IDENTIFICATION OF THE INCAPACITATED PATIENT IN MASS CASUALTY EVENTS: AN EXAMINATION OF CHALLENGES, BARRIERS AND SOLUTIONS

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Volume I

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With friendship, family and faith, all things are possible.

List of Abbreviations

A&E	Accident and Emergency
AAIB	Air Accident Investigation Branch
ACE-V	Analysis, Comparison, Evaluation and Validation
ACPO	Association of Chief Police Officers
BBC	British Broadcasting Corporation
CB	Casualty Bureau
CCA	Civil Contingencies Act
CoP	Court of Protection
CPS	Crown Prosecution Service
CQC	Care and Quality Commission
DNA	Deoxyribonucleic acid
DMORT	Disaster Mortuary Operational Response Team
DVI	Disaster Victim Identification
ECtHR	European Court of Human Rights
ED	Emergency Department
EPO	Emergency Planning Officer
EPRR	Emergency Preparedness, Resilience and Response
EU	European Union
EUR	Exercise Unified Response
EWCOP	England and Wales Court of Protection
FLO	Family Liaison Officer
GDPR	General Data Protection Regulation
HART	Hazardous Area Response Teams
HEMS	Helicopter Emergency Medics
HRA	Human Rights Act
HSE	Health and Safety Executive
ICU	Intensive Care Unit
ICMA	Independent Mental Capacity Advocate
ID	Identification
INTERPOL	International Criminal Police Organization
JESIP	Joint Emergency Service Interoperability Programme

LESLP	London Emergency Services Liaison Panel
LFB	London Fire Brigade
MCA	Mental Capacity Act
NARU	National Ambulance Resilience Unit
NICE	National Institute for Health and Care Excellence
NHS	National Health Service
OAPA	Offences Against the Person Act
OPCW	Organisation for the Prohibition of Chemical Weapons
PAHO	Pan American Health Organisation
PPE	Personal Protective Equipment
PSNI	Police Service Northern Ireland
PTSD	Post Traumatic Stress Disorder
RCA	Root Cause Analysis
RCMP	Royal Canadian Mounted Police
RQ	Research Question
SIM	Senior Identification Manager
SIO	Senior Investigating Officer
SPOC	Single Point of Contact
TRiM	Trauma Risk in Management
UK	United Kingdom
USA	United States of America
WHO	World Health Organization

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Abstract

Increasing scrutiny of the role and actions of emergency responders in the aftermath of mass casualty events continues to elicit the need for changes and advances in terms of treatment and care. Despite improvements in some areas, there is a growing concern relating to the identification of incapacitated patients who are unable to provide any identifying details. The use of visual identification and the reliance on personal effects within the vicinity of victims, both living and deceased, has resulted in mistaken identification in a number of major incidents internationally. There is a misguided emphasis on the identification of the deceased over that of the living incapacitated victim.

This research examines the practicalities of using scientific methods for identification of the deceased, such as those used in INTERPOL's Disaster Victim Identification (DVI) process, and questions whether they should be broadened to include those who are incapacitated and unable to confirm their own identity.

The study uses qualitative ethnographic analysis, triangulating observation of two large mass casualty and fatality exercises, interviews with front-line responders and subject-matter experts and corresponding documentation and fieldnotes to critically examine the challenges, barriers and solutions to determining an unconscious patient's identity. In addition, analysis of previous cases of identification errors was carried out using Turner's Incubation Theory as a basis for understanding the causative factors.

This thesis establishes that despite the growing number of these cases, and the successful implementation of DVI techniques with the incapacitated in the aftermath of two recent terrorist attacks, lessons are not being learned. There remains a resistance to organisational learning from a crisis and an unwillingness to change practices that are no longer sufficient or relevant.

Ultimately, the application of DVI on its own to resolve identification issues is insufficient. The empirical evidence established as a result of this study

demonstrates that successful implementation of DVI requires better awareness of these issues, including the latent failures present in the Incubation Period. Perceived barriers, including questions over the legal viability of DVI when used with the living, will need to be overcome. This can be achieved through awareness, planning and training and ultimately steered by effective strategic leadership with a desire to improve the culture of emergency response across an organisation. Failure to adopt this strategy alongside the application of DVI will result in harms, not only to victims and their families as a result of identification errors, but importantly to the responders themselves. If organisations fail in their duty to plan for and respond to mass casualty incidents involving unidentified and unknown incapacitated patients, the responders themselves will become victims of psychosocial stress and harm.

