICE, 2015; Edwards, 14; Marie Curie, 2014). The cost of an ambulance callout is estimated between £144-216 (NAO, 2011) and average cost per bed day admission £222 (2015/16 Enhanced Tariff Option) (NICE, 2015), in comparison to £77 projected for a community specialist nurse visit (Marie Curie, 2014). Highlighting that patient preference, such as using an ambulance service may not be cost effective. However, the feasibility to deliver on extended community services could be problematic due to decreasing numbers of community staff (Torjesen, 2016; Age UK, 2015).

In order to understand the potential for service expansion and feasibility, it was important to ascertain if this was a requirement among stakeholders. Overwhelmingly, when asked, case-managed patients and carers stated they would not like to call-out a case manager in the out-of-hours period and saw this as time for emergency services. Such a finding further elaborates a loss of power and control within the healthcare system (Peräkylä, 2010). This is in contrast to the findings of LeCalle and Rabin (2010), who noted that the younger populace called for increasing service hours to fit

in with their twenty-four-hour lifestyles and working hours. The elderly case-managed populace had not considered if the service should be twenty-four-hours, possibly arising from the attitude of not wanting to be a burden. Dissimilarly, service use in the out-of-hours period for case-managed patients was seen to arise from unexpected failed self-care, genuine clinical need and crises, not choice or convenience.

Case managers were equivocal as to whether the service should be expanded and viewed this more as an erosion of the proactive nature of case management, making it more reactive and possibly duplicating other services. Describing, as patients, their lack of influence and control in changing the healthcare system within the structure (Moore, 2008), they highlighted that service provision should remain with special rapid response teams, out-of-hours GPs, 111, 999 and A&E. This is in line with many virtual ward models which operate a delegation process, with good information sharing to ensure provision is adequate in the out-of-hours (Lewis, 2007; Downes and Pemberton, 2009; Lewis, 2010; Marriot, 2011; Smith et al., 2013), but this is not widespread practice. No delegation or transfer of information to out-of-hours services was being processed by case managers in this study. Better social input throughout the out-of-hours period was also suggested as a service that required improvement and may reduce dependence on 999 and A&E in this time period. A lack of alternatives and knowledge of the alternatives to 999 and A&E in the out-of-hours, as suggested by Agarwal et al. (2012), within the general population, could also be seen within case management service interactions among patients, carers and case managers. Calnan et al. (2007) further suggested from the results of qualitative interviews with GPs that out-of-hours admissions for case-managed patients may be due to the lack of awareness of alternatives to admission by out-of-hours staff. Worth et al. (2006) also highlighted the challenges that patients face in this period when they are not known to an out-of-hours service provider, often experiencing a lack of clarity and personal knowledge about their condition. Hence, there is increased need for consistent out-of-hours service provision for case-managed patients.

Something clearly needs to be done differently with regard to twenty-four-hour service availability in the community to serve case-managed patients better as well as to match the drive to make secondary care twenty-four-hours seven-days-a-week (NHS

England, 2013c; Freemantle et al., 2015; Lazou, 2015). Community service availability is an avoidance opportunity to reduce demand on acute services. Community services must therefore be looked into to ensure a more seamless and reassuring journey across the twenty-four-hour time trajectory and provide better continuity of care and reduce reliance on 999. Single-care pathways should be provided across organisations; case management was conceived as providing integration of care across the macro- and meso-levels of the NHS and social care for complex multimorbid patients (Curry and Ham, 2010; Guthrie et al., 2010). However, the ability of case management to work across boundaries has been questioned within this study, possibly due to its hours of service provision. This facet could be improved by twenty-four-hour community services, better data transparency across services and improved joint working across the meso- and macro-levels within the NHS.

7.4.2 Coordinated Resources

Bringing elements of the case-managed patient journey through NHS healthcare into a harmonious and efficient relationship would undoubtedly lead to better patient outcomes and provide more efficient use of NHS resources. A hospital is known to produce substantial stress in older patients (Krumholtz, 2013); therefore, opportunities to avoid admission and readmission and to expedite discharge must be considered. A route to achieving this could be through the better coordination of services the patient meets within a single-care pathway.

Good coordination within community services and between community services and primary care was described by patients, carers and case managers, possibly due to understanding the similar meso-level services. Among those 65 years and older, marked discontinuity of care contributed to an increase in unplanned admissions in the prospective cohort analyses by Tammes et al. (2017). Good working relations with case managers and GPs was documented with some GPs congratulating case managers on coordinating patient care, avoiding admission and saving them money. This is verified by Smith et al. (2013) who documented improved case management patient care emerging from good GP and case manager relationship and coordination. Additionally, positive collaborations were reported with other health and social care

professionals, who reported confidence and satisfaction with case management (Armour, 2007; Leighton et al., 2008; Chapman et al., 2009). Bower (2009) noted the need for the case manager to have skills in co-ordination and effective communication. Coordination of primary and community care resource appeared vital in this study as an avoidance opportunity; however, it was not demonstrated across the twenty-four-hour time spectrum.

Despite the majority of patients arriving at hospital via 999 emergency services and being admitted via A&E within the quantitative data studies, an alternative route to admission was recounted by some key stakeholders which could be an avoidance opportunity. Direct admission to a medical assessment unit (MAU) or clinical decisions unit (CDU) within the hospital, which avoids A&E, was seen as alternative route that was organised via coordination between case manager and GP. Admissions via this route did not convey the same media impact that A&E appeared to have for case-managed patients, with MAU emerging as more acceptable. Titles of the units vary according to locality, but the shared objective is to receive appropriate referrals from clinicians that can be admitted straight into a hospital bed and are not considered emergency but medical admissions (Goodacre, 1998; Cooke et al., 2003; Hassan, 2003). Data retrieved did not identify if any admissions were via these units, possibly due to not utilising the same IT systems as A&E. In these units, admission would be directly to the ward system, and, since data from study two were retrieved from A&E IT systems, the study was not privy to these data. Data from study one also did not stipulate these conveyances, as, generally, medical or advanced nurse referral is required, and referrals are not accepted from paramedics who normally convey patients to A&E. Joint collaboration of GPs and case managers provides this alternative route to admission, seen as a positive experience by patients and carers who favour shorter waiting times. Coordinated community resources provided an avoidance opportunity for case-managed patients and were evaluated highly by key stakeholders, saving NHS resources and removing pressure from 999 and A&E. However, this is generally only a daytime resource, as most units do not operate twenty-four-hours a day (Hassan, 2003). Thus, if this resource was available throughout the time spectrum, it could be utilised to benefit more case-managed patients and provide a more coordinated resource.

Very few patients were discharged from A&E within the quantitative data, and the majority experienced ongoing admission. A few patients and carers described being turned around in A&E, which was mainly due to organising take-home equipment or carer monitoring. Likewise, Subbe et al. (2017) identified that the equipment needs of frail and elderly patients must be anticipated at the onset of attendance. GMB (2016) also identified that a delay in community resource to provide adaptations and equipment delayed discharge in 2.5% of transfers of care between 2015-2016. Some patients and carers also described numerous admissions until equipment could be put in place at home and their difficulties in trying to obtain this. Rodakowski et al. (2017) noted this as a common phenomenon, asserting that the need to involve care givers to reduce resources was essential. A coordinated resource between A&E and community services responding to the provision of equipment could reduce admissions and expedite discharges. This unmet avoidance opportunity could ideally cover the twenty-four-hour time period to match the drive for equitable services across the meso- and macro-levels of healthcare.

Another example of discharge from A&E was by A&E staff making contact with community services. In previous qualitative studies, positive collaborations were reported with other health and social care professionals working to prevent unplanned admissions and, where admissions occurred, working with secondary care staff to facilitate speedy discharge was documented (Armour, 2007; Leighton et al., 2008; Chapman et al., 2009). The latter had been enhanced in some areas through the use of key fobs alerting A&E staff and ward staff to the fact that a patient has a case manager (Downes and Pemberton, 2009). Such coordination provided an avoidance opportunity but, again, was a minority experience as patients and case managers reported that most patients experienced ongoing admission.

Case managers acknowledged that part of their role was to link with acute care, recommended as a pertinent part of the objectives of the service (Lillyman et al., 2009; Russell et al., 2009; Challis et al, 2011). Strengthening the secondary care community care interface was essential in role development (Smith et al., 2013) and has been highlighted within this study as an underutilised avoidance opportunity. If case

managers could intercept the 999 call or A&E, then admission and readmission could possibly be prevented. Ames and Gallagher (2015) agrees, considering that A&E departments with stronger community ties have both better flow in the department and can reduce readmissions of patients. It was not possible to identify from the admission data which patient episodes were readmissions; nonetheless, case managers identified numerous scenarios of readmission within 30 days. Readmission to hospital within 30 days of discharge is a target for NHS resource and a potentially preventable opportunity (Barnett and Blagburn, 2016). Joint pathways in A&E to reduce reattendance could benefit case-managed patients as verified by Crede et al. (2017) for the general population. However, Randall et al. (2011b) noted barriers such as the conceptualisation of what collaboration was and the acceptance of acute staff of case managers. Few other studies have investigated the community secondary care interface working practices from a case management perspective, and the findings of this study suggest joint working is currently ineffectual for the case management populace. Until parity between service operational hours is achieved, joint working remains fractional and confined to in-service hours, as verified by NHS England (2013c), who reported that the lack of availability of primary care and community services out-of-hours was preventing collaboration.

7.4.3 Self-care

Self-care is the action taken by case-managed patients or their carer to develop, maintain and improve health at the micro-level of healthcare (Armour, 2007). Clegg and Bee (2008) suggested that case management improved the quality of life of patients by supporting self-care skills. The self-care abilities of patients and carers within this study were affected by wider resource issues at the meso-levels of case management provision and within the sociological structure of the macro-health system. The avoidance opportunity of improving self-care skills further could be harnessed to influence case-managed patients' 999 callouts, A&E attendances and hospital admissions. The unique relationship role of the case manager to provide self-care and support individuals with long-term conditions provides a multitude of opportunities, and evidence from this study and Kennedy et al (2007) suggest that this mode of imparting self-care could reduce A&E attendances and admissions.

Education was seen as a key parameter by patients and carers that their case manager delivered to assist in avoiding unnecessary contact with service. The self-care model of education is the means by which a person is provided with the knowledge and skills needed to perform self-care, manage crises and make lifestyle interventions (Clements, 1995). While some meso-level services are not flexible enough to support this model (Corben, 2005), case managers acknowledged they had always previously had the time to deliver self-care education. However, case managers now noted the need for increasing reassurance and reinforcement when providing self-care education which required multiple visits and time. As noted by Gaffney (2009) and reinforced by Simmonds et al. (2018), constancy is required with a trusted clinician to reinforce patient education. Further challenges and difficulties have also been documented for clinicians with regards to multimorbidity self-care. Søndergaard et al. (2015) highlight the difficulties in applying multiple guidelines to one individual. Case managers noted the change in bearing to their work with a drive to become more reactive than proactive and spend less time with patients. This contradicts a key domain of the role and responsibility of case managers to provide education and assist in the delivering of self-care skills in an innovative and person-centred way (DOH, 2005e) which can reduce both hospital admission and A&E attendance (Kennedy et al., 2007). Therefore, case management is one of the most suitable models to impart education and self-care skills; however, the increasing complexity of multimorbidity, move to reactive care and time constraints need to be accounted for.

Strategies to support concordance to treatment is a key component of self-care, addressed by all stakeholders in the qualitative studies. Rescue packs, which are the supplying of emergency medicines for self-initiation by a patient (Effing et al., 2012; Ogunbayo et al., 2015), were noted to either be over-used or under-used according to case managers, with only few examples of appropriate use. Examples of hospital admissions from overuse were given, along with 999 callouts for delays in initiating self-treatment. Hurst et al. (2018) examined the over use of oral steroids among the COPD patient population. Unfortunately, no data were supplied to confirm or reject the qualitative findings. Søndergaard et al. (2015) noted that even clinicians struggle with polypharmacy in multimorbidity. It is estimated that around 7% of unplanned

hospital admissions in the general population are associated with adverse drug reactions, many of which are preventable (Pirmohamed et al., 2004). It is also estimated that between one-third and on-half of medications for long-term conditions are not taken as recommended (Nunes et al., 2009). In contrast, improved skills in medication management was an outcome of the qualitative interviews conducted with case-managed patients by Sargent et al. (2007). In relation to medication management, Challis et al. (2011) observed that case managers spent a substantial amount of time ensuring individuals' medication regimens were appropriate and up to date, that patients were concordant and that no adverse effects were experienced (Challis et al., 2011). What is evident from this study is that health literacy is fundamental to patient-centred care and patient safety (Aronis et al., 2017).

Patients and carers viewed rescue packs as a vital aspect of self-care, a method inaugurated by Barnett and Blagburn (2016), which has become very popular within self-care (Ogunbayo et al., 2017). The aspect of assisting in treatment is a key component for case-managed patients and presents an opportunity to affect admission avoidance. Much more evaluation is needed with regards to the effects and impacts of rescue packs for patients and NHS resources, as current data are limited. This study adds to the knowledge base that rescue packs are liked by patients and carers and could have an impact upon admission prevention. However, there is risk for overuse, as identified by case managers and within the COPD literature base (Hurst et al., 2018), and further research is necessary within the generic older adult population and case management population.

7.4.4 Person-centred Care

Person-centred care (PCC) represents a shift from a traditional, paternalistic, clinician-driven and disease-focused approach towards one that fully integrates the patient's perceptions, needs and experiences into every phase of a care journey (Fix et al., 2018). The higher-than-population average A&E conversion rates from study two could indicate genuine clinical need; however, it could also indicate some degree of inadequate shared decision making and person-centred approaches regarding choice of place of care, thus pulling case-managed patients toward secondary care. Little

evidence was relayed by key stakeholders regarding the integration of their needs and wants within care scenarios at all stages of the care pathway discussed in the qualitative work. Paternalistic decisions were made within the constraints of the system structure and no opportunities to make independent decisions as agents of their own health were narrated. Many patients disputed conveyance or were forced into 999 conversion by 111 or their GP, and carers mentioned scenarios of having to be convinced to go into hospital. The person-centred approach to the care of the case-managed patient appeared to be a missed avoidance opportunity.

The case management model adopts a generic person-centred approach (DOH, 2005c) which was advocated by key stakeholders and demonstrated by the case management service throughout the qualitative work. This is in line with previous findings of the Evercare pilots that acknowledged a person-centred approach and shared decision making in qualitative evaluation (Boaden, 2005a). The theme of psychological support provided by case managers for patients and carers in a person-centred mode was also noted as crucial by Williams et al. (2011). Sargent et al. (2007) additionally found that patients and carers considered person-centred care to be equally as important as clinical care and worked in favour of improving the quality of life and overall management of long-term conditions.

Nevertheless, on describing care at the macro-level, patients and carers stated they had very rarely been spoken to or made action plans with regards to their preferred place of care. Despite growing emphasis on shared care and person-centred care, the involvements of patients in their care continues to be minimal, with patients and carers feeling that they are not always listened to (Jeffs et al., 2012; Hvalvik and Dale, 2015; Hardicare et al., 2017), which is in line with the findings of this study. Issues with regard to end-of-life care and DNACPR decisions were discussed by all key stakeholders with a lack of person-centred care approaches apparent, often hindered by the lack of transparent data available to emergency services staff. A clinician often dealt with emergencies who may not have known the case-managed patient or their wishes and made decisions at the time based on presenting clinical need. Fix et al. (2018) acknowledged that the person-centred care approach is poorly understood by healthcare staff, although promoted by policy makers and managers (Kennedy et al.,

2007; Coulter et al., 2015). In contrast, Smith et al. (2017) noted shared decision making and person-centred care showed little or no impact upon hospital admission rates and service utilisation. However, they concluded that much more research was required and called for longer studies to test effectiveness over time.

Carers discussed having to advocate for their relatives regarding care, treatment, communication and discharge decisions. They described feeling excluded and judged as interfering, which, they felt, affected future service interaction. These findings are consistent with a Canadian study by Gill et al (2014), who also found that carers frequently expressed frustration due to a lack of person-centred care in caring for patients with multimorbidity. Feelings of not being listened to and not understanding their long-term condition were also experienced; likewise, Morphet et al. (2015) acknowledged the need for clear communication in A&E for carers. This lack of person-centred care contributed to delays in seeking help by many case-managed patients and carers who feared not being able to convey their wishes to emergency and hospital staff. Morphet et al. (2015) concluded that a carer's overall experience of an A&E department visit was linked to the quality of staff communication. Having the time to know and engage with patients is often difficult in the current climate of healthcare (Fix et al., 2018) and difficult for pressurised emergency services. Nonetheless, this is no explanation for some of the experiences of case-managed patients noted in this study. The role of the health care professional must be to empower patients to take an increased responsibility for their health management because, most of the time, they manage it without a professional present (Fix et al., 2018). Person-centred conversations can address the modifiable barriers through exploration of information requirements, discussion of beliefs and increasing patient responsibility for managing their own health (Coulter et al., 2015; NICE, 2015). Despite being provided at the case management level, person-centred care was not demonstrated within the wider macro-healthcare setting for case-managed patients.

An approach harnessing the principles of person-centred care could be required in care planning for admission avoidance; hence, communication is improved between services and opportunities to avoid admission are taken. Case managers are in the ideal position to provide this level of input, catalyse organisational approaches and shift the

culture of care (Fix et al., 2018). A change in culture is required at the patient micro-level with acceptance of responsibility for their health, as well as at the macro-level within NHS culture via approaches to the care of case-managed patients. The Health Foundation's (2014) and NHS England's (2013d) principles of person-centred care were not evidenced in this study. The more effective adoption and implementation of person-centred care at every phase of the care journey could provide further opportunities for admission avoidance in the case management populace, thus empowering patients and the healthcare system. Undoubtedly if digitalisation and data transparency is improved, person-centred care could be improved.

7.5 A Proposed Conceptual Model of the Factors that Contribute to 999 Callouts, A&E Attendances and Hospital Admissions of the Case-Managed Population

This research has discovered a new understanding of the 999 callouts, A&E attendances and hospital admissions for case-managed patients by combining both the quantitative patterns in the data and the inferences of the key stakeholders. A triangulated, convergent, integrated and holistic model has been proposed that presents the multifaceted nature of case-managed patients' interactions with services, representing the precepts of causation and mechanism by which patients interact with services. The research has been summarised and synthesised into a single conceptual model.

A conceptual model or framework is described as 'explaining either graphically, or in narrative form, the key factors, concepts or variables and the presumed relationship among them' (Miles and Huberman, 1994, p. 18). Understanding the causal patterns of interconnections across observations, concepts and other parts of case-managed patients' experience adds to the when, how and why questions proposed in overall research aim. The model represents the reality for case management patients and why they interact with emergency and acute care services in an illustrated format to make the research findings meaningful.

The key aim of the model is to highlight the differences between precepts of causation,

identifying elements of a wider system that force/encourage interactions with services. The model outlines the trajectory of interaction with services, from detection of health deterioration to understanding the factors that trigger and ultimately lead to service contact, and proposed areas for implementing interventions to avoid unnecessary service interaction. The multifaceted causation factors require a more comprehensive model for this population of multimorbid, complex and high-intensity service users. In contrast to other frameworks, this focuses on systems at the micro-, meso- and macro-levels of healthcare, providing a road map for avoidance opportunities and presents potential impacts for healthcare provision in the NHS.