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CHAPTER ONE

Background and Introduction

1.1 Background and Rationale

The necessity for rapid reunification and reconciliation of those affected by a disaster with their families has been an essential component of emergency planning for many years (Black et al, 2010; Black et al, 2011; International Committee of the Red Cross (ICRC) 2010; Richardson et al, 2017). Correct identification of the deceased to enable their remains to be reunited with the right relatives has been at the forefront of forensic and emergency response in the wake of disasters (Black et al., 2011; Black and Hackman, 2013; College of Policing, 2018a, Ellis, 2019). Narratives of mistakes in identifying the deceased are routinely included in training events and procedurally managed through a series of international INTERPOL guidance documents (INTERPOL, 2018a). However, there is growing concern regarding identification errors associated with living incapacitated victims (Black and Bikker, 2016; Quatrehomme, 2018). As Black and Bikker (2016, 2) attest, “misidentification…is not a single event, it exhibits multiplicity”. Simply, where one error exists with the identification of an individual, there will inevitably be a mistake in the identification of another person or body. This research scrutinises the immediate aftermath of disasters to understand the issues associated with unidentified critically ill patients and whether the Disaster Victim Identification (DVI) procedure can and should be used as an alternative to the current practice of using visual identification techniques such as photographs.

DVI is an internationally recognised and agreed process used by specially trained staff to accurately determine the identities of the deceased. According to INTERPOL the process of DVI establishes that:

> The primary and most reliable means of identification are fingerprint analysis, comparative dental analysis and DNA analysis. Secondary means of identification include personal description, medical findings as well as evidence found on the body. These means of identification serve to support identification by other means and are not sufficient as sole means of identification (INTERPOL, 2018b, 39).

At present the identification of a living unknown patient relies on an accepted yet inaccurate use of visual identification. This may be in the form of confirmation by a family member viewing the critically injured patient or hospital staff using a photograph which bears a resemblance to the patient. Unfortunately, this technique can result in the families being alongside the wrong patient and in some cases, families being misinformed of their loved one's death. Recent examples such as the misidentification of two young team players in the Humboldt Broncos incident in Canada and of Justine Moulin in the Paris terrorist attacks in 2016 offer instances of impact and consequences of identification errors. Both these situations occurred due to a reliance on an unscientific and outdated practice of visual identification. Ascertaining exact numbers of incapacitated and unknown patients is immensely difficult. A lack of awareness of the impact of misidentification and/or un-identification exists, which means that there are no known formal records of these individuals and their circumstances. However, given the numbers of media reported cases (approximately two reported per year), the impact to those affected is significant enough to warrant scrutiny into how and why such failings could and do occur. As the number of mass casualty and fatality events continues to increase, so too will the errors and consequences of misidentification of the survivors.

This study uses a qualitative quasi-ethnographic approach of observations of emergency responders in the wake of mass casualty and fatality incidents. The findings are triangulated using interviews and document analysis alongside contextual examples to understand how identification errors occur. The study seeks to understand the implications of such errors, specifically the psychosocial repercussions to all those affected, including responders. This research demonstrates that fundamental issues remain in organisational learning across the

mass casualty and fatality response effort (Easthope, 2007; Coles, 2014, Norton and Gibson, 2019), specifically concerning the identification of critically injured unidentified persons. Barriers to implementing a solution are being justified by a misunderstanding of the applicable laws and an inability and unwillingness to adopt positive examples of best practice. Although there are recent international examples of implementation of DVI to successfully identify a number of living individuals, these remain isolated cases. The mindset that DVI can only be effectively and legally used for deceased victims is incorrect and needs to be dispelled. There is a requirement to rethink how incapacitated individuals can also be identified. Families desperately searching for information regarding their loved ones require authorities to have clear protocols for accurately identifying the deceased and those who remain unidentified in hospitals. As the INTERPOL Guidance clearly states:

> As far as INTERPOL is concerned, one of the most important requirements for victim identification is the application of international standards, which aims to promote a consistent and widely understood approach, especially in multinational DVI operations (INTERPOL, 2018a, 6).