A model offers patients, practitioners, health services-related researchers and policy makers a guide to rethinking service provision and future research. This model also helps facilitate exploration between community, primary and secondary care practices, service provision and interaction, including individual beliefs and preferences of patients and providers. Communication and the organisational culture of the healthcare system could promote further engagement of communities, providers and policymakers to enhance the impact of the research. Figure 56 is a conceptual model of the factors that contribute to the 999 callouts, A&E attendances and hospital admissions of the case management population.

A CONCEPTUAL MODEL OF THE FACTORS THAT CONTRIBUTE TO 999 CALL OUTS, A&E ATTENDANCE AND HOSPITAL ADMISSIONS OF THE CASE MANAGEMENT POPULATION

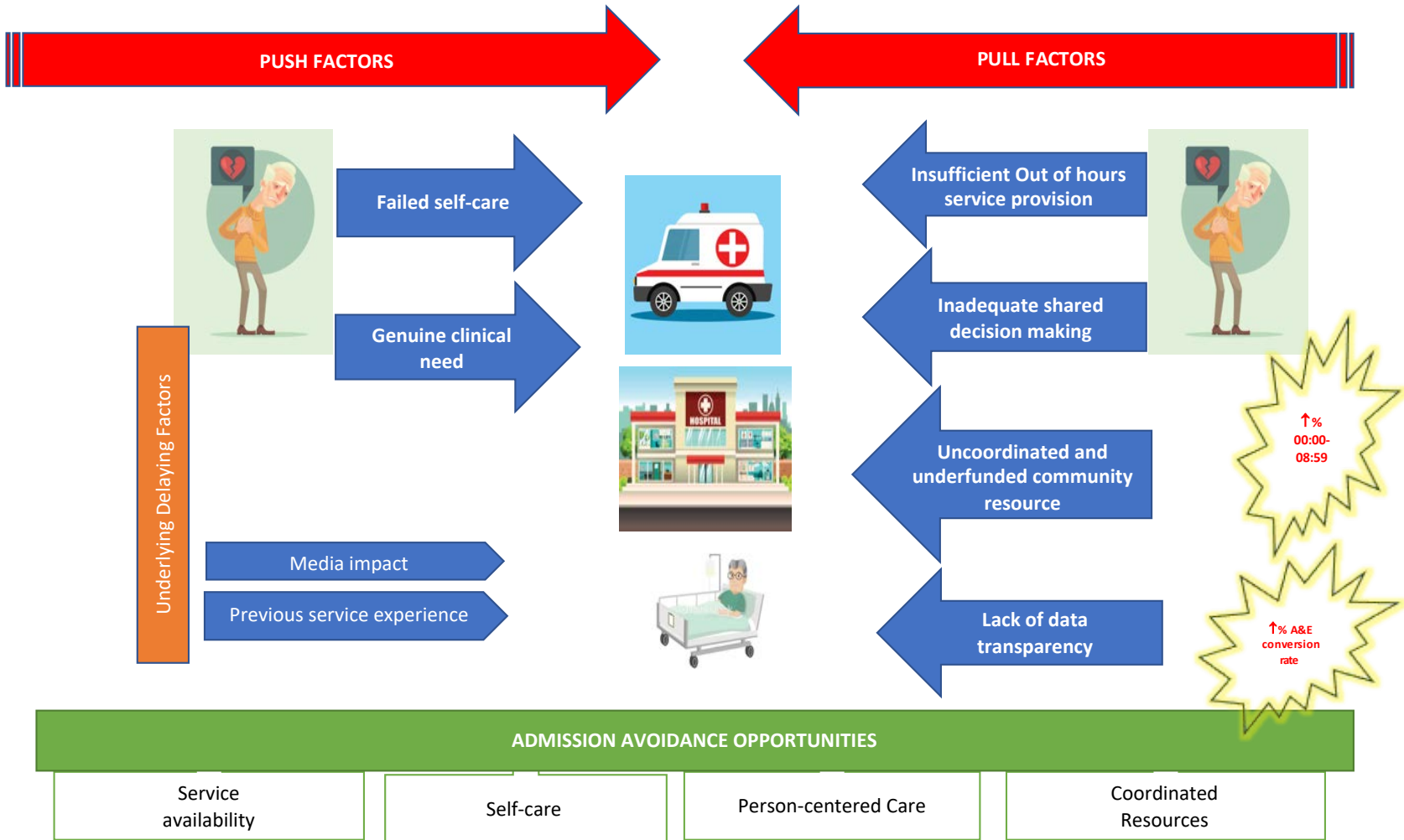


Figure 56. Conceptual model.

7.5.1 Philosophy of the Model

The philosophy of the model is one of holistic, patient-centred care provision, underpinned by a pragmatic research philosophy that recognises the contribution of different stakeholders to influence or participate in the system of healthcare being depicted. Moving in towards the centre of the model from the left and right, patients encounter a diversity of healthcare services involvement with differing communities, primary care, emergency services and secondary care staff and facilities, all of which pertain to very different philosophies with regards to care. This is demonstrated by the increased emphasis on the treatment and biomedical model at the centre of the model, with less recognition of the whole person as conferred by case management treating patients in their own homes and social environments at the sides of the model. The outputs of the model, via the ability to erode the underlying, push and pull factors if the avoidance opportunities are harnessed, advocates the holism and patient-centred approach required for case-managed patients. The cultural context determines interaction, and an increasing number and variety of determinants affect the interfaces of case-managed patients.

7.5.2 Structure and components

A linear continuum of movement from each side of the patient position coincides with an increase in the complexity of the structure of case management conceptual model. This is particularly a function of the increasing number of viewpoints and determinants of interaction that must be considered when decisions are made by patients with regard to service interaction. Underlying delaying factors, push factors and pull factors were seen to occur concurrently with the hierarchical representation, giving precedence to the factors of failed self-care and insufficient out-of-hours provision. However, the power of the combined effect of all factors is conjectured for case-managed patients' service interactions.

Push factors or micro-level patient factors drove patients towards making emergency service interaction and towards secondary acute care. Failed self-care and genuine clinical needs were dynamics pushing case-managed patients to 999 calls, A&E and

hospital admission. The media impact and previous service experience were underlying delaying influences of 999 or A&E contact, conceptualised as push factors for increasing the chances of hospital admission. Pull factors were conceptualised as forces drawing case-managed patients in the direction of contacting services. At the macro- and meso-levels, they were factors often out of the control of individual patients and system-wide concepts that were difficult for the patient to influence: insufficient out-of-hours service provision, inadequate shared decision making, uncoordinated and underfunded community provision and lack of data transparency.

Up from the bottom of the model are avoidance opportunities that could be harnessed for the benefit of patients. These are things that could be done more effectively to either reduce service interaction or alter the timing of interactions. Areas of care that could erode both the push and the pull characteristics of the model are; service availability, coordinated resources, self-care and person-centred care. The underlying factors, push factors, pull factors and avoidance opportunities offer a new level of understanding of service interaction for patients of the NHS case management programme.

7.5.3 Process

Communication between and among individuals (NHS staff, patient and carer) must increase as the patient moves in from left and right towards the centre of the model and, indeed, up from the avoidance opportunities that have the potential to permeate all underlying, push and pull factors, particularly in the way case-managed patients are involved, as the process of the care journey continues inwards towards 999, A&E and secondary care.

Respect for diversity of opinions and attempts at making consensus-based decisions decreases as more practitioners become involved in conveyance and admission decisions; therefore, there is a call to work more closely in delivering patient care. Respecting the individual autonomy of patients requires personalised care and a recognition of patients as individuals. Synergy amongst services and patients could increase as more avoidance opportunities are harnessed, nullifying the effects of the

underlying, push and pull factors and deterring case-managed patients from emergency and secondary care at the centre of the model.

7.5.4 Outcomes

It is expected that health outcomes will improve, and focus will move to the multiple aspects of well-being as the patient is allowed to remain at the left or right of the model, at home, in the community. In addition, care may be more cost effective at the sides of the model as more community care is provided, reducing costly 999 calls, A&E attendances and hospital admissions (NICE, 2015; Edwards, 2014; Marie Curie, 2014; Gaffney, 2009; Wright et al, 2007). The cost of community nursing care varies from £39-77 per home visit (Marie Curie, 2014), in comparison to £144-£216 for a 999 callout (NAO, 2011), £124 for an A&E attendance and an unplanned admission starting at £222 per bed day cost (NICE, 2015). Cost effectiveness is therefore projected as with the national policy, that money is saved by reducing unplanned admissions (NHS England, 2013c, 2015a). However, the theory that community nursing is better value for money and that nursing time is cheaper than a hospital admission is based on the fact that there is potential to reduce emergency service use and admissions. Nevertheless, the majority of the literature found a negligible impact of case management on the significant reduction in unplanned hospital admissions. Therefore, if case management does not reduce unplanned admissions, it is possibly just an added cost. A study from the Netherlands exploring integrated and person-centred care for older adults revealed no cost savings from providing intensive community nursing support (Uittenbroek et al., 2018). Theoretically, community nursing care is more cost effective according to policy makers, however there is a sparsity of substantial research evidence to support this.

Feasibly, it must be noted that despite cost saving projections, community nursing may also not be able to provide extended hours of care due to the reducing numbers of community staff (Age UK, 2015). As with the experience of extending GP contract hours, cost saving may be projected but the actual cost benefit may not be realised. The cost per total extended GP hour was up to £280, with practices needing to cover premise costs and reception, nurse and GP hours (Aziz, 2016)). Staffing these hours

was also especially problematic for some areas that did not have enough GPs. Experiences from these pilots regarding feasibility and cost effectiveness would need to be considered in expansion of community service and case management provision to cover the twenty-four-hour period as an outcome of the model.

Highlighted within the study is that there are some case managed patients in the community who do not have the resources to care for themselves and therefore utilise 999 and A&E services. This raises questions as to whether this is appropriate. As noted by Thwaites et al. (2015) the term inappropriate is difficult to conceptualise and that patient perspective was rarely included in research regarding unplanned admissions. Some answers about what is preferred by case managed patients and carers adds to the body of knowledge, however questions surrounding cost effectiveness and feasibility must also be considered if community services are to be extended. Therefore, there is acknowledgment that patient preference may not reflect what is cost effective or feasible.

The complexity and diversity of the outcomes that need to be measured increase towards the centre of the model, as patients are pulled or pushed to service interaction. The increasing number of different practitioners and staff contributing to patient care may be expected to affect and assess outcomes differently and incorporate increasing complexity to the patient journey with no predictable trajectory. Furthermore, the case management model on the right and left of the model tends to define the concept of improved health outcome in a more holistic means, taking into account social, psychological and emotional wellbeing in conjunction with physical outcome.

7.5.5 Application and Implications

The conceptual model is a step towards defining the care journey for case-managed patients and the influencing factors. It is impossible to act upon the potential variables for service interaction unless they can be identified and categorised. Without a conceptual model such as this one, it is not clear what should be addressed as no studies have previously explored the reasons case managed patients call 999, attend

A&E and are admitted to hospital or the admission patterns across the twenty-four-hour period.

It is important to reiterate the need to link the model with patient need. A patient with chest pain and an acute myocardial infarction requires a model of rapid assessment and intervention to move them promptly to the centre of the model and acute secondary care. In contrast, the majority of case-managed patients with complex, multimorbidity and social determinants of ill health have better outcomes with the holistic case management community approach to care at the sides of the model (Hutt et al., 2004; Clegg and Bee, 2008; Williams et al., 2011). As identified earlier, patient and carer involvement in and responsibility for health care decisions increases as the avoidance opportunities permeate up through the model. However, not all patients want the same degree of participation in their healthcare (Deber et al., 1996). This appears to vary across patients and within the same patient across time, based on a variety of social and cultural factors. Understanding how their role changes within the model may help patients to access care that meets their perceived needs.

In addition, commissioners and policy makers will need to consider the health care system that they operate in. The single, one-size-fits-all model of care used for the general population may not be suitable for complex case-managed patients, and this proposed model identifies and conceptualises the specific requirements of this population of patients, to be adopted for the best health outcomes and costs associated for case-managed patients. The NHS healthcare system needs to be flexible to incorporate different models of care if patients are allowed to choose the care they believe best suits their needs and the NHS is to remain adaptable to the ageing and multimorbid demographic.

There are two main potential limitations of any given conceptual model: initial bias and ongoing bias (Miles and Huberman, 1994). The conceptual framework was seen to undergo several revisions in order to mitigate researcher influence (initial bias) and no concepts were given prominence over the other (ongoing bias).

7.6 Limitations of the Research

The restrictive weaknesses and limits of this doctoral thesis will be addressed and considered in relation to the separate quantitative (studies one, two) and qualitative studies (studies three, four and five).

7.6.1 Quantitative studies one and two

Studies one and two collected 999 callout data and A&E attendance and hospital admission data to measure the patterns of service use within defined case management populations. The quantitative data samples were purposive due to the availability of combined acute and community NHS Trust data, however, provided over 19,000 data episodes obtained for analysis. Had more data been available, the results would have arguably been more robust and useful; in mixed-methods research, the researcher should desire to undertake a vigorous quantitative element of enquiry that is valid and reliable (Phillips and Burbules, 2000). A power calculation was not performed due to the unknown nature of the datasets available. However, it could be argued that the independent samples of 19,000 attendances and admissions was suitably powered, and representativeness achieved regarding the total population (Aberson, 2010).

Data were reliant on publicly available secondary data and was thus limited in terms of what was collected and reported, with some missing data, notably in the gender and ethnicity fields. Nevertheless, the data collected provided a fairly consistent time series, and it is unlikely that the trends observed were data collection or classification artefacts. The datasets provided were large and some issues around completeness and consistency must be noted. However, contextualising this, large healthcare datasets are likely to suffer from the same issues and overall a large amount of data was worked with which is likely to improve the reliability and validity of what was found. Greater accuracy and consistency of data in the clinical reasoning data field would have been beneficial to utilise as a predictor of admission. The multiple codes and free text utilised in this field hindered further analysis. The lack of a patient identifier also impeded further statistical tests within study one, as no predictive tests for conveyance to A&E could be performed on the 999-callout data. Data were not available on the

total case management population; therefore, better understanding of A&E attendance and statistical analysis was limited, and comparisons could not be drawn with those patients who did not interact with services.

Socioeconomic circumstances could not be considered within studies one and two due to the inability to make comparisons to English Indices of Deprivation 2015 (Department for Communities and Local Government, 2015) with only the first three postcode digits supplied in the anonymised data. Socioeconomic factors were also not discussed by key stakeholders in the qualitative work. Despite not being apparent in the data, there is evidence of a causal link in the literature (Purdy et al., 2010; Bankart et al., 2011; Purdy and Huntley, 2013) which would have been worthy of further exploration for the case management programme if data were available. Geographical location to hospital could also not be considered within studies one and two from the first three postcode digits. This factor is known to affect hospital attendance behaviour in that living closer to A&E and residing in an urban area was associated with higher unplanned admission rates (Purdy et al., 2010; Gunther et al., 2013; Purdy and Huntley, 2013; Wilson et al., 2015), which would also have provided further interesting insights for the case-managed populace as well as to extrapolate evidence in the literature. Analyses was limited in this aspect to the anonymised nature of the data supplied.

This was a cross-sectional observational study, and, although such studies can test for associations, a common concern is that any association may be attributable to differences in unobserved cofounders (Barker et al., 2017). The analysis therefore could not tease out whether conveyance or admission was avoidable or desired.

7.6.2 Qualitative Studies Three, Four and Five

The purpose of studies three, four and five was to explore and understand the views of key stakeholders in relation to case management patients' emergency service use and hospital admissions. Data were not statistically generalisable but provided a useful insight about the key stakeholders' experiences. The limitations specifically relate to the qualitative design, and the analysis required to achieve this purpose and inability

to generalise conclusions beyond the sample population. Small sample sizes and the type of data collected (non-statistical) are inherent within the qualitative field and recognition is given to these factors. The findings presented are the collective views and experiences of those participating in the research as interpreted by the researcher.

As part of the ethical approval to undertake studies three and four, the requirements stipulated potential patient and carer participants to be approached by the case managers. Arguably, they may have chosen to tell patients about the study who they felt would show them or the service in a positive light. Attempts to mitigate this potential for sample bias were made by asking the case managers to approach all individuals on their caseloads who fitted the inclusion criteria. It is fair to say that the views of the case management service as portrayed by patients and their carers were largely positive, which is in line with other literature. Other studies have not made it clear how patients were recruited, but similar issues may have been a factor. These studies also excluded those who could not read English and thus are not representative of the non-English reading community.

Case managers (study five) were recruited purposively for their interest in the emergency service use and hospital admissions of case-managed patients. Purposive sampling of only one NHS case management service may mean that their views were less broad and may have implications for the generalisability of the findings in this doctoral study. However, the NHS service that participated covered an expansive geographical area, and, by conducting three focus groups, it was hoped a wide variety of experiences were collected to overcome this factor.

This may not have been an entire systems approach but was triangulated with the perspectives of three stakeholders who would offer the fullest picture that was practicably possible within the confines of time and resource of a PhD study. Paramedics, A&E and social care staff viewpoints would have been invaluable, but these staff groups were often not able to distinguish, from the hundreds of thousands of patient contacts each year, which patients may be case managed; hence, viewpoints may be gained generally on chronic diseases or elderly care and not specifically to the callouts or admissions of case management service patients. It is acknowledged that due to this limitation there may be people who do not endorse the viewpoints

represented within the thesis. Predominantly, community focused opinion was obtained through the qualitative studies and issues raised by this population may be seen in a very different light by emergency and acute care staff. Particular areas surrounding conveyance to hospital and admission decisions could be seen from a very different perspective by staff working within those services who may understand the systems and processes very differently. Similarly, social care staff may review the provision of community services care from an alternate stance and may not echo the views of carers or case managers represented within studies four and five. GPs were also not represented within the research and medical perspective surrounding case managed patients' emergency service use and admissions would be invaluable. Additionally, their perspective from a primary care stance may not ratify some of the case managers, patients or carer opinions, especially surrounding hours of service provision. However, this domain of further stakeholder perspective may provide potential for future work.

By meeting the criteria for qualitative research as presented in 3.5.2., trustworthiness and authenticity were improved, acknowledging the above limitations. The utilisation of a mixed-methods design in terms of triangulation also assisted in resolving whether these findings might be extrapolated to a larger population. While not generalisable to all older people (Lincoln, 1995), this research has the capacity for data that are credible, dependable and transferable to other case management cohorts within England.

7.7 Challenges of the Research

The difficulties encountered that affected the validity of the doctoral thesis will be examined, focusing on data availability, case management service changes and access to potential participants issues that were encountered.

7.7.1 Data Availability

Within a large county, only four NHS Trusts were identified as holding the required data; in that community, 999 and acute Trust data were shared and IT systems

interoperable. Initial investigatory work required time and commitment to contact services and was often labour intensive. Lack of interoperability of systems within the NHS impeded further data enquiry within the time constraints of the doctoral study.

Only three out of the four NHS Trusts applied to could retrieve the data required, and, despite prospective data being applied for, two NHS Trusts ceased communication after the first data download. Possible staffing and time issues within the NHS Trusts for non-portfolio research may have accounted for this along with the decommissioning of one of the case management services. The NHS ambulance Trust utilised in study one supplied one further data set and then stopped responding to subsequent requests. In longitudinal studies, where participants are required to remain in a study for an extended period of time, difficulties are often experienced for these aforementioned reasons (Miller et al., 2006).