Furthermore, there is a need for responders to be trained and exercised effectively in the appropriate techniques and processes for identifying *all* victims of a disaster, both the living and deceased (Pan American Health Organisation, 2016). Ultimately, the justice afforded to the deceased, in terms of determining their identities using DVI scientific techniques, should be extended to those incapacitated and unknown in hospital. As mass casualty and fatality events are likely to continue (Goh, 2017; LaFree, 2019), there exists an increasing need for an organisational culture shift across the multi-agency arena (Wankhade et al., 2018), and a requirement for this to be duly considered amongst academics and practitioners.

The present study originated with a brief internet investigation which suggested the use of visual identification as the principal identification tool. Therefore, in early 2014, at an Emergency Planning Society Conference, a poster raising the issue of the use of DVI to identify the living. The presenters were the Author and Professor

Lucy Easthope, a subject-matter expert in the field of disaster recovery, specialising in the return of personal effects, the human aspects of mass fatality events and the effectiveness of emergency response legislation. A UK DVI trained policeman queried whether samples could be taken for the purpose of identification from an incapacitated individual. It was argued by the same DVI team member that it would be illegal under the Offences Against the Persons Act 1861 to obtain a sample without consent and doing so would amount to battery (the term ‘assault’ was used, yet this was part of the misunderstanding and misconception that the DVI process is only compatible with the deceased). This fundamental issue instigated further research into this phenomenon and demonstrated a need to thoroughly investigate whether questions over the legality of the process was preventing implementation of DVI in hospital environments or whether there was a more latent and subversive barrier to its use.

There is also a more personal reason for this research and one that only came to light as a result of discussing the contextual examples with family members. In 1993, the Author’s cousin was critically injured in a car accident. He had no identification on him at the time and both he and his friend were incapacitated and rushed to hospital. After failing to turn up to work on Monday, his work colleagues finally contacted his mother to question his whereabouts. When she was notified that a person matching his description was critically injured in hospital, she was informed that he was, by that time, brain dead. She was asked to attend the hospital to make the decision to turn off life support.

If he would have survived had his mother been notified earlier, or if the hospital decided to keep him alive so that family could say goodbye, is almost irrelevant. It is the knowledge that in our society, with ever advancing technology and a greater awareness of the ethical requirements of patient care, we should always aim for improvements to ensure relatives are notified as soon as possible. More importantly, every available resource should be used, and specifically in light of the potential for visual identification errors, these should be scientifically accurate to ensure better treatment and care of patients.

1.2 Research Question and Objectives

Can the challenges presented by the identification of incapacitated patients in mass casualty and fatality events be resolved by using the scientifically accurate and internationally recognised protocols of DVI? (RQ).

In order to answer the RQ the following objectives were established.

- RO1 Examine how and why identification errors occur.
- RO2 Determine the psychosocial implications of identification errors.
- RO3 Examine the barriers from the responder's perspective in accurately determining identity of an incapacitated unknown patient, specifically the medico-legal challenges relating to DVI .
- RO4 Scrutinise how the lessons relating to patient identification errors and the use of DVI have been instigated by UK responders.

All are interconnected through the idea that the disaster scenario is a challenging and complex arena, with many limitations and barriers making lessons hard to identify and change difficult to achieve (Coles, 2014). Furthermore, all questions are individually interesting and worthwhile subjects in their own right.

To understand the problems presented by unidentified critically ill patients in emergency situations and whether these can be resolved using DVI (RQ), four further objectives were proposed. The first research objective (RO1) looks at how and why the issues of mistaken identification can occur. Using Turner's (1976) Incubation Theory as a contextual reference point, this study seeks to determine the causative factors as to why errors are made, how individuals are mistakenly identified and uses retrospective analysis of examples of identification errors alongside observation and interviews.

The second research objective (RO2) considers the implications of these errors. A significant concern was that potential psychosocial harm could occur as a result of

the errors in mistaking an individual's identity. Both RO1 and RO2 need to be answered to understand why current identification methods are unsatisfactory and the problems that would need to be overcome by using DVI to identify incapacitated patients.

DVI is an already established protocol to determine the identities of the deceased and is used by UK police forces nationwide in the aftermath of a mass fatality event. Yet, specific concerns were raised by DVI experts and some junior clinicians regarding the use of DVI techniques on the living without consent and the fear that doing so would be considered assault and invade the patient's privacy. Therefore, the third objective (RO3) examines whether these concerns are justified and looks at what may be preventing or limiting the ability of responders to determine a living individual's identity using DVI.

The fourth objective (RO4) seeks to ascertain why responders are not adopting best practice from other similar organisations. International media reports of visual identification errors occur on a relatively frequent basis and the DVI community are well versed in the perils of mistakenly identifying the deceased (Black and Bikker, 2016; INTERPOL, 2018; Forrest, 2019). However, no effort has been made to amend current practice and broaden the application of a scientifically successful method to the living patient. To examine why this might be the case a theoretical understanding of organisational learning is applied to the findings derived from observation, interviews and documentation gathered from exercises conducted in a hospital and a mass casualty and fatality setting.

The objectives (RO3 and RO4) help to understand whether DVI *can* be used to identify individuals and highlight where barriers to its implementation and use might be and therefore offers some solutions to the challenges identified in RO1 and RO2.

This study also gathered examples of incapacitated and unknown victims and any associated identification errors. The list of reported cases is provided in Appendix I. Appendix II contains a selection of these examples detailing the accounts of these incidents drawn from interviews and secondary data, including

autobiographical accounts, media reports and televised interviews. The contextual examples (CE) are continually referred to throughout this thesis (in a similar manner to case studies) in order to situate the reality of the problem and provide a depth of understanding (Yin, 2018) as to how the issue occurs and the consequences of actions taken.

1.3 Chapter Synopsis

To critically examine the challenges, solutions and barriers to determining an unconscious patient's identity this thesis is divided into twelve chapters, of which this introduction is the first.

Chapter Two introduces the methodological approach taken to answer the research question and objectives outlined in Section 1.3 above. It explains the reason for the qualitative methodology and how the quasi-ethnographic approach triangulates observation, interviews and responder documentation to determine the answers to the research question and objectives. In order to understand the patient and deceased pathway and to observe how responders react in a complex and challenging mass casualty and fatality scenario, two major incident exercises were observed in 2016 and 2017. Alongside this fieldwork, semi-structured interviews with 29 subject-matter experts, including international DVI experts, Casualty Bureau (CB) staff, forensic teams and front-line medical staff, amongst others, were conducted during 2015–2017 to garner their views on why actions were taken and their understanding of the issues regarding the identification of patients. A 'purposive' sampling strategy (Denzin and Lincoln, 2011) was used to consult those with a specific understanding of mass casualty and fatality incidents and identification of the deceased. Informed consent was gained from all participants and ethics approval was sought and gained from local NHS Research Committees and the University of Lincoln School of Life Sciences Research Ethics Committee. In addition, responder documentation was critically examined to understand whether the actions and comments observed and heard corresponded

to legal doctrine and whether there were areas that needed addressing or refinement. The frameworks determined through the review of the literature (Chapters Four, Five and Six) related to the objectives and informed the analysis of the empirical evidence derived from the qualitative fieldwork, interviews and document analysis. Alongside this, Contextual Examples (CE) of misidentification were used to provide examples of such events. The topic studied is undoubtedly a sensitive one and there were clear ethical limitations to this study. Therefore, a careful approach was taken using advice and guidance from the principal supervisors Easthope and Langlois and a decision was made to not interview primary victims and their families. However, the CE take into account more personal perspectives gathered from a multitude of sources and testimonial accounts in autobiographies and interviews with the media.

Chapter Three establishes the key principles within emergency response as outlined by the Civil Contingencies Act 2004 and the key requirements of emergency responders. It outlines the patient pathway and how UK emergency responders deal with those affected by a mass casualty and fatality incident, from the scene, known as the ‘hot zone’, through to their treatment and care in hospital. It also looks at the care of the deceased and how they are identified using DVI. It includes a brief explanation of each of the DVI processes. Finally, it considers the crucial element of family reconciliation and how relatives are reunited with their missing and deceased. Despite the emphasis being on UK responders, as with all isomorphic (corresponding or similar in form or relations (Lexico, 2020) learning, the findings and evidence presented here are equally applicable to similarly focused organisations both nationally and internationally.