The flagging of case management healthcare records was used as the method of tracking patients 999 calls, A&E attendances and hospital admissions and made the data study possible. Initial work was conducted with a large NHS trust to instigate this procedure and set in place data-sharing agreements between acute and community NHS Trusts in order to benefit patient care and as a possible prospective data collection method. After working with the Trusts for over a year, it was not made possible, and the challenges of data protection agreements and the application of administration support to update systems hindered any further progress in implementing the flagging system. Future work surrounding the interoperability of NHS systems and service integration is offered in section 8.3.

7.7.2 Case Management Service Changes

During the progress of study two, the case management service within one NHS Trust was decommissioned; therefore, further data were unavailable. This trust had been a potential recruiting site for studies three, four and five, so, unfortunately, a further site then had to be sourced. The other acute NHS Trust which provided data could also not accommodate the qualitative studies due to staffing issues. The subsequently selected site for studies three, four and five aligned geographically to part of the data collected

in studies one and two and was chosen due to its large size and regional coverage of the case management service within the same county. Thus, the situation did not affect the comparability of the studies or inferences drawn.

The current position of community services within the NHS is subject to constant change, and case management services have been affected across England. As identified in the literature the number of case management nurses has declined across England since 2014 and services are being seen to be reconfigured in line with current government drivers (NHS Information Centre for Health and Social Care 2015).

7.7.3 Access to Potential Participants

Key stakeholders selected for the qualitative part of the study were patients, carers and case managers who could provide details of a patient's journeys through 999 callout, A&E attendance and hospital admission. Access to these stakeholders was made possible in the participating trust, and recruitment figures could be attained with ease and the assistance of local case manager collaborators. Triangulation was sought to gain a fuller picture to explain the data findings and literature.

The inclusion of 999 ambulance staff and A&E staff was considered in order to gain a true multi-stakeholder viewpoint. Difficulties in accessing these staff groups became apparent from early investigatory work. Moreover, they often could not identify case management patients from the rest of the populations accessing their services and their knowledge in relation to the experiences of this cohort of patients was limited. The researcher, therefore, deemed that these stakeholders would not add further value to the study if they could not distinguish case management patients as a regular experience of their daily work. This highlights the issues of service integration and communication for this vulnerable group of patients and emphasises the need for further integration as discussed within this chapter and Chapter 8.

7.7.4 Reflexivity of The Researcher

As acknowledged in section 3.7 the position of the researcher as a community nurse and researcher was a challenge and may have had the potential to bias the study from an emic perspective. The element of emic insider bias is acknowledged by Freidman and Schustack (2012) and despite the researcher setting aside her personal stance, participants may have viewed the researcher as part of the culture, thus effecting the way they may have acted and reacted. Case managers may have interacted with the researcher as colleague or superior, therefore assisted with negotiating access to potential participants more favourably. Having insider knowledge of NHS IT systems, processes and departments undoubtedly assisted with access to data and Trusts in studies one and two.

It is acknowledged case managers may have been keen to portray certain viewpoints of their caseload or of the service, in order for the research to have positive outcomes. This was however attempted to be mitigated against by selecting three geographical areas to conduct the focus groups, gaining a wide perspective. Additionally, if the researcher was viewed as a community nurse colleague, case managers may have been more open with what was said and been more candid as to how this was said. Nevertheless, it is worthy of reflection that on the alternative perspective, case managers may also have wanted to deny the need for longer hours of service operation, as hours of extended service provision would entail working more unsocial shifts if instigated.

Despite assurances in relating to patient and carer participants as a researcher and not a nurse, participants may have been informed of the researcher's profession or guessed this during interviews. Upon catharises, patients and carers may also have been more candid with what was said and how it was said relating to a nurse and not a researcher. Participants were noted to be very open and honest and positive in terms of case management service provision and not as positive about other emergency or primary care services. A large qualitative sample size was attained, hopefully reducing this emic effect.

The researcher's commitment to the area of case management was not completely impartial having spent 5 years in the role and instigating a service within the NHS. However, on reflection, it was not felt that this coloured the viewpoints presented. Transition to the position of researcher was developed throughout the study and the researcher was eager to present a credible and trustworthy study. Indeed, the researcher no longer works within the NHS and has no invested interest in the service. Following the protocols rigorously, quality PPI, member checking, the iterative nature of the qualitative data analysis process and supervision within the confines of the PhD assisted in the mitigation of this precept. It is acknowledged some emic bias may be present within qualitative work (Jingfeng, 2013). However, the open declaration from the researcher and knowing where the researcher sits within the process of a mixed methods study, working to a pragmatist philosophical stance, has honestly highlighted potential issues. It is acknowledged within the literature that community research is complex and can often be plagued with methodological difficulties (Shepperd et al., 2002) and that some degree of flexibility and creativity is required to overcome such issues (Andrews and Halcomb, 2007).

7.8 Chapter Summary

The integration of data at the discussion phase provided a rich information source to identify the conceptual iterations and new understandings of case-managed patients' interactions with emergency services and hospital provision, delineating the complex inter- and intra-relationships. Issues at the micro-, meso- and macro-level of care journey were uncovered, identifying factors that pushed patients to emergency and acute secondary care at the micro-level, underlying factors that contributed to the delay in contact with emergency services and factors that pulled them in from the meso- and macro-levels. Potential avoidance opportunities that spanned these levels were presented from the occasions that were overlooked in the care of the case-managed patient. The conceptual model incorporates the diverse and rich data to present a synthesised framework of causation, mechanisms and relationships, offering a guide to service provision for the case management populace within the NHS.

Chapter 8: Conclusions

8.1 Introduction

The increasing use of emergency services and pressure on NHS acute services in England has instigated the drive for extended community service provision and for alternative pathways of care in order to reduce the burden on 999, A&E and hospital services. In order to achieve this, examination of current patterns of service use for specific populations of high-intensity service users is required; however, data systems are not currently making this easy to achieve. The elderly are one cohort of patients who are most at risk of unplanned service use and admission, especially case-managed patients with multimorbidity. This research therefore set out to contribute to the admission avoidance agenda and understand the patterns of emergency service use and hospital admissions in a mixed-methods sequential explanatory process.

The conceptual model of the factors that contribute to 999 callouts, A&E attendances and hospital admissions of the case management population presented is the ultimate contribution to knowledge of this doctoral thesis. Utilising a unique research methodology, this study examined 999 callout, A&E attendance and hospital admission data across the twenty-four-hour period to provide a new perspective as to when case-managed patients access services. Exploring with three key stakeholders how case-managed patients can be adequately self-caring to becoming an emergency admission to hospital despite intensive case management in the community has uncovered a novel understanding of this population. Few studies have included this contribution from key stakeholders, and older people are rarely involved in research into service use. Bringing the lived experience of older people to the forefront has identified the impact of the media on service interactions. In addition to contributing to the academic body of knowledge, the findings of the research also have implications for the delivery of services within the NHS at the meso-level and could potentially affect policy and strategy-level decisions at the macro-level of healthcare. Proposals for case management service continuation, review of the need for twenty-four-hour community services and improved integration across service sectors are offered. This

chapter aims to outline the contribution to knowledge, present the implications of the research for the NHS and consider future work opportunities.

8.2 Contribution to Knowledge and Implication of the Research for NHS Service Delivery and Policy

8.2.1 A Conceptual Model of the Factors that Contribute to 999 Callouts, A&E Attendances and Hospital Admissions of the Case Management Population

Using a pluralistic framework engaging key stakeholders and utilising previously unexploited datasets, the conceptual model provides a novel understanding of when, why and how case-managed patients interact with services. Via a comprehensive infographic representation, the model proposes issues a perfect system could address and identifies areas for the NHS to consider in assisting with the admission-avoidance agenda for this patient population.

The philosophy of the model is one of holistic, person-centred care provision underpinned by a pragmatic research philosophy that recognises the contribution of the different stakeholders in influencing or participating in the system being depicted. Taking a real-world view of what works and doesn't work (Patton, 1990) for case-managed patients in the structure of the healthcare system, the outputs of the model propose admission avoidance opportunities. As potential facilitators of improving patient care, choice and experience, and assisting in admission avoidance, they could offer policy makers and practitioners a guide to rethinking service provision for case-managed patients. If avoidance opportunities could be harnessed, they may be immediately effective, attempting to erode the underlying, push and pull factors, and placing the patient at the heart of the model, representing the ethos of case management with true person-centred care. The framework also helps facilitate the exploration between community, primary and secondary care practices, service provision and collaboration, encouraging joint work and interoperability to ensure a seamless pathway of care for case-managed patients. The conceptual model represents

key stakeholder ideas that are opportunities for ensuring that the future of the NHS case management programme is aligned and appropriate to the ageing and multimorbid demographic, by providing more care in the community, relieving the pressure on secondary care and addressing the overwhelming patient requests to be treated at home and avoid hospital contact.

Self-care, shared decision making and person-centred care have been ideas within healthcare for many years (Clements, 1995; Kennedy, 2007). However, this study noted that these ideas are still not being as effectively implemented as they could be. Self-care was seen as reaching its limits, as the patient and carer competence threshold was reached and instigated contact with services. However, the time for providing self-care was described by case managers as decreasing with the drive to provide a more reactive model of care. The possible necessity for continuing a proactive model of case management is endorsed to provide patients with the skills to self-care and reduce the pressure on acute care.

As fundamental principles of case management, shared decision making and person-centred care were implemented in the community, but the ethos on many occasions had not transferred through to emergency services and when admission to hospital was required. Patients and carers noted little inclusion in conveyance and admission decisions, yet they were requesting to be informed and included. This study proposes a need for person-centred care pathways and for case management patients to become more actively involved in decisions regarding where they wish to be treated. Moreover, this study suggests that, when an interaction with services does occur, it is incorporated into everyday practice for all clinicians who meet case-managed patients. To decrease unplanned emergency and acute service use, a shared vision and shared strategy is required for a system that implements common values across the entire NHS. Patients' views, wishes and preferred place of care should be considered when conveyance and admission decisions are being made. A system such as the communication of DNACPR between services could be immediately utilised for a preferred place of care decisions. Improved digital infrastructure may offer future opportunities to allow this for case-managed patients and other populations of NHS patients.

Unplanned emergency attendances and admissions could be seen in parts of the system that were under strain. Across organisations, communication was revealed as deficient in a number of areas in the digital, written and verbal domains. Infrastructure and hours of services could have been seen to hinder communication when contact by a case management patient was made. If communication could be improved, conveyances and admissions may possibly be prevented. Single care could be provided across organisations, and the case management programme was essentially set up to assist with this agenda (DOH, 2005a). Nonetheless, this study highlights the difficulties, current scarcity of service integration and the inability of case management to exist in isolation. If emergency service and admission prevention is to be improved, service integration and a single patient pathway may be required and is proposed. Radical redesign of the NHS could be conjectured in order to achieve this.

Recommendations include maximising integration of services across the primary, community and secondary care divide and strategic leadership and adopting a system-wide approach to reconfiguration. The NHS, set up to treat single diseases, is struggling to manage the multimorbidity and ageing trajectories, and redesign has been called for already by the Five Year Forward view (NHS England, 2014b), digitalisation agenda (DOH, 2013; Intellect, 2013; National Advisory Group on Health Information Technology in England, 2016) and the need to reduce the burden on acute care (NHS England, 2013c). This study provides insight into the perceived lack of integrated services and its potential impact upon attendance and admission rates, especially in the out-of-hours periods, and further proposes the importance of maximising integration of services and service redesign. If the digitalisation issues reported in 7.3.4 were managed, many of these issues could be potentially resolved. It is acknowledged that despite the new perspective on appropriateness of service interactions, what patients and carers want may not reflect what is feasible or cost effective within the NHS.

8.2.2 Uniqueness of Research Methodology

Application of the research method of studies one and two in utilising patient-level flagged records within ambulance service and secondary care data to track, measure

and analyse service interactions for this patient populace has never been done before. Previous studies have attempted to track case-managed patients through NHS IT systems via the use of HES data, practice-level primary care and secondary care data as well as by attempting to combine data sets; however methodological inaccuracies and challenges were presented in section 2.6 of the literature review. No previous research studies have applied this method in acute care or community settings, and large patient-level datasets were obtained, that acknowledge the inherent completeness and consistency issues. As a new method to track patient journeys across community and secondary care, IT flagging could have the ability to affect future research and enable the NHS to evaluate case management programmes further and analyse demographics to better understand the characteristics of case-managed patients. This doctoral thesis recommends flagging records for all case-managed patients within the NHS. There may be further potential application of this method to wider groups of NHS patients to track patient journeys across care sectors.

Highlighting the community case-managed status on emergency service and acute IT systems has revealed that it is possible to work within the Data Protection Act (1998) and share data between organisations when the systems and infrastructure are put in place. However, this is not widespread within case management services or the NHS. The utility of data for patients whose care journey spans multiple organisations has implications when making conveyance and admission decisions, providing continuity of care and enabling shared decision making for case-managed patients. Therefore, data integration could assist in acute care avoidance. Policy-level recommendations appeal to a shared infrastructure to improve full digital integration within the NHS in order to benefit case-managed patients. Shared infrastructure between organisations is called for when a single patient is following a single-care pathway. For this to be achieved, all staff must have access to the information needed to provide a seamless journey for complex case-managed patients. When the NHS progresses to a position where information flows easily between organisations, there is potential to improve patient care and reduce costs. All too often, poor communication and a lack of adequate information results in instances of avoidable harm (Khashu, 2015), influencing conveyance and admission decisions within this study.

Potential answers may include the patients themselves holding their data in the form of a digital platform or mobile app. While this may be being difficult for the current general populace of case-managed patients and older adults (Johnson and Lanes, 2018), future cohorts of the elderly are likely to be more technologically able (Alexander et al., 2018). Patients are moving into the digital age and want to control their data (White et al., 2016), which is the way of the future. Applications such as a digital platform or mobile app would allow case-managed patients to communicate decisions regarding their preferred place of care and under what circumstances they would wish to be conveyed or admitted, thus allowing all staff who engage with case-managed patients to ensure shared decision making and person-centred care is apparent. Communicating with all services involved in the patient's care journey is suggested. Defining the specifications of the system with case management patient involvement would be paramount.

8.2.3 Case Management Services and Twenty-Four-Hour Service Provision

At the service level, this study recommends the continuation of the case management service within NHS community care provision. It was described as a service highly valued by stakeholders and contributing to the admission avoidance agenda within the NHS by providing continuity of care for complex patients with multimorbidity. The economic value was also intimated in cost savings and reducing GP workload by stakeholders. If implemented correctly with a proactive model and with adequate resources, case management can assist in admission avoidance and in reducing the pressure on emergency services. However, services continue to be decommissioned in the current austere climate, possibly due to the lack of impact upon admission rates (Gravelle et al., 2007) and inability to provide economic evaluation of services due to the variety of models in place. When services are being realigned, redeveloped and recommissioned, qualitative research outcomes such as those presented in this study should also be considered; all too often, these are overlooked.

The current government drive to break down barriers between services and to provide more care closer to home requires the NHS to work differently. With the evolving nature of integrated care systems (ICSs), integrated care partnerships (ICPs) and

accountable care organisations (ACOs) (Ham, 2018), the complexity and number of models of care are increasing. Case management will need to ensure it is at the heart of these sustainability and transformation plans (STPs) to assist in the reduction of emergency admissions and meet the rising demand from the ageing and multimorbid population. Integrated care between NHS services and social care is required, and the piloted care models of primary and acute care systems (PACS) and multispecialty community providers (MCPS) sites have demonstrated a lower growth and reduction in emergency admissions (Ham, 2018). However, despite it not being clear how case management was placed within these pilot integrated care systems, the principle of integrating and coordinating care for the patient's benefit should be supported. Case management and its principles should remain at the forefront of the admission avoidance agenda as services become increasingly complex and disparate within the modern NHS. Improved, integrated and extended community care provision across the twenty-four-hour time spectrum that provides continuity is required to match acute services and ensure more care is kept closer to home for patients with long-term conditions.

The patterns of service interaction across the twenty-four-hour timespan have been reported, and data patterns explored and explained by key stakeholders, with the out-of-hours period remaining problematic for this vulnerable, elderly, multimorbid population of patients. Despite the expectation and given that 70% of the time available is out-of-hours, a disproportionate amount of case managed patients accessed emergency resource during the in hours period. There may have been less activity during the out-of-hours, however, the stakeholder analysis conveyed the difficulties for patients during this period. Therefore, this study recommends a review of a need for twenty-four-hour, seven-day-a-week community services. Having a twenty-four-hour case management service could negate the need for acute admission if appropriate clinical care was provided earlier in the home setting. Some case-managed patients also delayed service contact until the daytime when the case manager could visit. By this time, emergency service utilisation and admission may have been clinically necessary due to condition deterioration and was instigated by the GP or case manager. Again, if a twenty-four-hour case management service was available, then treatment could commence earlier, and emergency service contact and admission may be avoided.

There is a need for community services to align with acute care services (NHS England, 2016); however, the case management service was not requested by key stakeholders to be provided twenty-four-hours. Nonetheless, the need for better continuity and the provision of integrated care in the out-of-hours period is advocated. In order to reduce the dependence on emergency services and acute care, alternatives are needed for this complex multimorbid population who wish to remain in their own homes when possible. The overnight time period of eight to ten hours is a long duration, especially if elderly, isolated and lacking personal networks. This study adds to the debate at the meso-level that a twenty-four-hour community service provision for case-managed patients may be required.

8.2.4 Inclusion of the Older Adult Population in Research

It has been widely documented that the elderly and those with multimorbidity are often excluded from research (Kaiser et al., 2006; The Academy of Medical Sciences, 2018). However, this study recruited 38 elderly housebound patients and carers for one-to-one interviews, and a zero-attrition rate was attained, revealing that community research within the elderly populace is achievable. All participants were eager to contribute and were articulate in voicing their opinions of their service experiences. This adds to the body of knowledge for the general elderly population who are the largest users of services, exploring reasons and contributing factors for service interaction. Bringing the lived experience of older people to the forefront has identified nuances previously unexplored in research. With the ageing population and rise in multimorbidity, the necessity for these service users will be vital in contributing to the admission avoidance agenda. This study suggests that accessing elderly housebound patients is achievable, replicable and valued. Future impact could be demonstrated by the publication of a protocol for engaging elderly and housebound participants within research.

8.2.5 Impact of the Media on the Elderly

At the macro- and micro-levels, media coverage and media campaigns were seen as negatively affecting this elderly cohort of patients' decisions to access emergency services, thus contributing to delaying contact with services and influencing the increased chance of admission to hospital. This has highlighted a new phenomenon of the potentially detrimental effect of the media on service access decisions for this population. This is important because campaigns focused on reducing the burden on emergency and acute care appear to be troublesome to the elderly who are generally not targeted. At macro-level economics, media campaigns are being commissioned and allocated funds; however, the methods and messages purveyed potentially need to be adapted. Subliminal messaging can affect the elderly in a negative way; therefore, this study recommends campaigns for the elderly about when to access emergency care. Redesign of marketing and policy within the NHS is immediately actionable and impactable as a recommendation of this study.

8.3 Future Work Opportunities

The findings of the doctoral thesis have raised additional questions that are worthy of further investigation into case management provision in England, community service delivery and the wider NHS service delivery and policy levels, as presented in Figure 57, and each recommendation will be proposed in turn.



Macro

- Digital interoperability
- Digital flagging
- Community and secondary care joint working



Meso

- Further development of conceptual framework accross england wide case management services
- 999 and A&E staff perspectives of case-managed patients service use and integrated working with the community



Micro

- Media impact on the elderly
- Shared decision making and patient centred care planning



Future Work Opportunities

Figure 57. Future work opportunities.

At the macro-level, the digital interoperability issues encountered throughout the research journey have highlighted the need for further work investigating flagging of case-managed patients' NHS records. Studies one and two were only possible due to this new digital method of tracking case-managed patients' service interactions;

however, it is not known to what extent this is utilised throughout the NHS in England. Further quantitative studies are required in order to establish the current position of use in all case management services in England and make national recommendations for best practice. If digitalisation is going to be possible by 2020 (DOH, 2013; Intellect, 2013; NHS England, 2014a; National Advisory Group on Health Information Technology in England, 2016), provisions will need to be put into place to ensure patient journeys can be tracked and reviewed. More evidence is needed on the current position of digital interoperability across primary, community and secondary care. As suggested in 8.2.2, a digital platform for system interoperability would allow patient input and access would need to be tested robustly.

Joint working across the primary, secondary and community care interface was highlighted as an area requiring improvement in order to increase patient safety and experience. Qualitative investigation surrounding the barriers currently in place would add to current knowledge and look to propose and implement systems to improve integrated working. This study identified such parameters as verbal, written and digital communication as not operating seamlessly for case management patients. Exploring a patient's journey in a case study approach or staff experience via survey could affect service delivery and policy recommendations, thus providing evidence for how elderly multimorbid patients can be best managed across care sectors.

With the current position of the case management service in England uncertain, a survey-based design or review of existing services would be beneficial. No current figures of case managers left in England were available at the time of this study, and no previous research has documented all the current approaches being utilised, and, as noted in section 8.2.3, some services are being decommissioned. For national future policy recommendations surrounding the management of the multimorbid ageing demographic, this investigation is imperative to ensure workforce provision can meet the increasing need.

A larger-scale study could be duplicated across many more case management services in England to investigate country-wide patterns of emergency service use and admissions for all case management service users. This would allow for further development of the conceptual model as well as for a whole service-wide picture to

be gained and a greater understating of service use appreciated. Further work looking at the need for—and the cost-effectiveness of—a twenty-four-hour, seven-day-a-week community service provision would add to the evidence regarding the need for community and primary care services to align with acute care times of provision.

Highlighted in the limitations in 7.6.2 was the absence of A&E, 999, GP and social care staff perspectives as stakeholders. If it was possible to identify case-managed patients by these key stakeholders, their input to the conceptual model would be a worthy addition to understand what factors they perceive as influencing case management patients' patterns of service interaction.

At the micro-level, this study determined that the media affected older adults' contact with and even delay contact with services. Qualitative exploration with the general elderly population could be investigated to better understand such influence overall. The findings of this study presented the worry and sense of burden the elderly feel in contacting services, and it would be valuable to understand if this is extrapolated across the general elderly population. Such research has the potential to advise and guide future media campaigns and the way the NHS communicates with the ageing cohort of society, an under-represented population.

The lack of shared decision making, and person-centred care experienced by case-managed patients in this study is a vital area for future investigation. The theories and models are presented at the macro-policy level; however, their actual implementation at the service level was not felt by the patients and carers. A qualitative study investigating staff implementation of the theories of person-centred care and potential barriers would add to this area of knowledge. Research within the case management population and indeed all those patients with multimorbidity could guide future policy. Enabling patients to make pre-emptive decisions regarding their preferred place of care could reduce the burden on emergency services and A&E if patients requests to be treated at home were communicated and fulfilled. Digital communication could be utilised to address this current deficit in care philosophy and delivery and form the basis of further digitalisation.

8.4 Chapter Summary

This chapter has summarised the key outputs of the doctoral thesis, the implications for NHS service delivery and policy and the areas of potential future work. The research provides, for the first time, key perspectives of when, why and how case-managed patients contacted crisis situations of emergency services and unplanned emergency admissions to hospital. The conceptual model, a new method of data flagging, the recommendation for the need for a review to consider twenty-four-hour community service provision, the contribution of the elderly in research and the impact of the media upon case-managed patients and carers have contributed to the academic body of knowledge. Practical policy and service delivery recommendations have encompassed the whole healthcare system at the micro-, meso- and macro-levels and the impact and importance of findings for the NHS presented. It is anticipated that the key factors for service interaction have been identified, and fundamental areas for future admission avoidance opportunities have been recognised that could lead to the prevention of hospital admission and a reduced burden on emergency services in the future for case-managed patients. The conceptual model forms a holistic infographic guide for case management admission prevention among patients who overwhelmingly stated they wish to remain at home.

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Appendix One: University Ethics Approvals



Ref: MH/166/2016

Address for Correspondence

Faculty of Health, Education and Life Science Research Office
Faculty of Health, Education and Life Sciences
Birmingham City University
Westbourne Road
Birmingham B15 3TN
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Email: HELS_Ethics@bcu.ac.uk

16th March 2016
Eloise Phillips
Faculty of Health, Education and Life Sciences

Dear Eloise

Re: Understanding hospital admissions for patients of the case management programme: [REDACTED]

Further to my letter of 27th May 2015, thank you for providing, as was requested, copies of emails confirming permission to access data from:

- [REDACTED] Ambulance Service
- [REDACTED] NHS Foundation Trust
- [REDACTED] NHS Foundation Trust

I am aware that the delay sending these was because you were awaiting communication from The Royal Wolverhampton NHS Trust, which now seem unlikely. Evidence of permission to access the study sites listed above, fulfils the previously stated condition required in order for me to confirm approval the study. I wish you success with your research.

Yours sincerely,

Merryl E Harvey

Chair, Faculty of Health, Education and Life Sciences Academic Ethics Committee

Cc Dr S Jones, Professor M Lintern, Professor M Radford

Appendix Two: NHS R&D Approval Study One



[Redacted] Service **NHS**
NHS Trust

NIHR Clinical Research Network: [Redacted]

[Redacted]

Tel: [Redacted]

Email: [Redacted]

22nd September 2015

[Redacted]
Clinical Audit Manager
Clinical & Quality
[Redacted] Ambulance Service NHS Trust

Dear [Redacted]

Project Title: Understanding hospital admissions for patients of the case management programme: [Redacted] Ambulance Service study
Short Title: [Redacted] Ambulance Service Virtual Ward Data Study
R&D Ref: [Redacted]
REC Ref: N/A

I am pleased to inform you that the R&D review of the above project is complete, and NHS permission has been granted for the study at [Redacted] Ambulance Service NHS Trust. Your research activity is now covered by NHS indemnity as set out in HSG (96) 48, and your trial has been entered onto the Trust's database.

The permission has been granted on the basis described in the application form, protocol and supporting documentation. The documents reviewed were:

Document	Version	Date
Birmingham City University Faculty of Health, Education and Life Sciences Ethics Committee Favourable Opinion Letter		27 May 2015
Protocol	V2.0	10 April 2015

All research must be managed in accordance with the requirements of the Department of Health's Research Governance Framework (RGF), to ICH-GCP standards (if

applicable) and to NHS Trust policies and procedures. Permission is only granted for the activities agreed by the relevant authorities.

All amendments (including changes to the local research team and status of the project) need to be submitted to the REC and the R&D office in accordance with the guidance in IRAS. Any urgent safety measures required to protect research participants against immediate harm can be implemented immediately. You should notify the R&D Office within the same time frame as any other regulatory bodies.

It is your responsibility to keep the R&D Office and Sponsor informed of all Serious Adverse Events and to ensure that they are reported according to the Trust Clinical Incident policy, where required. All SAEs must be reported within the timeframes detailed within ICH-GCP statutory instruments and EU directives.

In order to ensure that research is carried out to the highest governance standards, the Trust employs the services of an external monitoring organisation to provide assurance. Your study may be randomly selected for audit at any time, and you must co-operate with the auditors. Action may be taken to suspend Trust approval if the research is not run in accordance with RGF or ICH-GCP standards, or following recommendations from the auditors.

You will be sent an annual progress report which must be completed in order to ensure that the information we hold on our database remains up to date, in line with RGF requirements.

I wish you well with your project. Please do not hesitate to contact me should you need any guidance or assistance.

Yours sincerely

[Redacted Signature]

[Redacted Name]

Research Support Facilitator

CC

Eloise Phillips, Chief Investigator
Sarahjane Jones, Director of Studies, Birmingham City University
Dr Lucy Land, Professor of Nursing/Director of Health Research/Chair of the
Research Insurance and Indemnity Committee, Birmingham City
University

[Redacted Line]

NHS Trust

Appendix Three: NHS R&D Letters Study Two

[REDACTED]
NHS Foundation Trust
[REDACTED]

**RESEARCH & DEVELOPMENT DIRECTORATE
CLINICAL RESEARCH UNIT**
[REDACTED]

28 July 2015

Eloise Phillips – PhD Student
Birmingham City University,
Faculty of Health,
City South Campus,
Room 223,
Ravensbury House,
Westbourne Road,
Edgbaston,
Birmingham,
B15 3TN.

Dear Eloise

Re: ID: 1273: Understanding hospital admissions for patients of the case management programme; [REDACTED] Acute Sector [REDACTED] data study
Sponsor: Birmingham City University
IRAS No: 187736
Date of NHS Permission: 28 July 2015

NHS permission for the above research has been granted on the basis described in the application form, protocol and supporting documentation. The documents reviewed for this purpose are:

<u>Document</u>	<u>Version / Date</u>
Investigator CV	July 2015
Supervisor CV	March 2015
R & D study request email	28/05/2015
[REDACTED] support email	21/07/2015
[REDACTED] City University Research Insurance and Indemnity Agreement	09/07/2015
Certificate of Employers Liability Insurance	01/08/2014 to 31/07/2015
Birmingham City University permission letter	27/05/2015
HRA decision tool	
R&D form	187736/820761/14/185
SSI Form	Draft
Protocol	Version 1, dated 10/04/2015
Admission data enquiry email	21/07/2015
Permission to access data emails	12, 19 and 30/06/2015

The Trust has no concerns regarding the potential risks of this study. It will be covered by the Birmingham City University Research Insurance and Indemnity Agreement.

Enclosed with this letter you will find copies of policies relevant to undertaking this piece of research in the Trust:

- (a) The Trust's Policy for addressing fraud and misconduct in research
- (b) PI Checklist

Please complete and return the PI checklist to the R&D Office at your earliest convenience in order to comply with the Trust's research governance policy.

I wish you and your collaborators well in your investigations.

Yours sincerely

[Redacted Signature]

[Redacted Name]
Research & Development Facilitator

Cc - Dr Sarah Jane Jones, Supervisor (sarahjane.jones@bcu.ac.uk)
[Redacted Email]@nhs.uk

[REDACTED]
[REDACTED] NHS Foundation Trust

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Miss Eloise Phillips
Birmingham City University
Faculty of Health
City South Campus
Room 223
Ravensbury House
Westbourne Road
Edgbaston
Birmingham
B15 3TN

Wednesday 24th June 2015

Dear Eloise,

Re: Understanding hospital admissions for patients of the case management programme: [REDACTED] case study

Thank you for submitting the details of your study protocol and supporting letters on 23rd June 2015. Having reviewed your project, I can confirm that this would be considered a service evaluation, therefore will not require registration with the Clinical Audit Department at [REDACTED] NHS Foundation Trust [REDACTED].

However, as your project will involve the collection of patient data from [REDACTED] ward at [REDACTED], I have attached a table taken from the Caldicott Review which sets out a 'simplified framework of data processing from a legal perspective' which as you can see is very clear about only using anonymised data for the purpose you have described in your study proposal, particularly as you are not informing patients and gaining consent.

Given that [REDACTED], Group Performance Manager at [REDACTED] has confirmed that extracted anonymised admission data from the hospitals IT systems will be used for this project, I can see no issue with this project proceeding. In addition, you have identified internal support from [REDACTED], Systems Architect at [REDACTED] to download and transfer the data according to Trust protocol and that clinical support will be provided by Dr [REDACTED], Consultant in General Medicine at [REDACTED].

Yours sincerely




[REDACTED]
Clinical Audit & Effectiveness Manager

Appendix Four: HRA Approval Studies Three, Four and Five



Health Research Authority

Miss Eloise Phillips
PhD Student
Birmingham City University
Faculty of Health, Education and Life Sciences
City South Campus, The Attic, Ravensbury House,
Westbourne Road, Edgbaston, Birmingham.
B15 3TN
eloise.phillips@bcu.ac.uk

Email: hra.approval@nhs.net


Dear Miss Phillips

Letter of **HRA Approval**

Study title: Understanding the use of emergency services and hospital admissions for patients of the case management programme:  qualitative case study

IRAS project ID: 209930

REC reference: 16/EM/0325

Sponsor Birmingham City University

I am pleased to confirm that **HRA Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications noted in this letter.

Participation of NHS Organisations in England

The sponsor should now provide a copy of this letter to all participating NHS organisations in England.

Appendix B provides important information for sponsors and participating NHS organisations in England for arranging and confirming capacity and capability. **Please read *Appendix B* carefully**, in particular the following sections:

- *Participating NHS organisations in England* – this clarifies the types of participating organisations in the study and whether or not all organisations will be undertaking the same activities
- *Confirmation of capacity and capability* - this confirms whether or not each type of participating NHS organisation in England is expected to give formal confirmation of capacity and capability. Where formal confirmation is not expected, the section also provides details on the time limit given to participating organisations to opt out of the study, or request additional time, before their participation is assumed.
- *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* - this provides detail on the form of agreement to be used in the study to confirm capacity and capability, where applicable.

Further information on funding, HR processes, and compliance with HRA criteria and standards is also provided.

It is critical that you involve both the research management function (e.g. R&D office) supporting each organisation and the local research team (where there is one) in setting up your study. Contact details and further information about working with the research management function for each organisation can be accessed from www.hra.nhs.uk/hra-approval.

Appendices

The HRA Approval letter contains the following appendices:

- A – List of documents reviewed during HRA assessment
- B – Summary of HRA assessment

After HRA Approval

The document "*After Ethical Review – guidance for sponsors and investigators*", issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics, and is updated in the light of changes in reporting expectations or procedures.

In addition to the guidance in the above, please note the following:

- HRA Approval applies for the duration of your REC favourable opinion, unless otherwise notified in writing by the HRA.
- Substantial amendments should be submitted directly to the Research Ethics Committee, as detailed in the *After Ethical Review* document. Non-substantial amendments should be submitted for review by the HRA using the form provided on the [HRA website](http://www.hra.nhs.uk), and emailed to hra.amendments@nhs.net.
- The HRA will categorise amendments (substantial and non-substantial) and issue confirmation of continued HRA Approval. Further details can be found on the [HRA website](http://www.hra.nhs.uk).

Scope

HRA Approval provides an approval for research involving patients or staff in NHS organisations in England.

If your study involves NHS organisations in other countries in the UK, please contact the relevant national coordinating functions for support and advice. Further information can be found at <http://www.hra.nhs.uk/resources/applying-for-reviews/nhs-hsc-rd-review/>.

If there are participating non-NHS organisations, local agreement should be obtained in accordance with the procedures of the local participating non-NHS organisation.

IRAS project ID	209930
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User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please email the HRA at hra.approval@nhs.net. Additionally, one of our staff would be happy to call and discuss your experience of HRA Approval.

HRA Training

We are pleased to welcome researchers and research management staff at our training days – see details at <http://www.hra.nhs.uk/hra-training/>

Your IRAS project ID is **209930**. Please quote this on all correspondence.

Yours sincerely

Beverley Mashegede
Assessor

Email: hra.approval@nhs.net

Copy to: Dr Barbara Howard-Hunt (Birmingham City University),
barbara.howardhunt@bcu.ac.uk, Sponsor Contact

██████████ (██████████ Healthcare NHS Foundation Trust),
██████████ Lead NHS R&D Contact

Appendix A - List of Documents

The final document set assessed and approved by HRA Approval is listed below.

<i>Document</i>	<i>Version</i>	<i>Date</i>
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [BCU_INSURANCE-CERT-13.7.16]	1	22 August 2016
Interview schedules or topic guides for participants [INVG_PT_8_6_16_V1]	1	08 June 2016
Interview schedules or topic guides for participants [INV_CARER_8_6_16_V1]	1	08 June 2016
Interview schedules or topic guides for participants [FG_CM_8_6_16_V1]	1	08 June 2016
IRAS Application Form [IRAS_Form_13072016]		13 July 2016
IRAS Application Form XML file [IRAS_Form_13072016]		13 July 2016
IRAS Checklist XML [Checklist_25082016]		25 August 2016
IRAS Checklist XML [Checklist_06092016]		06 September 2016
Letter from sponsor [RIIC Approval Letter for E Phillips 602_11.07.16]	1	11 July 2016
Letters of invitation to participant [PT_CAR_INV_8_6_16_V1]	1	08 June 2016
Letters of invitation to participant [CMINV_8_6_16_V1]	1	08 June 2016
Other [Mark Radford Cv 2016]	1	18 July 2016
Other [Prof Lintern CV Apr 16]	1	01 April 2016
Other [WM GCP_Introduction to GCP Certificate]	1	19 August 2016
Other [eGCP (Primary Care) Introduction to good clinical practice training Certificate]	1	19 August 2016
Other [Scientific peer review form for doctoral candidates_V1_08.08.16]	1	08 August 2016
Other [Statement of Activities]		23 September 2016
Other [Schedule of Events]		23 September 2016
Participant consent form [CONA_8_6_16_V1]	2	15 August 2016
Participant consent form [CONB_8_6_16_V1]	2	15 August 2016
Participant consent form [CONC_8_6_16_V1]	3	06 September 2016
Participant information sheet (PIS) [PIS_8_6_16_V1]	2	15 August 2016
Participant information sheet (PIS) [CIS_8_6_16_V1]	2	15 August 2016
Participant information sheet (PIS) [CMIS_8_6_16_V1]	2	15 August 2016
Research protocol or project proposal [QUAL_8_6_16_V1]	1	08 June 2016
Summary CV for Chief Investigator (CI) [academic cv 2pg.16.v2]	3	15 August 2016
Summary CV for student [academic cv 2pg.16.v2]	3	15 August 2016
Summary CV for supervisor (student research) [SJones_CV(Apr160)]	1	08 June 2016

Appendix B - Summary of HRA Assessment

This appendix provides assurance to you, the sponsor and the NHS in England that the study, as reviewed for HRA Approval, is compliant with relevant standards. It also provides information and clarification, where appropriate, to participating NHS organisations in England to assist in assessing and arranging capacity and capability.