Chapter Four considers the theoretical foundations of incident causation to meet RO1. Turner’s Incubation Period Theory (1976) is used as a framework by which to examine the causative factors which may contribute to an individual being unidentified or mistakenly identified. Alongside Turner’s seminal research on incident causation, the key theories of academics and experts commonly associated with high risk industry accidents are also studied (Reason, 1990; Toft and Reynolds, 2005; Perrow, 1999, 2016; Vaughn, 2016). This branch of academia is a useful comparative field of analysis, as the lessons, and more

importantly, associated learnings from high risk industries are long established and considered a ‘corner-stone’ of safety and improvements (Woloshynowych et al., 2005; The Health Foundation, 2013; Deboard, 2015, Cox et al., 2018). The focus for this research is on mass casualty and fatality incidents where the numbers of critically injured patients are likely to be higher and the complexities of the scene and overall responses arguably larger and more difficult to manage. However, this study and its findings are transferable to smaller incidents of misidentification where, as will be shown in the interviews and the CE, these mistakes can occur in very much the same way, if visual identification is relied on. Importantly, the same causative incubating factors are equally likely to be present.

Chapter Five reviews the literature underpinning the consequences of failing to identify individuals correctly. In addition to the significant risk to life as a result of misidentification in relation to medical treatment (a lack of medical records could cause inadvertent allergies amongst other adverse outcomes), another fundamental concern is the potential psychosocial harm suffered. Media reports and interviews have highlighted the distressing accounts of relatives who have been in the unfortunate position of learning that the family member they thought had survived was not the person in the hospital bed, but was in fact deceased (Van Ryn et al., 2008; Brown, 2013; L’Express, 2016). Therefore, this review focuses on psychosocial harms – what is meant by psychosocial harm (National Health Service (NHS), 2018), how it occurs and what underlying values are associated with this outcome. A review of the three principal categories of those affected is carried out, looking at the impact to survivors, relatives and responders. Using the UK Health and Safety Executive’s (HSE) (Bond et al, 2006) analysis of stress in the workplace, the six key underlying causes of stress in the workplace are used as thematic waypoints to guide the analysis of the empirical evidence relating to responder stress and emotional impact obtained in the qualitative research. These causes of stress were mirrored in the recent study carried out by Mind.org.uk (2015 - 2019) in the UK of front-line responders demonstrating the importance in acknowledging their impact and the importance of mental-health awareness (Mind, 2019).

Chapter Six appraises the literature of organisational learning to understand the theory underpinning RO4 and considers the elements that encourage or detract from the need to identify and learn from past events. This chapter looks at what factors may help or hinder organisational learning, such as active and passive learning (Mitchel et al., 2009) and the various ways in which organisations can learn from each other and past events. It establishes that organisations should be learning from the lessons identified in public inquiries and governmental reports in the wake of mass fatality and casualty situations, but in practice little change takes place (Clarke, 1999; Coles, 2014, Macrae, 2016).The literature in this chapter also helps to explain RO3 and examines the barriers to adopting best practice from past events in similar organisations.

The findings are subdivided into separate chapters, exploring objectives RO1 to RO4. Chapter Seven presents the first of these (RO1), looking at the causation of identification failures and provides evidence triangulated from the observations, interviews and document analysis. The results suggest that human error through the making of assumptions regarding personal effects, the complexity of the scene and the challenging circumstances of inter-agency working, accumulate to act as interlinked causative factors. Individually, these can lead to mistakes in determining a patient's identity and even more concerning is that, amalgamated, they can have serious consequences for the patients, their families and the responders themselves. The empirical data confirms that an alternative approach to visual identification is needed and that the already established DVI protocols *should* be broadened to include the identification of the incapacitated patient.

Chapter Eight details the findings concerning the psychosocial harms that occur as a consequence of identification errors (RO2). As noted in Chapter Five, research into the harms suffered by the responders has not received as much attention. This chapter adds to the growing body of literature regarding responder harms and presents the evidence collected from the fieldwork and interviews. Of significance is the finding that there is a gap in the literature with regards to harms to responders as a result of identification errors. Crucially, this chapter supports the argument that DVI *should* be considered as an alternative to using visual identification to determine the identity of an unknown patient.