For information on how the sponsor should be working with participating NHS organisations in England, please refer to the, *participating NHS organisations, capacity and capability and Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria) sections in this appendix.*

The following person is the sponsor contact for the purpose of addressing participating organisation questions relating to the study:

Dr Barbara Howard-Hunt, 01213317162, barbara.howardhunt@bcu.ac.uk

HRA assessment criteria

Section	HRA Assessment Criteria	Compliant with Standards	Comments
1.1	IRAS application completed correctly	Yes	No comments
2.1	Participant information/consent documents and consent process	Yes	No comments
3.1	Protocol assessment	Yes	No comments
4.1	Allocation of responsibilities and rights are agreed and documented	Yes	The Statement of Activities will act as an agreement between the Sponsor and the participating NHS sites to confirm capacity and capability to undertake their role in this research. The Sponsor is not requesting and does not require any other site agreement.
4.2	Insurance/indemnity arrangements assessed	Yes	Where applicable, independent contractors (e.g. General Practitioners) should ensure that the professional

IRAS project ID	209930
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Section	HRA Assessment Criteria	Compliant with Standards	Comments
			indemnity provided by their medical defence organisation covers the activities expected of them for this research study.
4.3	Financial arrangements assessed	Yes	No funds will be provided to the participating organisation.
5.1	Compliance with the Data Protection Act and data security issues assessed	Yes	No comments
5.2	CTIMPS – Arrangements for compliance with the Clinical Trials Regulations assessed	Not Applicable	No comments
5.3	Compliance with any applicable laws or regulations	Yes	No comments
6.1	NHS Research Ethics Committee favourable opinion received for applicable studies	Yes	Provisional Opinion was issued on 15 August 2016. This was followed by Further Information Favourable Opinion issued on 06 September 2016.
6.2	CTIMPS – Clinical Trials Authorisation (CTA) letter received	Not Applicable	No comments
6.3	Devices – MHRA notice of no objection received	Not Applicable	No comments
6.4	Other regulatory approvals and authorisations received	Not Applicable	No comments

Participating NHS Organisations in England

This provides detail on the types of participating NHS organisations in the study and a statement as to whether the activities at all organisations are the same or different.

This is a student study (PhD) and there is one site type.

The Chief Investigator or sponsor should share relevant study documents with participating NHS organisations in England in order to put arrangements in place to deliver the study. The documents should be sent to both the local study team, where applicable, and the office providing the research management function at the participating organisation. For NIHR CRN Portfolio studies, the Local LCRN contact should also be copied into this correspondence. For further guidance on working with participating NHS organisations please see the HRA website.

If chief investigators, sponsors or principal investigators are asked to complete site level forms for participating NHS organisations in England which are not provided in IRAS or on the HRA website, the chief investigator, sponsor or principal investigator should notify the HRA immediately at hra.approval@nhs.net. The HRA will work with these organisations to achieve a consistent approach to information provision.

Confirmation of Capacity and Capability

This describes whether formal confirmation of capacity and capability is expected from participating NHS organisations in England.

Participating NHS organisations in England will be expected to formally confirm their capacity and capability to host this research.

- Following issue of this letter, participating NHS organisations in England may now confirm to the sponsor their capacity and capability to host this research, when ready to do so. How capacity and capability will be confirmed is detailed in the *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* section of this appendix.
- The [Assessing, Arranging, and Confirming](#) document on the HRA website provides further information for the sponsor and NHS organisations on assessing, arranging and confirming capacity and capability.

Principal Investigator Suitability

This confirms whether the sponsor position on whether a PI, LC or neither should be in place is correct for each type of participating NHS organisation in England and the minimum expectations for education, training and experience that PIs should meet (where applicable).

The HRA have had confirmation that Local Collaborators have already been identified.

GCP training is not a generic training expectation, in line with the [HRA statement on training expectations](#).

HR Good Practice Resource Pack Expectations

This confirms the HR Good Practice Resource Pack expectations for the study and the pre-engagement checks that should and should not be undertaken

The student researcher has confirmed that she has a contractual relationship with the participating Trust. Therefore no honorary research contracts or letters of access are expected for this study.

Other Information to Aid Study Set-up

This details any other information that may be helpful to sponsors and participating NHS organisations in England to aid study set-up.

The applicant has indicated that they do not intend to apply for inclusion on the NIHR CRN Portfolio.

Appendix Five: NHS REC Approval Studies Three, Four and Five

Health Research Authority

Research Ethics Committee

Please note: This is the favourable opinion of the REC only and does not allow you to start your study at NHS sites in England until you receive HRA Approval

06 September 2016

Miss Eloise Phillips
PhD Student
Birmingham City University
Faculty of Health, Education and Life Sciences
City South Campus, The Attic, Ravensbury House,
Westbourne Road, Edgbaston, Birmingham.
B15 3TN

Dear Miss Phillips

Study title:	Understanding the use of emergency services and hospital admissions for patients of the case management programme: [REDACTED] qualitative case study
REC reference:	16/EM/0325
IRAS project ID:	209930

Thank you for your letter of 6 September 2016, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the

date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact the REC Manager, [REDACTED].

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for NHS permission for research is available in the Integrated Research Application System, www.hra.nhs.uk or at <http://www.rdforum.nhs.uk>.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of management permissions from host organisations

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the first participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to contest the need for registration they should contact Catherine Blewett (catherineblewett@nhs.net), the HRA does not, however, expect exceptions to be made. Guidance on where to register is provided within IRAS.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Non-NHS sites

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	Version	Date
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [BCU_INSURANCE-CERT-13.7.16]	1	22 August 2016
Interview schedules or topic guides for participants [INVG_PT_8_6_16_V1]	1	08 June 2016
Interview schedules or topic guides for participants [INV_CARER_8_6_16_V1]	1	08 June 2016
Interview schedules or topic guides for participants [FG_CM_8_6_16_V1]	1	08 June 2016
IRAS Application Form [IRAS_Form_13072016]		13 July 2016
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Letters of invitation to participant [PT_CAR_INV_8_6_16_V1]	1	08 June 2016
Letters of invitation to participant [CMINV_8_6_16_V1]	1	08 June 2016
Other [statement-activities-EP_WMCS_6.16_V1]	1	17 June 2016
Other [hrs-schedule-events-excel_EP_WMCS_6.16_V1]	1	17 June 2016
Other [Mark Radford Cv 2016]	1	18 July 2016
Other [Prof Lintern CV Apr 16]	1	01 April 2016
Other [WM GCP_Introduction to GCP Certificate]	1	19 August 2016
Other [eGCP (Primary Care) Introduction to good clinical practice training Certificate]	1	19 August 2016
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Participant consent form [CONB_8_6_16_V1]	2	15 August 2016
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Participant information sheet (PIS) [CMIS_8_6_16_V1]	2	15 August 2016
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Summary CV for student [academic cv 2pg.16.v2]	3	15 August 2016
Summary CV for supervisor (student research) [S.Jones_CV(Apr160)]	1	08 June 2016

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document "*After ethical review – guidance for researchers*" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website:

<http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/>

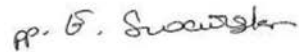
HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at <http://www.hra.nhs.uk/hra-training/>

16/EM/0325	Please quote this number on all correspondence
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With the Committee's best wishes for the success of this project.

Yours sincerely



Mr Ken Willis
Chair

Email: nrescommittee.eastmidlands-leicestercentral@nhs.net

Enclosures: "After ethical review – guidance for researchers"

Copy to: Dr Barbara Howard-Hunt
██████████, Research and Innovations Manager, ██████████
██████████ Healthcare NHS Foundation Trust

Appendix Six: NHS R&D Approval Studies Three, Four and Five

Monday, 26 September 2016 at 15:52:17 British Summer Time

Subject: Notification of Confirmation of Capacity and Capability - BCHC 26.09.2016

Date: Monday, 26 September 2016 at 11:29:59 British Summer Time

From: [REDACTED]

To: Eloise Phillips

CC: [REDACTED]

Notification of Confirmation of Capacity and Capability E-mail

Dear Principal Investigator,

Study Information	
Research Title:	Understanding 999 use & hospital admissions of case managed patients
Sponsor:	Birmingham City University
Chief Investigator:	Miss Eloise Phillips
BCHC Ref.:	BCHCCom209930.NonPort
IRAS Ref.:	209930

[REDACTED] Healthcare NHS Trust has reviewed your application for the research study described above. The review was based on the information described in the application form, protocol and supporting documents. The documents reviewed are listed below:

Document:	Version:	Date:
HRA Approval Letter	-	23.09.2016
IRAS form	209930/986766/37/820	17/06/2016 – signed by CI
Protocol	1	08.06.2016
Invitation Letter – Patient / Carer	1	08.06.2016
Invitation Letter – Case Manager	1	08.06.2016
PIS – Patient	2	15.08.2016
PIS – Carer	2	15.08.2016
PIS – Case Manager	2	15.08.2016
Consent Form – Patient	1	08.06.2016
Consent Form – Carer	1	08.06.2016
Consent Form – Case Manager	3	06.09.2016
Interview Schedule - Patients	1	08.06.2016
Interview Schedule - Carer	1	08.06.2016
Interview Schedule – Case Manager	1	08.06.2016

Confirmation of Capacity and Capability

[REDACTED] Healthcare NHS Trust is pleased to confirm that the Trust has the capacity and capability to deliver your research. Please find attached agreed Statement of Activities and Schedule of Events as confirmation.

Your research can commence as of today (26/09/2016).

Your research will need to meet the following research targets:

Please ensure you notify the R&I team with the following information:

1. Any amendment made to this research.
2. Any incident or complaint relevant to the conduct of the research within this Trust. This includes any event that could have, or did, lead to loss of data, a confidentiality breach, damage to property, and/ or harm to participants.
3. The date when all activities for this research at this Trust ended.

Page 1 of 2

4. A summary of the research findings when available.

Details of this research have been made available on the Trust website research directory [redacted] and held on the Trust research database "EDGE". (Pending)

Please contact the R&I team if you need any support with your research or if you have any queries regarding the above.

May we take this opportunity to wish you success with your research.

Kind regards
Research & Innovation
[redacted] Healthcare NHS Foundation Trust

[redacted]
Research and Innovation Manager

[redacted]
Medical Directorate
Research and Innovation
[redacted] Healthcare NHS Foundation Trust



Appendix Seven: Participant Invite Study Three and Four



Eloise Phillips
PhD Student,
Birmingham City University,
Faculty of Health,
City South Campus,
The Attic,
Ravensbury House,
Westbourne Road,
Edgbaston,
Birmingham,
B15 3TN.
Eloise.phillips@bcu.ac.uk

Dear Sir/Madam,

I would like to invite you to participate in a research project, which I am conducting as part of an **educational qualification** (PhD) at Birmingham City University.

Study Title

Understanding the use of emergency services and hospital admissions for patients of the case management programme.

Purpose of the Study

The aim of the research is to explore with patients and carers their experiences and opinions of calling 999, attending A & E and being admitted to hospital.

Please find attached an information sheet and consent form, which will further explain the aims and details of the research.

If you would like to participate, please make your case manager aware and give consent for them to pass your name and phone number onto myself. I will contact you via telephone and arrange an appointment to come to your house or meet with you at your convenience, to complete the interview.

Or you can contact me directly if you have any further questions and/or decide you would like to participate.

Thank you very much for your time.

Kind Regards,

Eloise Phillips
PhD Student, Birmingham City University.
Tel; 07775548989
Email; eloise.phillips@bcu.ac.uk

Appendix Eight: Participant Consent Form Study Three



Centre Number:

Study Number: IRAS 209930

Participant Identification Number for this trial:

CONSENT FORM A; PATIENT

Title of Project: **Understanding the use of emergency services and hospital admissions for patients of the case management programme.**

Name of Researcher: Miss Eloise Phillips

Please initial box

1. I confirm that I have read the information sheet dated 15/8/2016 (version 2) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected.
3. I understand that I will be interviewed face to face and that my voice may be recorded, and that my words may be used in the study, in future journal publications and conference presentations, but I will not be identified
4. I understand that the information collected may be used to support other research in the future, and may be shared anonymously with other researchers.
5. I agree to take part in the above study.

Name of Participant Date Signature

Name of Person Date Signature
taking consent

When completed: 1 for participant; 1 for researcher. Ref; CONA_15_8_16_V2, IRAS; 209930

Appendix Nine: Participant Consent Form Study Four



Centre Number:

Study Number: IRAS 209930

Participant Identification Number for this trial:

CONSENT FORM B; CARER

Title of Project: **Understanding the use of emergency services and hospital admissions for patients of the case management programme.**

Name of Researcher: Miss Eloise Phillips

Please initial box

1. I confirm that I have read the information sheet dated 15/8/2016 (version 2) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected and without penalty.
3. I understand that I will be interviewed face to face and that my voice may be recorded, and that my words may be used in the study, in future journal publications and conference presentations, but I will not be identified
4. I understand that the information collected may be used to support other research in the future, and may be shared anonymously with other researchers.
5. I agree to take part in the above study.

Name of Participant Date Signature

Name of Person taking consent Date Signature

When completed: 1 for participant; 1 for researcher.

Ref: CONB_15_8_16_V2, IRAS; 209930

Appendix Ten: Participant Information Sheet Study Three



Patient Information Sheet

Understanding the use of emergency services and hospital admissions for patients of the case management programme

Part 1

You are being invited to take part in a research study, which will provide data for an educational qualification (PhD). Before you decide whether or not to take part, it is important for you to understand why the research is being done, and what it will involve. Please take some time to read the following information carefully and discuss it with other members of your family or friends if you wish. Part 1 tells you about the purpose of the study and what will happen to you if you take part. Part 2 gives you more detailed information about the conduct of the study and gives details of who to contact for further information.

Please take time to decide whether or not you wish to take part.

Thank you for reading this.

What is the purpose of this study?

At a time when a growing number of people have long-term conditions, it is important that thought is given to how people with long-term conditions can be best cared for, in order for their lives and those of carers, to be as good as possible. Case managers are specially trained nurses who help people manage their long-term conditions, stay at home and avoid unnecessary hospital visits. We don't fully understand what factors lead people to use emergency services. The purpose of this study is to explore possible reasons for hospital admissions and the situations in which they engage with emergency services.

In this study we want to:

- explore with patients, carers and nurses the factors that may influence the pattern of 999 calls, A & E attendances and hospital admissions,
- consider implications for practice, policy, education and research in the future.

Why have I been chosen?

You have been chosen because you are receiving services from a case manager as a patient, and therefore your views on this matter are important.

Do I have to take part?

No, the decision to take part is entirely yours. You may also decline to answer any questions. You may of course withdraw from the study all together at any time. If you



decline to take part in the study, or if you decide to withdraw, you will not be asked for any reasons. It will not affect your care in any way.

What will I have to do if I take part?

The study will involve the researcher contacting you by telephone in the first instance, to arrange a convenient time and place for you to have your interview. Upon meeting, the researcher will talk you through this information sheet, and ask you to sign a consent form before being interviewed by the researcher. This will take approximately one hour. If you don't feel well on the day of the interview, you can cancel or reschedule by contacting the researcher on the details below. If you start the interview, but then feel unwell, the interview can be stopped. This will not affect the care you receive in any way. During the interview, the researcher will record your conversation with an audio recorder and take some notes.

Your medical records will not be seen by the research team.

The purpose of this study is not to make judgments about the clinical practice of your case manager, but rather to explore your ideas and opinions of factors that influence the way in which you interact with emergency services.

The researcher may contact you again at the end of the study to check over the findings with you, to make sure the researcher has interpreted them correctly. A sheet of key findings will be produced for participants of the study.

What are the possible benefits of taking part?

There are no guarantees that you will benefit directly from taking part in this study. However, by taking part you have the opportunity to influence the outcome of the study and ensure that a clear picture of why patients may go into hospital is gained. It may influence future education, professional practice and the care of other people with long-term conditions.

What are the possible risks to taking part?

You might feel worried that your answers will affect the care you receive. This will not happen. You may feel unwell during the course of the interview. The interview can be stopped without affecting any care you receive.

The researcher will try to answer any concerns you have, but you can also get further information about this study from the Customer Services Team (formerly PALS). Their telephone number is: [REDACTED].

What happens when the research stops?

All tapes of individual discussions will be destroyed immediately after they have been transcribed (making a written record of the conversation).

We will keep the transcripts of what has been said for up to 5 years after the award of the educational qualification (PhD), they will be held in a format that would not identify you. Your personal data, that is, your name and telephone number used to contact you, will only be kept until the completion of the educational qualification (PhD). A sheet of key findings will be produced for participants of the study; therefore the researcher will need to record either your address or email details if you would like to be sent this summary.

Where can I get support and make complaints?

If taking part in this study has raised issues that you would like to discuss further, in the first instance you could contact the researcher, Eloise Phillips, on the contact details provided at the bottom of this information sheet. For further information on the complaints procedure relating to this study, please see Part 2 of this information sheet.

Will my taking part in this study be kept confidential?

Yes. The researcher will follow ethical and legal practice and all information about you will be handled in confidence.

All personal information, which is collected about you during the course of this study, will be kept strictly confidential unless to do so would breach the Nursing and Midwifery Code (NMC, 2015), e.g. safeguarding issues such as being at risk of harm. All personal information recorded on paper will be stored in a locked filing cabinet in a locked room at Birmingham City University and all electronic data will be stored on a secure server at Birmingham City University. Only the research team will have access. All research data, e.g. the written record of your interview, will be anonymised and would not identify you. It will be stored separately from your personal data. Personal, identifiable data will be stored until the completion of the educational qualification (PhD). Research data will be kept for up to 5 years after the award of the educational qualification (PhD). All data will be destroyed securely.

If the information in Part 1 has interested you and you are considering participating, please read the additional information in Part 2 before making any decisions.

Part 2

What will happen if I don't want to carry on with the study?

You are free to withdraw from the study at any time. Any data already collected will still be used in the study, unless you explicitly state to have it removed. The removal of your data will be available to you for 2 weeks after your interview, after which time it will have been incorporated into the analysis.

What if there is a problem?

Any complaint about the way you have been dealt with during the study will be addressed. If you have any concerns about any aspect of this study you should speak to the researcher who will do her best to answer your questions, and to resolve the matter. Failing this you

can contact the Birmingham City University Ethics Committee chair, Merryl Harvey in writing at;

City South Campus, Westbourne Road, Edgbaston, B15 3TN or by telephone on 0121 331 5000.

In the event of a complaint relating to the NHS Trust, you should contact [REDACTED] Community Healthcare NHS Foundation Trust's Customer Services Team. Their telephone number is: [REDACTED] and their email address is: [REDACTED]

What will happen to the results of the research study?

The findings will be written into a thesis in partial fulfilment of an educational qualification (PhD), and if successful, will be made available in the public domain. If applicable, results will be incorporated into existing policy, practice and education. It will also be shared with relevant agencies including local and regional special interest groups. Conference papers will be submitted to appropriate forums to inform practitioners at a national level. The researcher will submit papers for publishing the results in relevant professional journals, in order to ensure wide dissemination to the target audience. A sheet of key findings will be produced for participants of the study. Quotes generated by you may be presented in any of these formats but will not identify you.

Who is organising and funding the research?

This study is in partial fulfilment of an educational award (PhD) and is being undertaken at Birmingham City University. This study has no external funding.

Who has reviewed the study?

This study has been peer reviewed by Birmingham City University's Faculty Academic Ethics Committee and ethically approved by the East Midlands- Leicester Central Research Ethics Committee (REC). Research management approval from Birmingham Community Healthcare NHS Foundation Trust has been granted.

Contact for further information

Miss Eloise Phillips
PhD Student, Birmingham City University,
Faculty of Health, City South Campus, The Attic, Ravensbury House,
Westbourne Road, Edgbaston, Birmingham, B15 3TN.
Mobile: 07775548989, Email: Eloise.phillips@bcu.ac.uk

Thank you for considering your involvement in the study.