As mentioned previously, a core argument preventing the use of DVI techniques on living critically injured patients concerned the interpretation of the applicable laws relating to patient consent and privacy. As this is a fundamental barrier to accurately determining an individual's identity, under RO3, it is necessary to understand the legal responsibility responders may have in this respect. Most concerns revolve around criminal liability or liability under medical negligence law, and so this study will be limited to these key areas. Interviews with subject-matter experts in the field of DVI, policing, law and healthcare were conducted to gain an understanding of how the law is interpreted and applied in its current form. Chapter Nine presents the evidence that there is a misunderstanding of the law which results in confusion between legal doctrine, policy and practice. In addition to a misunderstanding of the legal position there are other reasons why DVI has not been used more widely to determine the identity of the living, especially when examples of successful application exist.

RO4 raised the question of how lessons are identified and rectified in the wake of an identification error. Chapter Ten presents the evidence of how DVI organisations and UK emergency responders work to identify lessons, learn from events and set about trying to improve practice, or not, as the case may be. In a similar manner to that predicted by the Incubation Period Theory, there are numerous interlinking causative factors as to why lessons are either not identified, or more importantly when they are, why they are not learned. This chapter looks at the data accumulated from both the fieldwork and interviews (as well as the CE of identification errors) and presents the argument that, again, little positive change is occurring to prevent future identification issues. Without legal or professional enforcement, organisations have little impetus to change.

Chapter Eleven draws together on the evidence associated with each of the objectives outlined above to discuss the solutions, challenges and barriers to identifying critically injured unknown patients and whether these can be resolved using DVI. The chapter proposes four key areas which responder organisations should consider if misidentification errors and the subsequent consequences are to be avoided. The first looks at raising the awareness of identification errors and the latent issues exhibited in the incubation period. The second makes

recommendation for plans and policies, either because they don't exist, or they do exist but are violated or finally, where they have an inadequate or inaccurate plan. The third solution outlines the requirement for training and exercising the proposed or modified plans and argues that organisations need to continually reflect on lessons identified through, not only real incidents, the exercising and testing regime. Lastly, senior management need to drive the process of change and provide robust leadership for each of the recommendations above. It is suggested that without implementing these solutions identification errors and the consequences, including psychosocial harm to responding staff, will continue to occur.

Chapter Twelve concludes the thesis and presents the main arguments and justifications for the adoption of DVI to determine the unidentified incapacitated individual in mass casualty and fatality incidents. The significance of this research and its contribution to academia, particularly in the fields of psychosocial harm, organisational learning and causes of error in front-line emergency response, is discussed. Furthermore, the impact of this research in the UK to date is presented, including the changes taking place as a direct result of the work done with multiagency partners since the inception of this thesis. Areas for further consideration and research are also presented and the potential for future exploration is discussed, particularly given the changes that are occurring in the field of patient identification and reconciliation. Finally, this chapter reflects on the research journey as a whole and offers some thoughts to fellow PhD candidates, academics and emergency responders entering the academic research domain in this field.

1.4 Scope and Limitations

In light of these specific research objectives, it is important to state what this thesis will not do. First, it will not attempt to provide detailed explanations of the individual DVI processes. A brief outline is provided in Chapter Three. However, the

successes or failures of the individual scientific attributes will not be considered in this study. This has been achieved to great effect elsewhere (Black, et al., 2010; Black et al., 2011; Bikker, 2013; Adams et al., 2014; Taylor and Kieser, 2015).

Second, whilst Chapter Nine outlines the requirements and underpinning legal arguments as to why identification investigations might be necessary and how these could be achieved, it is not the purpose of this thesis to critically deconstruct the law or offer avenues of reform for the law itself. A brief introduction is important for contextualisation; however, a pragmatic decision was made to not venture into legal detail as this would detract from the main focus of the thesis.

Third, the fieldwork and interviews included perspectives from international experts in France, Belgium, Canada and Australia. Where interviews were conducted with international representatives from non-English speaking countries, the documentation was translated by the individuals themselves and the interviews conducted in English. The findings presented here are primarily for use with UK responders, however, the lessons identified do have applicability on a wider international scale.

Fourth, owing to ethical considerations, this research did not conduct any interviews with survivors or relatives. Accounts and narratives were gathered from secondary data easily accessible via the internet. This is discussed in more detail in Chapter Two.