Appendix Eleven: Participant Information Sheet Study Four



Carer Information Sheet

Understanding the use of emergency services and hospital admissions for patients of the case management programme

Part 1

You are being invited to take part in a research study, which will provide data for an educational qualification (PhD). Before you decide whether or not to take part, it is important for you to understand why the research is being done, and what it will involve. Please take some time to read the following information carefully and discuss it with other members of your family or friends if you wish. Part 1 tells you about the purpose of the study and what will happen to you if you take part. Part 2 gives you more detailed information about the conduct of the study and gives details of who to contact for further information.

Please take time to decide whether or not you wish to take part.

Thank you for reading this.

What is the purpose of this study?

At a time when a growing number of people have long-term conditions, it is important that thought is given to how people with long-term conditions can be best cared for, in order for their lives and those of carers, to be as good as possible. Case managers are specially trained nurses who help people manage their long-term conditions, stay at home and avoid unnecessary hospital visits. We don't fully understand what factors lead people to use emergency services. The purpose of this study is to explore possible reasons for hospital admissions and the situations in which they engage with emergency services.

In this study we want to:

- explore with patients, carers and nurses the factors that may influence the pattern of 999 calls, A & E attendances and hospital admissions,
- consider implications for practice, policy, education and research in the future.

Why have I been chosen?

You have been chosen because your relative or friend that you care for is receiving services from a case manager, and therefore your views on this matter are important.

Do I have to take part?

No, the decision to take part is entirely yours. You may also decline to answer any questions. You may of course withdraw from the study all together at any time. If you

decline to take part in the study, or if you decide to withdraw, you will not be asked for any reasons. It will not affect the care of your relative or friend in any way.

What will I have to do if I take part?

The study will involve the researcher contacting you by telephone in the first instance to arrange a convenient time and place for you to have your interview. Upon meeting, the researcher will talk you through this information sheet, and ask you to sign a consent form before being interviewed by the researcher. This will take approximately one hour. If you don't feel well on the day of the interview, you can cancel or reschedule by contacting the researcher on the details below. If you start the interview, but then feel unwell, the interview can be stopped. This will not affect the care your relative or friend receives in any way. During the interview, the researcher will record your conversation with an audio recorder and take some notes.

Your medical records and the records of the person you care for will not be seen by the research team.

The purpose of this study is not to make judgments about the clinical practice of your relative or friend's case manager, but rather to explore your ideas and opinions of factors that influence the way in which the person you care for interacts with emergency services.

The researcher may contact you again at the end of the study to check over the findings with you, to make sure the researcher has interpreted them correctly. A sheet of key findings will be produced for participants of the study.

What are the possible benefits of taking part?

There are no guarantees that you or the person you care for will benefit directly from taking part in this study. However, by taking part you have the opportunity to influence the outcome of the study, and ensure that a clear picture of why patients may go into hospital is gained. It may influence future education, professional practice and the care of other people with long-term conditions.

What are the possible risks to taking part?

You might feel worried that your answers will affect the care your relative or friend receives. This will not happen. You may feel unwell during the course of the interview. The interview can be stopped without affecting any care your relative or friend receives.

The researcher will try to answer any concerns you have, but you can also get further information about this study from the Customer Services Team (formerly PALS). Their telephone number is: [REDACTED].

What happens when the research stops?

All tapes of individual discussions will be destroyed immediately after they have been transcribed (making a written record of the conversation).



We will keep the transcripts of what has been said for up to 5 years after the award of the educational qualification (PhD), they will be held in a format that would not identify you. Your personal data, that is, your name and telephone number used to contact you, will only be kept until the completion of the educational qualification (PhD). A sheet of key findings will be produced for participants of the study; therefore the researcher will need to record either your address or email details if you would like to be sent this summary.

Where can I get support and make complaints?

If taking part in this study has raised issues that you would like to discuss further, in the first instance you could contact the researcher, Eloise Phillips, on the contact details provided at the bottom of this information sheet. For further information on the complaints procedure relating to this study, please see Part 2 of this information sheet.

Will my taking part in this study be kept confidential?

Yes. The researcher will follow ethical and legal practice and all information about you and the person you care for will be handled in confidence.

All personal information, about you and the person you care for, which is collected during the course of this study, will be kept strictly confidential unless to do so would breach the Nursing and Midwifery Code (NMC, 2015), e.g. safeguarding issues such as being at risk of harm. All personal information recorded on paper will be stored in a locked filing cabinet in a locked room at Birmingham City University and all electronic data will be stored on a secure server at Birmingham City University. Only the research team will have access. All research data, e.g. the written record of your interview, will be anonymised and will not identify you. It will be stored separately from your personal data. Personal identifiable data will be stored until the completion of the educational qualification (PhD). Research data will be kept for up to 5 years after the award of the educational qualification (PhD). All data will be destroyed securely.

If the information in Part 1 has interested you and you are considering participating, please read the additional information in Part 2 before making any decisions.

Part 2

What will happen if I don't want to carry on with the study?

You are free to withdraw from the study at any time. Any data already collected will still be used in the study, unless you explicitly state to have it removed. The removal of your data will be available to you for 2 weeks after your interview, after which time it will have been incorporated into the analysis.



What if there is a problem?

Any complaint about the way you have been dealt with during the study will be addressed. If you have any concerns about any aspect of this study you should speak to the researcher who will do her best to answer your questions, and to resolve the matter. Failing this you can contact the Birmingham City University Ethics Committee chair, Merryl Harvey in writing at;

City South Campus, Westbourne Road, Edgbaston, B15 3TN or by telephone on 0121 331 5000.

In the event of a complaint relating to the NHS Trust, you should contact [REDACTED] Community Healthcare NHS Foundation Trust's Customer Services Team. Their telephone number is [REDACTED] and their email address is: [REDACTED]

What will happen to the results of the research study?

The findings will be written into a thesis in partial fulfilment of the educational qualification (PhD), and if successful, will be made available in the public domain. If applicable, results will be incorporated into existing policy, practice and education. It will also be shared with relevant agencies including local and regional special interest groups. Conference papers will be submitted to appropriate forums to inform practitioners at a national level. The researcher will submit papers for publishing the results in relevant professional journals, in order to ensure wide dissemination to the target audience. A sheet of key findings will be produced for participants of the study. Quotes generated by you may be presented in any of these formats but will not identify you.

Who is organising and funding the research?

This study is in partial fulfilment of an educational award (PhD) and is being undertaken at Birmingham City University. This study has no external funding.

Who has reviewed the study?

This study has been peer reviewed by Birmingham City University's Faculty Academic Ethics Committee and ethically approved by the East Midlands-Leicester Central Research Ethics Committee (REC). Research management approval from Birmingham Community Healthcare NHS Foundation Trust has been granted.

Contact for further information

Miss Eloise Phillips
PhD Student, Birmingham City University,
Faculty of Health, City South Campus, The Attic, Ravensbury House,
Westbourne Road, Edgbaston, Birmingham, B15 3TN.
Mobile; 07775548989, Email: Eloise.phillips@bcu.ac.uk

Thank you for considering your involvement in the study.

Appendix Twelve: Interview Schedule Study Three



Interview Schedule– Patients

The interview will begin with a friendly greeting confirming the participant is still happy to be interviewed and informing them the tape recording will begin.

Please talk me through the last time you called 999/attended A & E or were admitted to hospital....

It is anticipated that this will provide a patient led narrative that the researcher will be able to investigate to pick out nuances relating to the research aims and objective. Where there is information missing, the researcher will then move on to asking more direct and fact eliciting questions e.g.

Topic area 1) the admission experience-

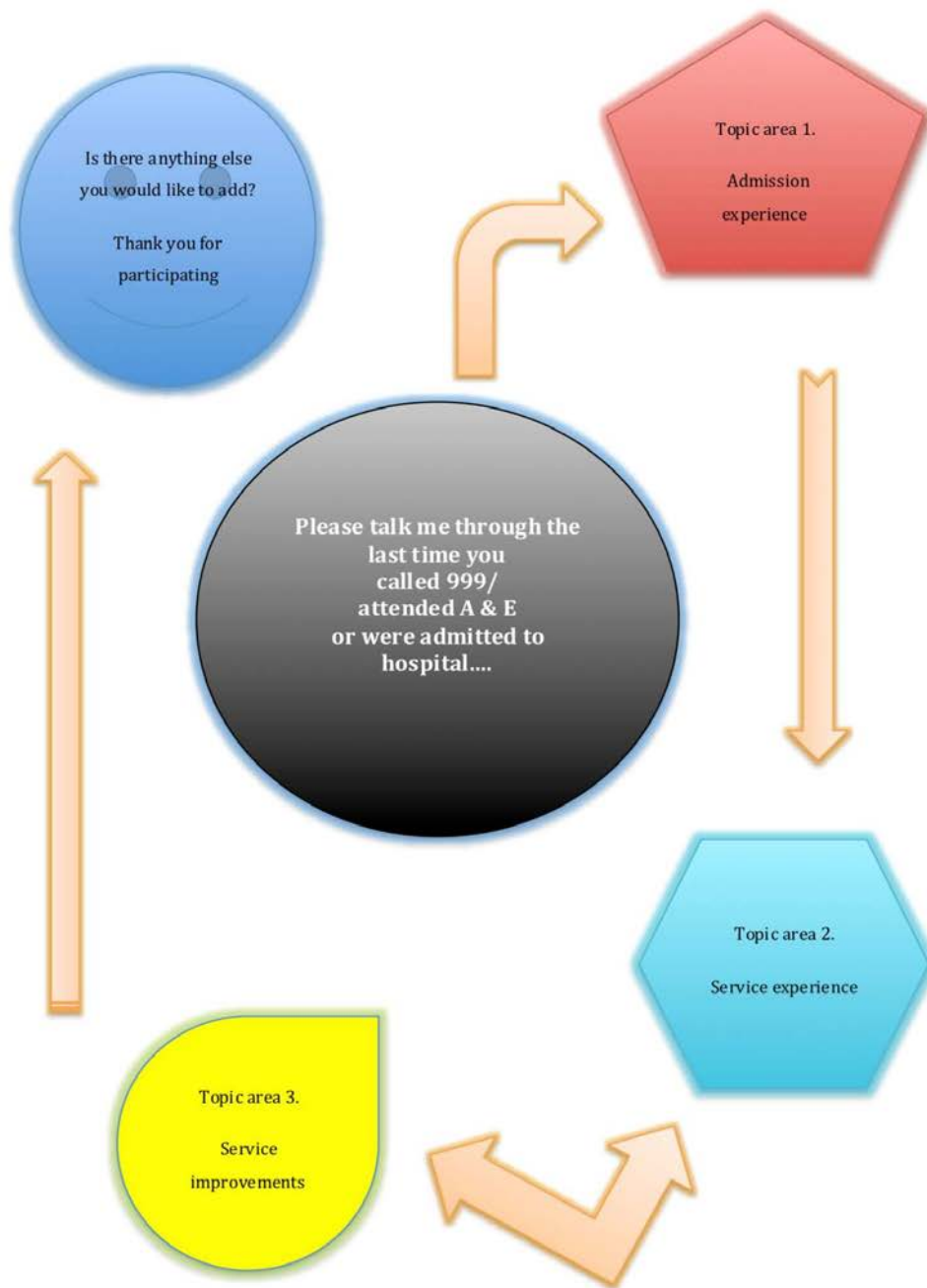
- What led up to you becoming ill?
- What time of day was this? (if not stipulate)
- How did you get there? (if not via 999)
- How many 999 calls/ A & E attendances/ admissions have you had in the past year? tell me more about them..

Topic area 2) about the service experiences-

- Did you contact any other services prior to 999 call/ A & E attendance/ admission?
i.e. Case manager, Gp, OOHS Gp, 111, Walk in centre, other...
- If not, why?
- Did you tell the paramedics/staff in the hospital you had a case manager?
- How long was your stay? Were you admitted or did you come home again?
- Are you aware of who to contact when you need help and who do you call at different times of the day/night?

Topic area 3) Service improvements-

- Do you think there was anything that could have been done differently to prevent you going into hospital/calling 999/going to A & E?
- How would you improve services to avoid you having to go into hospital?



Appendix Thirteen: Interview Schedule Study Four



Interview Schedule– Carers

The interview will begin with a friendly greeting confirming the participant is still happy to be interviewed and informing them the tape recording will begin.

Please talk me through the last time your relative/friend called 999/attended A & E or were admitted to hospital....

It is anticipated that this will provide a carer led narrative that the researcher will be able to investigate to pick out nuances relating to the research aims and objective. Where there is information missing, the researcher will then move on to asking more direct and fact eliciting questions e.g.

Topic area 1) the admission experience-

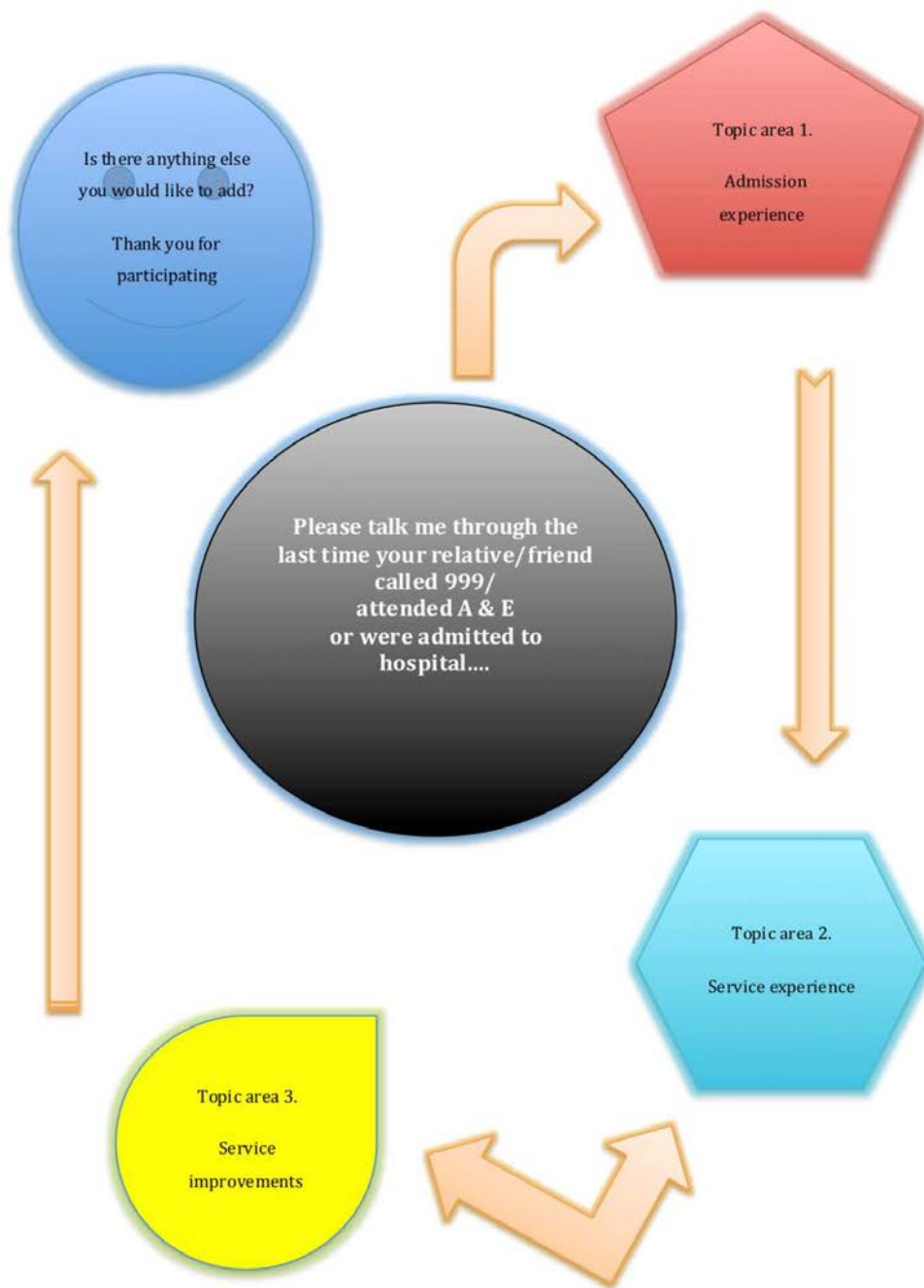
- What led up to your relative/friend becoming ill?
- What time of day was this? (if not stipulate)
- How did you they get to hospital? (if not via 999)
- How many 999 calls/ A & E attendances/ admissions has your friend/relative had in the past year? tell me more about them..

Topic area 2) about the service experiences-

- Did you or your relative/friend contact any other services prior to their 999 call/ A & E attendance/ admission?
- i.e. Case manager, Gp, OOHS Gp, 111, Walk in centre, other...
- If not, why?
- Did you or your relative/friend tell the paramedics/staff in the hospital your relative/friend had a case manager?
- How long was their stay? Were they admitted or did they come home again?
- Are you and your relative/friend aware of who to contact when you need help and who do you call at different times of the day/night?

Topic area 3) Service improvements-

- Do you think there was anything that could have been done differently to prevent your friend/relative going into hospital/calling 999/going to A & E?
- How would you improve services to avoid your relative/friend having to go into hospital?



Appendix Fourteen: Participant Invite Study Five



Dear Case Manager,

I would like to invite you to participate in a research project, which I am conducting as part of an educational qualification (PhD) at Birmingham City University.

Study Title

Understanding the use of emergency services and hospital admissions for patients of the case management programme: [REDACTED] qualitative case study.

Purpose of the Study

The aim of the research is to explore the key stakeholders perspectives as to why, when and how case managed patients utilise 999 services, attend A & E and are admitted to hospital.

The first part of the study has uncovered some very interesting findings and further work is needed to interview patients, carers and case managers to triangulate the data captured and try to understand reasons for the patterns uncovered.

The purpose of the study is not to make judgments about individual clinical practice, but rather to explore your ideas and opinions of factors that have influenced your patients' recent/previous hospital admission(s), use of emergency services and A & E attendances.

Please find attached an information sheet and consent form, which will further explain the aims and details of the research.

If you would like to participate, the focus group will be roughly one hour long and be held at one of your locality reflection meetings. Anything discussed in the focus group will be tape-recorded and transcribed onto an encrypted database; your anonymity will be maintained throughout the process by the use of participant numbers.

I look forward to speaking to you all at the citywide case manager meeting to explain in more detail. You will be given opportunity to sign up to a focus group at this meeting- the dates are as follows;

- 1)
- 2)
- 3)

Or you can reply to this email if you would like to participate.

Thank you very much for your time.

Kind Regards,

Eloise Phillips
PhD Student, Birmingham City University.
07775548989
eloise.phillips@bcu.ac.uk

Ref: CMINV_8_6_16_V1, IRAS; 209930

Appendix Fifteen: Participant Information Sheet Study Five



Case Manager Information Sheet

Understanding the use of emergency services and hospital admissions for patients of the case management programme: [REDACTED] qualitative case study

Part 1

You are being invited to take part in a research study, which will provide data for an educational award (PhD). Before you decide whether or not to take part, it is important for you to understand why the research is being done, and what it will involve. Please take some time to read the following information carefully and discuss it with other colleagues if you wish. Part 1 tells you about the purpose of the study and what will happen to you if you take part. Part 2 gives you more detailed information about the conduct of the study and gives details of who to contact for further details.

Please take time to decide whether or not you wish to take part.

Thank you for reading this.

What is the purpose of the study?

At a time when a growing number of people have long-term conditions, it is important that thought is given to how people with long-term conditions can be best cared for, in order for their lives and those of carers, to be as good as possible. Case managers are specially trained nurses who help people manage their long-term conditions, stay at home and avoid unnecessary hospital visits. We don't fully understand what factors lead people to use emergency services. The purpose of this study is to explore possible reasons for hospital admissions and the situations in which they engage with emergency services.

In this study we want to:

- explore with patients, carers and nurses the factors that may influence the pattern of 999 calls, A & E attendances and hospital admissions,
- consider implications for practice, policy, education and research in the future.

Why have I been chosen?

You have been chosen because you are a Case Manager who looks after individuals with long-term conditions, and therefore your views on this matter are important.



Do I have to take part?

No, the decision to take part is entirely yours. You may also decline to answer any questions. You may of course **withdraw** from the study all together, at any time. If you decline to take part in the study, or if you decide to withdraw, you will not be asked for any reasons, no other colleague or manager will be informed of your actions.

What will I have to do if I take part?

The study will involve you taking part in a small focus group of up to 10 case managers, **led** by the researcher. This will take approximately 90 minutes and the researcher will talk you through this information sheet, and ask you to sign a consent form before the focus group commences. Focus groups will be audiotaped and your words will be used, but your name will not be used. Focus groups will take place at a mutually convenient time and place. The purpose of the study is not to make judgments about individuals' clinical practice, but rather to explore your ideas and opinions of factors that have influenced your patients' recent/previous hospital admissions, use of emergency services and A & E attendances.

What are the possible benefits of taking part?

There are no guarantees that you will benefit directly from taking part in this study. However, by taking part you have the opportunity to influence the outcome of the study and ensure that a clear picture of why patients may go into hospital is gained. It may influence future education, professional practice and the care of other people with long-term conditions.

What are the possible risks to taking part?

You might feel worried that your answers will affect your job role. This will not happen. The data will be **anonymised** and your answers **will not identify you**. **If you were unable to complete the focus group for any reason** or you decide to, you are free to leave without this affecting your participation or job role.

The researcher will try to answer any concerns you have, but you can also get further information about this study from the Research and Innovations Department. Their telephone number is [REDACTED]

What happens when the research stops?

All tapes of the focus groups will be destroyed immediately after they have been transcribed (making a written record of the conversation).

We will keep the transcripts of what has been said for up to 5 years after the award of the **educational qualification** (PhD), they will be held in a format **that would not identify you**. Your personal data, that is, your name and contact details will only be kept until the



completion of the **educational qualification** (PhD). A sheet of key findings will be produced for participants of the study; therefore the researcher will need to record either your address or email details if you would like to be sent this summary.

Where can I get support and make complaints?

If taking part in this study has raised issues you would like to discuss further, in the first instance you could contact the researcher Eloise Phillips, on the contact details provided at the bottom of this information sheet. Otherwise, you could contact the Royal College of Nursing counselling service at www.rcn.org.uk/support/services or UNISON at www.unison.org.uk or Occupational Health within your Trust. For further information on the complaints procedure relating to this study, please see Part 2 of this information sheet.

Will my taking part in this study be kept confidential?

Yes. The researcher will follow ethical and legal practice and all information about you will be handled in confidence.

All personal information, which is collected about you during the course of this study, will be kept strictly confidential unless to do so would breach the Nursing and Midwifery Code (NMC, 2015), e.g. safeguarding issues such as a patient being at risk of harm. All personal information recorded on paper will be stored in a locked filing cabinet in a locked room at Birmingham City University and all electronic data will be stored on a secure server at Birmingham City University. Only the research team will have access. All research data, e.g. the written record of your focus group, will be anonymised and **would not identify you**. It will be stored separately from your personal data. Personal, identifiable data will be stored until the completion of the **educational qualification** (PhD). Research data will be kept for up to 5 years after the award of the **educational qualification** (PhD). All data will be destroyed securely.

If the information in Part 1 has interested you and you are considering participation, please read the additional information in Part 2 before making any decisions.

Part 2

What will happen if I don't want to carry on with the study?

You are free to withdraw from the study at any time. Any data already collected will still be used in the study, unless you explicitly state to have it removed. The removal of your data will be available to you for 2 weeks after your focus group, after which time it will have been incorporated into the analysis.



What if there is a problem?

Any complaint about the way you have been dealt with during the study will be addressed. If you have any concerns about any aspect of this study you should speak to the researcher who will do her best to answer your questions, and to resolve the matter. Failing this you can contact the Birmingham City University Ethics Committee chair, Merryl Harvey in writing at;

City South Campus, Westbourne Road, Edgbaston, B15 3TN or by telephone on 0121 331 5000.

In the event of a complaint relating to the NHS Trust, you should contact your line manager directly or the Research and Innovations Team on [REDACTED].

What will happen to the results of the research study?

The findings will be written into a thesis in partial fulfilment of the educational qualification (PhD), and if successful, will be made available in the public domain. If applicable, results will be incorporated into existing policy, practice and education. It will also be shared with relevant agencies including local and regional special interest groups. Conference papers will be submitted to appropriate forums to inform practitioners at a national level. The researcher will submit papers for publishing the results in relevant professional journals, in order to ensure wide dissemination to the target audience. A sheet of key findings will be produced for participants of the study. Quotes generated by you may be presented in any of these formats but will not identify you.

Who is organising and finding the research?

This study is in fulfilment of an educational qualification (PhD) and is being undertaken at Birmingham City University. This study has no external funding.

Who has reviewed the study?

This study has been peer reviewed by Birmingham City University's Faculty Academic Ethics Committee and ethically approved by the East Midlands- Leicester Central Research Ethics Committee (REC). Research management approval from Birmingham Community Healthcare NHS Foundation Trust has been granted.

Contact for further information

Miss Eloise Phillips
PhD Student, Birmingham City University,
Faculty of Health, City South Campus, The Attic, Ravensbury House,
Westbourne Road, Edgbaston, Birmingham, B15 3TN.
Mobile: 07775548989, Email: Eloise.phillips@bcu.ac.uk

Thank you for considering your involvement in the study.

Appendix Sixteen: Participant Consent Form Study Five



Centre Number:

Study Number: IRAS 209930

Participant Identification Number for this trial:

CONSENT FORM C; CASE MANAGER

Title of Project: **Understanding the use of emergency services and hospital admissions for patients of the case management programme.**

Name of Researcher: Miss Eloise Phillips

Please initial box

1. I confirm that I have read the information sheet dated 15/8/2016 (version 2) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.
3. I understand that I will participate in a focus group with other case managers and that my voice may be recorded, and that my words may be used in the study, in future journal publications and conference presentations, but I will not be identified
4. I understand that the information collected may be used to support other research in the future, and may be shared anonymously with other researchers.
5. I agree to take part in the above study.

Name of Participant Date Signature

Name of Person taking consent Date Signature

When completed: 1 for participant; 1 for researcher. Ref: CONC_15_8_16_V2, IRAS; 209930

Appendix Seventeen: Focus Group Schedule Study Five



Focus Group Schedule– Case Manager

The focus group will begin with a friendly greeting confirming the participants are still happy to be interviewed and informing them the tape recording will begin.

Can you please describe for me some examples of some of your patients emergency services usage/ A & E attendances/ hospital admissions?

It is anticipated that this will provide a case manager led narrative that the researcher will be able to investigate to pick out nuances relating to the research aims and objective. Where there is information missing, the researcher will then move on to asking more direct and fact eliciting questions e.g.

Topic area 1) 999 calls/ A & E attendances and hospital admission

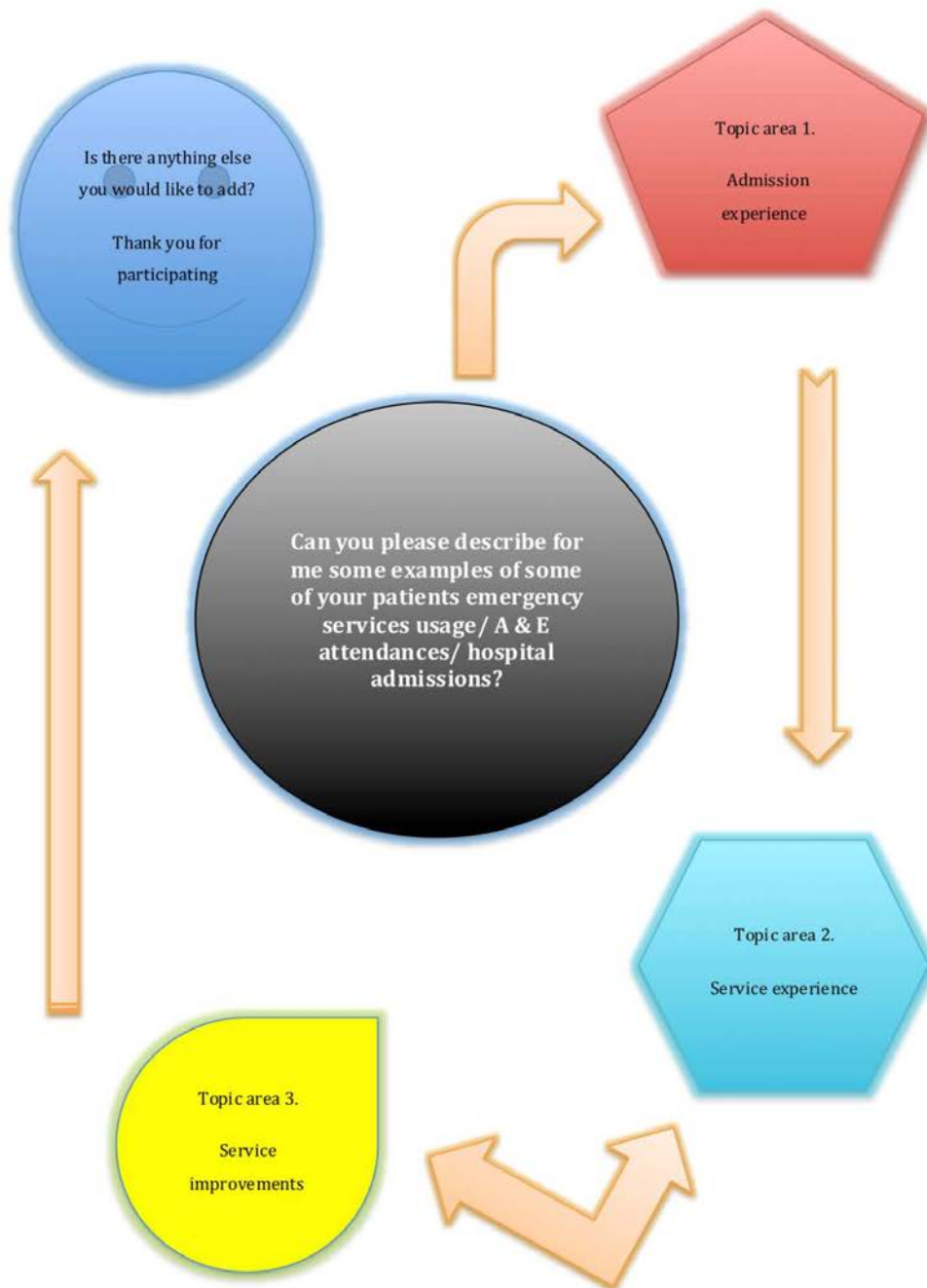
- Do you think many of your patients on your case loads call 999/ go to A & E/ admitted to hospital? Do they contact you?
- Do you get many emergency calls from your patients?
- Do you admit your patients?
- Do you think more patients use emergency services in the Out-of-hours? Why? Any change in OOHs provision/111 affected this?

Topic area 2) Service experience

- What do you do to try and prevent patients on your caseload calling 999/attending A & E/ being admitted to hospital?
- Do you get notified of admissions? Do you contact hospitals? How could joint working be improved with secondary care?
- Do you as case managers think you have reduced your patient's use of 999 services/ A & E/ admissions to hospital?
- Do you feel confident dealing with unwell patients and what support networks do you have to do this? Any further training needed?

Topic area 3) Service improvement

- Can you suggest any further ways to prevent 999 use/ A & E attendances/ hospital admissions in the case managed population?



Appendix Eighteen: Publication (Due to green access copyright, final word file included)

ABSTRACT

Aim- To describe the characteristics of case-managed patients presenting at accident and emergency (A & E) and to explore the distribution of their attendances and admissions.

Background- Recently, the UK Government announced extended-hours primary care provision in an effort to reduce the growing utilization of A & E. No evidence is available to understand the use of acute services by this high-risk patient group.

Method- A cross-sectional design utilising routinely collected anonymised A & E attendance and hospital admission data from 2010-2015.

Results- The case-managed population is typically 70 years and older and most often arrive at A & E via emergency services and during the night (00:00-08:59). A large proportion are subsequently admitted having a statistically significant A & E conversion rate. No variables were predictive of admission.

Conclusion- The high level of A&E conversion could indicate case-managed patients are presenting appropriately with acute clinical need. However, inadequate provision in primary-care could drive decisions for admitting vulnerable patients.

Key words

case management, long-term conditions, chronic disease management, after-hours care, data accuracy

INTRODUCTION

Long-term conditions (LTCs) are diseases, which currently have no cure but can be managed by medication and other therapies (Department of Health 2005a). Patients with LTCs account for a large number of all inpatient bed days and pose an increasing burden on NHS resources (Department of Health 2008). Preventing people from being admitted to hospital is a priority for the NHS for several reasons, including the high and increasing cost of this care in comparison to other forms of care, as well as disrupting elective care by increasing waiting lists (Department of Health 2005b). The number of people suffering from one or more LTC is expected to rise with the ageing demographic and thus pose a significant burden to the NHS and healthcare organisations alike (Age UK 2015). By 2020, 7 million people in England aged over 60 are likely to have two or more long-term conditions (NHS Confederation 2016). The British government recognised this burden and implemented the NHS and Social Care long-term conditions model, which launched in England in 2005; the case management programme was the priority action for reducing this burden (Department of Health 2005c). The purpose of this programme was to reduce hospital admissions and improve quality of life by offering integrated and holistic care management to patients with complex, multiple long-term conditions at risk of hospitalisation. The evaluation of the two-year pilot programme indicated that it had not reduced hospital admissions, but the patients and carers valued the service in other ways such as the case manager's clinical skills and availability and appreciated the service (Graville *et al.* 2007). In 2013, a £50 million pilot scheme was announced to extend the hours of primary health care over growing concerns of the burden on A & E and speculation that the operating hours of primary care were forcing patients to overuse A & E services out-of-hours (NHS England 2014, Lazou 2015). This raises the question of whether the Monday to Friday standard operating hours of the case management programme result in a disproportionate amount of out-of-hours hospital admissions for its patient population.

BACKGROUND

The NHS and global healthcare is challenged with providing high quality care and support for people suffering with long-term conditions. It is estimated 17.5 million adults in Great Britain are living with chronic disease (Department of Health 2005b, Ham & Singh 2006); moreover, individuals with chronic disease account for 80% of all GP consultations (Department of Health 2005a). Five per cent of these patients also account for 42% of annual bed use and 33% of unplanned emergency admissions. In 2013/2014, there were over 2.2 million emergency admissions to English hospitals of people aged over 60, at a cost of £ 3.4 billion (NHS Confederation 2016).

Prior to 2004, community provision was seen as inflexible, struggling and reactive rather than proactive (Department of Health 2005b, Department of Health 2005c). By reducing unplanned admissions and improving supportive care in the community, cost savings in the region of £400 million per year were estimated (Department of Health 2005c). Policy drivers and the need to improve the quality of life of those with LTCs have been crucial in shaping this new model of care delivery by case management.

Case managers are highly skilled advanced nurses with Masters level training and independent prescribing skills and are seen as key in delivering planned, coordinated and personalised care to adults with long term complex needs (Department of Health 2004, Department of Health 2005b, Ham & Singh 2006). In Department of Health policy, the strategic aim of introducing 3000 case managers was to reduce reliance on hospital care, increase the range and responsiveness of community services, improve the quality of care for people with LTCs and plan for, predict and prevent crises in care management. Hutt *et al.* (2004) wrote that case managers should support new ways of working to reduce unplanned admissions.

Understanding the distribution of A&E attendances and hospital admissions for the case managed population: a single case cross sectional study.

1

Much debate has arisen following the Gravelle *et al.* (2007) publication that indicated there was no reduction in emergency admission rates to hospital regarding the effectiveness of services. Hutt and Rosen (2005) and Roland *et al.* (2005) further emphasised weak evidence in the reduction of hospital admissions, work force and training issues, and patient selection and identification stratification methods used in case management. The overuse of acute services has drawn recent media attention following a report which indicated a 'weekend effect' and it has been suggested that extended service hours of community provision could reduce the burden on the acute setting (Hamilton *et al.* 2016). Traditionally, the case management of patients is delivered between the hours of 8am and 6pm advancing the question; do case managed patients rely on acute service provision out-of-hours?

METHODS

Aim

The aim of this study was to describe the characteristics of case managed patients presenting at accident and emergency and to explore the distribution of their attendances and admissions. In doing so, an understanding of the use of A & E services and admissions to hospital during standard operating hours and out of hours periods could be derived.

Design

A cross-sectional observational design was adopted utilising routinely collected A & E attendance and hospital admission data of a case managed population from an acute hospital trust in the West Midlands for the period 01.04.10 – 31.08.15. Where appropriate, the data was compared with publically available national Hospital Episode Statistics (HES) (Health and Social Care Information System 2014) for the participating Trust and the area for the period 01.04.13 – 31.03.14.

Participants

A single NHS Trust within the West Midlands region provided A & E attendance and hospital admission data for the case managed population. The Trust serves an urban population of over 450,000 and sees in the region of 100,000 emergency department visits per year. The Trust also provides community care services and the case management service is delivered within a virtual ward model. The virtual ward model provides multidisciplinary case management using the staffing, systems and daily routines of a hospital ward to deliver preventive hospital admission avoidance care to patients in their own homes (Lewis *et al.* 2011).

No direct human participation was required to conduct this study as routinely collected administrative data was utilised in an anonymised format. All recorded A & E episodes for the case managed population within the Trust were included for the period of 01.04.10-31.08.15 with the exception of two records for patients who were aged below 18. Since the case management population is only provided for patients over the age of 18, these records were erroneous and consequently excluded.

Data Collection

Anonymised hospital episode statistics for attendance to the accident and emergency department were extracted from the participating Trust's electronic record system. Data for the period 01.04.10-31.08.15 were downloaded into comma-separated value (CSV) files. Variables provided included: gender, ethnicity, age, attendance date and time, referral source, primary diagnosis, primary investigation, length of stay (admission data) and attendance disposal.

Ethical Considerations

University research ethical approval was granted for this study. Local research and development approval was sought, and a letter of access was granted. Data was provided in an anonymised format in accordance with the Data Protection Act 1997. University data protection guidelines for the collection and storage of research data were followed.

Data Analysis

Analysis was undertaken using Microsoft Office 2015, Excel 15.0 (Microsoft 2015) and SPSS version 22 (IBM 2013). Descriptive statistics were applied to the whole dataset and where relevant, compared to the publically available HES for the year 2013/14 (Health and Social Care Information System 2014). HES Data for the participating NHS Trust is referred to as 'provider level' and for the local region as 'area level'. Where appropriate, inferential statistics were applied according to the data type. For categorical data, Chi Squared of number association was applied, and for continuous data t-tests were conducted, P values were two-sided and less than 0.05 was considered statistically significant. A binary logistic regression was performed to identify predictive factors for being admitted to hospital. The degree to which various statistical models fitted the observed data was compared using the Nagelkerke R-square value of the all-variable outputs.

Validity, reliability and rigour

Clear description of the process of analysis in the research protocol was an important factor in demonstrating the reliability of the research process (Roberts *et al.* 2006). To ensure rigour, the data was analysed by two of the researchers separately and then reviewed by a third. This promoted accuracy, dependability, trustworthiness and consistency.

RESULTS

For the period 01.04.10-31.08.15, there were 9008 type 1 attendances at A & E representing 3355 case managed patients. The mean number of attendances per patient was 5.36 (mode = 1, median = 2, 95% CI [5.3, 5.42], range: 1-92).

When comparing to publically available HES data at the provider and area level, data for the same 2013-14 period, was extracted from the case managed dataset and analysed. For this period, there were 1832 attendance representing 969 patients. The mean number of attendances per patients was 1.89 (mode = 1, median = 1, 95% CI [1.81, 1.97], range: 1-25). There were 95,375 and 896,768 attendances at the provider and area level data respectively but owing to the nature of the data, it is not possible to know how many patients this represents.

Demographics of Attendances

The mean age of case managed patients attending A & E for the period 01.04.10-31.08.15 was 78.72 years old (mode = 84, median = 81, 95% CI [78.49, 78.95], range: 19-103). For the period 2013-2014, the mean age of all attendances was 79.35 years (mode = 85, median = 81, 95% CI [78.9, 98.8], range: 29-103). The publically accessible HES data used for the year 2013-14 doesn't provide data at the individual attendance level, therefore, to compare, the two datasets have been categorised into '0-49 years of age', '50-69 years of age' and '70 years and older' and the case management dataset aggregated accordingly, this can be seen in Figure 1.

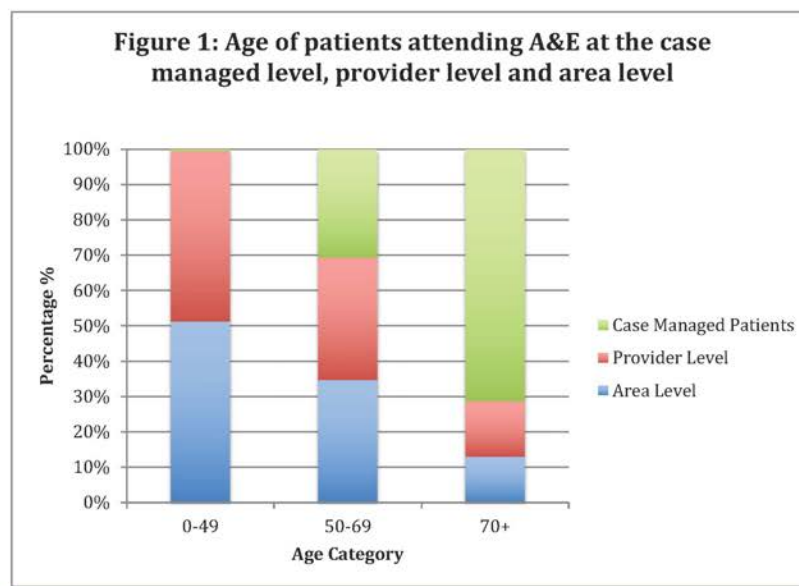


Figure 1. Age of patients attending A & E at the case managed level, provider level and area level.

Case managed patients presenting at the participating A & E are older than the general population presenting at A & E at the same Trust and within the local area.

With regards to gender, 52.92% (95% CI [51.89, 53.95]) of attendances for the period 01.04.10-31.08.15 were by females and 47.08% (95% CI [46.05, 48.11]) were by males. With respect to patients at the provider and area level for the year 2013-14, more attendances were by males than females (female=46.83%, 95% CI [46.51, 47.15]; male=53.17%, 95% CI [52.85, 53.49]; and female=48.80%, 95% CI [48.7, 48.9]; male=51.20%, 95% CI [51.5, 51.3] respectively). Whereas for the same period for the case managed population, females accounted for more attendances (54.75%, 95% CI [52.13, 57.37]) than males (44.25%, 95% CI [41.63, 46.87]). The difference in gender for the three populations was significant (X2 p<0.001). Post hoc testing (Bonferroni correction applied to produce an adjusted p value of 0.0167) revealed that the populations between the case managed patients and the provider's patients, and the area level patients were significantly different (X2 p<0.001, X2 p<0.001 respectively). However, the provider level and area level patients did not differ (X2 p=0.785).

Of the 8121 attendances for which ethnicity had been recorded (90.15%) for the period 01.04.10-31.08.15, 7822 (96.32%, 95% CI [95.91, 96.73]) attendances represented 'White - British' patients. 'Asian or Asian British - Pakistani' was second

most frequent with 1.02% (95% CI [0.8, 1.24]) and 'Black or British Black African' was the least frequent with 0.04% (95% CI [0, 0.8]). No publically accessible HES data was available for comparison.

In examining the 'presenting condition' in the case managed population for the period 01.04.10-31.08.15, more than half the A & E attendances were coded as 'Medical-other' (53.41%, 95% CI [52.38, 54.44]). 'Falls' were the next highest recorded reason (16.24%, 95% CI [15.48, 17]) then 'breathing difficulties' (12.30%, 95% CI [11.62, 12.98]) and 'chest pain' (7.78%, 95% CI [7.23, 8.33]). When in A & E, the most common primary investigation was 'bacteriology' (42.97%, 95% CI [41.95, 43.99]) followed by 'ECG' (25.88%, 95% CI [24.98, 26.78]), 'X-Ray' (6.73%, 95% CI [6.21, 7.25]) and 'urine' (3.99%, 95% CI [3.59, 4.39]). This clinically correlates to the documented reasons for attendance of chest pain, falls and breathing difficulties. Nearly 7% (95% CI [6.18, 7.22]) was coded as 'none' suggesting no investigations occurred while in A & E.

Distribution of Attendances

When examining A & E attendances by the month for the period 2013-2014, November received the highest number of attendances at 169 (9.22%, 95% CI [7.69, 10.75]) and June received the lowest with 117 (6.39%, 95% CI [5.1, 7.68]). HES England wide data (Health and Social Care Information System 2014) has less variation in attendances per month ranging from 7.50% of attendances in February to 8.90% in May and July. No provider level data was publically available for A & E attendances per month.

In terms of days of the week, Friday is the busiest day for case managed patients attending A & E with 279 (15.23%, 95% CI [14.49, 15.97]) attendances on Fridays in the year 2013-2014. The lowest day for attendances was Tuesday with 234 attendances (12.77%, 95% CI [12.08, 13.46]). At the provider level, Monday is the busiest day with 15,443 (16.19%, 95% CI [15.96, 16.42]) attendances in 2013-2014 and the quietest day is Saturday with 12,889 (13.51%, 95% CI [13.29, 13.73]) attendances. At the area level, Monday was also the busiest day with 143,173 (15.97%, 95% CI [15.89, 16.05]) attendances and Saturday the quietest day with 122,942 (13.71%, 95% CI [13.64, 13.78]) attendances. 11am is the single busiest hour in all three populations. The data for the case managed population can be seen in the Heatmap (Figure 2). The busiest time for case managed patients' remains between 9am to 5pm.

Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Sun	8	4	4	3	3	4	4	13	11	19	17	22	13	17	19	18	14	20	14	4	8	12	13	14
Mon	6	8	6	5	5	3	3	8	8	14	17	18	15	18	19	21	11	13	14	13	17	5	6	5
Tue	3	6	4	4	2	4	5	3	9	13	13	18	10	12	18	18	14	15	14	12	11	3	13	10
Wed	12	9	6	3	8	1	5	8	7	16	19	29	18	17	18	10	17	10	12	10	10	9	7	7
Thu	6	4	8	7	3	13	2	9	10	17	10	11	11	16	14	13	14	14	10	11	15	11	13	7
Fri	3	9	7	7	8	8	4	10	6	11	17	23	22	8	21	11	25	20	9	8	8	12	10	12
Sat	8	9	7	1	5	6	6	9	11	26	14	14	9	19	17	14	14	14	8	14	12	10	7	12

Figure 2: Heatmap of A & E attendances by day and time, 2013-2014 for Case managed patients (Red shading indicates higher attendance)

Figure 2: Heatmap of A & E attendances by day and time, 2013-2014 for Case managed patients (Red shading indicates higher attendance)

With regards to attendance in hours or out of hours, 41.60% (95% CI [40.58, 42.62]) of attendances were in hours and 58.40% (95% CI [57.38, 59.42]) out of hours, whereby in hours refers to Monday to Friday 8am to 6pm and out of hours is all other times. However, out of hours represents 70% of the week, therefore, there is a disproportionate amount of people attending A & E during standard operating hours compared with out-of-hours. Given variation of demand over a 24 hour period, it is not unexpected that foot flow into A & E is lower during the night, when people are sleeping or less active. Therefore, it is important to consider the use of services with regards to time, with respect to different demand across the day. When comparing the hour of arrival, the case managed population follows a similar trajectory to patients at the provider level and the area level (see Figure 3). Chi squared analyses were conducted to determine whether there was any significant difference between the three populations for the time periods 00:00 – 08:59, 09:00 – 17:59 and 18:00 – 11:59 and indicate that they are statistically significantly different (X2 <0.05 for the three way comparison and X2 <0.0167 for each of the three pairwise comparisons with Bonferroni correction applied to p value).

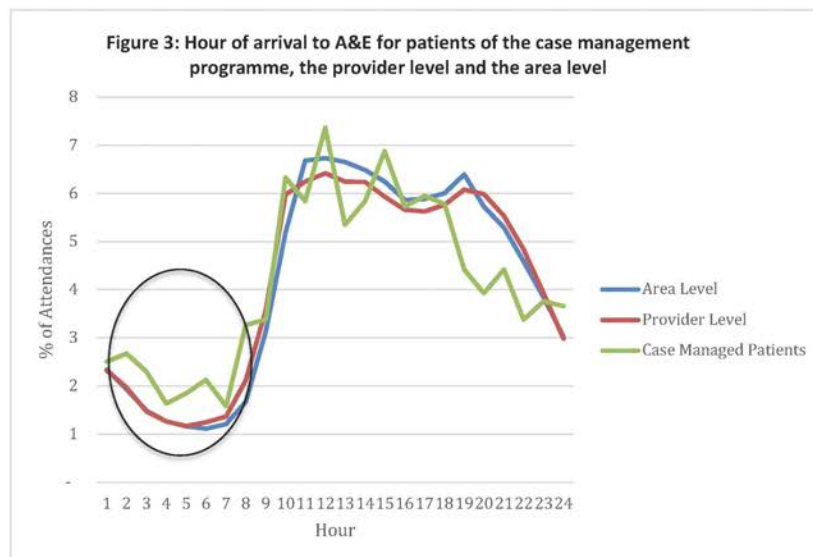


Figure 3. Hour of arrival to A&E for patients of the case management programme, the provider level and the area level

Demographics of Admission

For the period 01.04.10-31.08.15, of the 9008 attendances at A & E for case managed patients, 6,935 (76.99%, 95% CI [76.12, 77.86]) were converted to admissions representing 2,935 case managed patients, who on average were admitted 2.36 times (mode = 1, median = 2, 95% CI [2.3, 2.42], range: 1-44). The mean age of case management admissions from A & E for the period 01.04.10-31.08.15 was 79.34 years old (mode = 85, median = 81, 95% CI [79.1, 79.58], range: 20-103). With regards to gender, 53.34% (95% CI [52.17, 54.51]) of the case management admissions from A & E for the period 01.04.10-31.08.15 were female and 46.66% (95% CI [45.27, 47.61]) were male. Of the admissions for which ethnicity had been recorded (92.06%) for the period 01.04.10-31.08.15, 6,153 (96.37%, 95% CI [95.91, 96.83]) admissions represented 'White - British' patients. 'Asian or Asian British - Pakistani' was second most frequent with 0.94% (95% CI [0.7, 1.18]) and 'Black or Black British African' the least frequent with 0.03% (95% CI [0, 0.07]). Length of stay was recorded as less than one day 19.55% (95% CI [18.62, 20.48]) of the time. Maximum length of stay was recorded as 195 days (mean = 8.62, mode = 0, median = 29, 95% CI [8.14, 9.1], range: 0-195).

For the period 01.04.10-31.08.15, 84.89% (95% CI [84.15, 85.63]) of case management patient attendances at A & E arrived via emergency services. Of these, 84.89% of patients, 82.78% (95% CI [81.93, 83.63]) were admitted to hospital (A&E conversion rate). In comparison, 11.81% (95% CI [11.14, 12.48]) of case management attendances presented directly to A & E themselves with an A&E conversion rate of 38.82% (95% CI [35.89, 41.75]). No publicly accessible HES data was available for comparison but the England wide A & E conversion rate for the general population is known to be 26% (National Audit Office 2013)

Distribution of Admissions

Admissions from A & E for 2013-2014 are highest in July and October (9.36%, 95% CI [7.82, 10.9]) and lowest in June (6.17%, 95% CI [4.9, 7.44]). With respect to day of the week, more case management attendances were converted from A & E on a Sunday (15.53%, 95% CI [13.62, 17.44]) than any other day of the week, with Tuesday being the lowest (13.01%, 95% CI [11.24, 14.78]). Time of admission is not available; however, more patients attending A&E at 11am were then admitted to hospital than any other hour.

Predicting admissions to hospital

In order to conduct binary logistic regression, data were cleaned of the duplicate attendances for the period 01.04.10 - 31.08.15. Patients who 'died in the department' were excluded from the data set, and the remaining information was aggregated into

'admitted' and 'not admitted' resulting in 3316 unique patient episodes. Of these, 76.80% were admitted to hospital. The model utilised the following variables: gender, in/out of hours, ethnicity, and referral source.

The Wald statistic, demonstrated that only 'referral source' made a significant contribution to prediction ($p < 0.005$). Nagelkerke's R^2 of 0.199 on a reduced variable model using only referral source indicated that there are other variables accountable for the majority of the variability in the data.

DISCUSSION

Case managed patients attending A & E are older than the general population at both the provider level and area level; the majority of attendances of case managed patients are of individuals 70 years and older. This is unsurprising given the nature of the case managed population, whereby it targets patients who are at risk of hospitalisation and suffering co-morbidities, especially as older people are more likely to attend A & E. Nationally, a greater proportion of this age group attend A & E and one fifth of A & E attenders are aged 65 or above; in 2013/2014, there were nearly 3.7 million attendances at English A & Es by people aged over 65 (National Audit Office 2013).

With regards to gender, case managed patients attending A & E are more likely to be female. This could possibly be explained by the gender differences seen for life expectancy. Since case management disproportionately provides care for older people, and a greater number of older people are women as they live longer (Office for National Statistics 2014); the greater number of women attending the emergency department may be because there are greater numbers of women being cared for by the case management programme. If electronic data were available on the demographics of all patients in receipt of case management, analysis could have been undertaken to understand whether a greater proportion of women receiving case management attend the emergency department in comparison to men.

Accuracy of data coded presented difficulties when examining the 'ethnicity' and 'presenting condition' variables. Ten per cent of the cases did not record ethnicity in the dataset. Nationally it is well documented that up to 40% of people belonging to minorities could have their ethnicity wrongly recorded in their NHS hospital records (Saunders *et al.* 2013). The NHS has been recording ethnicity since 2000 but audits of the quality of the information have focused on completeness rather than accuracy and it is unclear why some hospital records are inaccurate (Saunders *et al.* 2013). This has potentially profound implications for the analysis of inequalities in care quality or disease prevalence in different ethnic groups.

In examining the 'presenting condition' in the case managed population, more than half the A&E attendances were coded as 'medical-other.' This mirrors Hospital Episode Statistics data that shows over two-thirds of all admissions for England were recorded as 'other' (Health and Social Care Information Centre 2014). The 'presenting condition' variable could not be included in the statistical testing to predict admission, due the high number coded as 'medical other', from which accurate inferences cannot be made about the primary purpose for attending A & E. This would have been an informative predictor for admission and highlights the poor quality of coding in certain domains within the dataset.

The findings of this study indicate that more case managed patients attend A & E during the service operating hours of 8am and 6pm, Monday to Friday than out of hours. The trajectory of attendances across the day when presented graphically, does appear to differ from the general population at the provider and area levels, but statistically speaking, all three populations differed from each other significantly. It would appear that case managed patients are more likely to attend A & E during the night than patients at the provider and area level.

The data indicates that three times more case managed patients attending A & E are subsequently admitted to hospital (A & E conversion rate), than the general A & E population in England (National Audit Office 2013). This correlates with the national picture of over 85 year olds being more than twice as likely to be admitted to hospital as an emergency than younger people (NHS Confederation 2016). The conversion of attendances to admissions could indicate a genuine clinical need for specialist hospital care (falls, breathing difficulties, chest pain) that could not reasonably be delivered in the community. This could further be supported by the high rate of attendances to A & E occurring via emergency services, as the most critical and severe cases tend to arrive by ambulance and have a known higher A & E conversion rate (National Audit Office 2013). However, the social circumstances of the elderly populace, who are more dependent for their holistic care needs (Hamilton *et al.* 2016), may also influence the decision to admit or not if there is inadequate social provision in the community. This phenomenon is well documented in contributing to delayed transfer of care when seeking to discharge patients from hospital (NHS England 2015) and it could be speculated to contribute to the admission rate of case managed patients.

Study Limitations

Owing to the study design, several limitations are present. Firstly, the analysis of secondary data is limited in validity by the quality of the data inputted. The absence of data within certain fields reduces the accuracy of the sample, and reduces the sample size where analysis techniques are unable to compute missing data. Data inputting is prone to human error which can further reduce the accuracy to an unknown extent. Secondly, the application of a single case cross sectional observation study cannot determine causality, only enable description and in some cases identify correlations and relationships. Finally, the coding of variables using categories that 'catch all' make it difficult to truly understand the finer details of patient characteristics and their journey.

CONCLUSION AND RELEVANCE TO CLINICAL PRACTICE

This study has found that within their own population, case managed patients do not proportionally attend A & E more in the out of hours than during service hours, however a greater proportion of case managed patients attend A & E during the hours of 00:00 and 08.59 in comparison to patients at the provider level and area level. A large proportion of attendances of case managed patients occur via the emergency services and a large proportion of these attendances are converted to admissions. Understanding the pattern of attendances and admissions for this highly complex patient group and the possible causes of these patterns could guide better care provision across all sectors and services, which this patient group may access. This level of understanding can only be achieved with accurate and complete data that is accessible for analysis. Data that is also integrated across care services would be beneficial; this study was only possible due to the provision of both acute and community services by a single organisation. This data would not be easily retrievable if a different provider delivered the case management programme.

Summary Statement

What wider global nursing community?

- The study should contribute to the evidence base on the impact that restricted hours primary/community care services have on A & E attendances and hospital admissions.
- The research should be used to inform the design of case management services and out of hours provision for patients with long-term conditions.
- The data issues identified reinforce the need for improved nursing data metrics, accurate NHS information systems and the greater use of objective data to appraise nursing services.

Funding Statement

This project was undertaken in partial fulfilment of a PhD within the Faculty of Health, Education and Life Sciences, Birmingham City University.

Conflict of Interest

The authors declare that they have no competing interests.

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