Fifth, the Manchester Bombings highlighted the emotional turmoil of clinicians in the care and treatment of adults and minors who were unidentified. However, this research does not include minors and young adults in its scope due to constraints on time and ethics. However, the issue was raised by the Author to the Care and Quality Commission (CQC) regarding the care and treatment of minors without appropriate consent in the wake of the Manchester Arena Bombings.

Sixth, as this research attests, incidences of unidentified and incapacitated patients are not formally reported. As a result, the exact number of cases in the UK and internationally is unknown. Nevertheless, this research demonstrates that the consequences of misidentification are serious enough to warrant investigation and resolution.

Finally, the findings of this thesis seek to avoid apportioning blame. The evidence presented here represents challenges to the industry and depicts the difficulty in embedding new practice into resource stretched and pressurised emergency response organisations (House of Commons, 2018; Wankhade et al., 2018).

1.5 Potential Benefits for Practice, Education and Management

This research provides a significant contribution to knowledge through its in-depth analysis of the potential barriers to and limitations of the use of DVI with living patients. It is acknowledged that DVI regarding the deceased is well researched and tested, yet its expansion to include the living is in its infancy. The findings presented in this thesis and the accumulation of contextual examples builds on this knowledge and highlights the issues underlying the failure to correctly identify individuals.

The analysis of the legal position of DVI concerning the living patient is an essential benefit of this research and provides the legal remit to engage in the use of DVI in a hospital setting with immediate effect. More importantly, the study highlights a gap in the understanding of the legal remit and responsibility of the role of the police concerning the reconciliation of families in a hospital setting. This is an essential factor to be considered in the management of patient care and treatment.

This research also contributes to the wider field of organisational learning in the emergency response domain. The analysis draws on best practice from across the health and police organisations, including the wider emergency responder community both nationally and internationally. The findings have the potential to influence policing, forensics and medical responders in the care and treatment of victims and their families in the wake of a disaster. The application of the lessons identified and highlighted in this thesis are readily adaptable to UK and international responder organisations.

As will be discussed in Chapter Two, Disaster Research is in itself a challenging field. The timing, access (including ethical considerations) and ability to draw valid conclusions whilst operating in a hot zone are recognised as unique circumstances which need to be overcome by the researcher. This study adds to the literature on Qualitative Disaster Research by reflecting on the complexities, challenges and benefits of undertaking research in post-disaster conditions and incident exercise environments.

1.6 Positioning the Researcher in the Research

According to Pitard (2017), it is vital that the researcher discloses their position in relation to the data to present the evidence as it relates to their personal experiences and philosophical standpoint. Furthermore, the researcher's background, experiences and influences help inform the research process (Silverman, 2005; Heath, 2018). The following section contextualises how the data have been gathered and interpreted and provides an insight into how the Author's personal reflexivity has influenced and guided the study.

The Author's first degree was in Mechanical Engineering before entering the Royal Navy as an Aeronautical Engineering Officer in 1999. This field of study was initially chosen due to a passion for logical and practical problem solving. The role required managing people in often difficult and complex situations and environments. This experience provided a unique perspective to operating under both organisational and political pressure to achieve results and helped guide the literature review in relation to incident causation and organisational learning. As a female officer the Author was often selected to act as Equal Opportunities Officer, and this led to the introduction to the field of Trauma Risk in Management (TRiM) in the Armed Forces. TRiM, in this setting, was used to assess and monitor fellow aircrew and engineers following aircraft incidents and accidents. Psychosocial support (from the perspective of a serving forces member) was provided in an attempt to prevent Post Traumatic Stress Disorder or, worse, suicide. These

experiences have helped to inform the research process in relation to psychosocial harms.

In 2005, the Author left the forces to undertake a Master's degree in emergency planning and disaster management. The Author's thesis looked at Safety Culture in the Aviation and Aeronautical Industries and how incidents and accidents occur, and the processes high-risk industries undertook to address safety issues. On completion of the Master's, the Author worked for a London Local Authority. This role required multi-agency incident response. In addition to planning for London specific incidents, work was carried out on national plans for mass casualties, mass fatalities and pandemic influenza. It was during this time that the Author gained an appreciation of multi-agency working, the complexity of plan development through to inception in front-line command setting and an intricate understanding of exercising and training. This experience was then utilised in the role of Resilience Manager for Addenbrookes Hospital in Cambridge, UK. This required both planning and preparing the hospital, one of the UK's seventeen Major Trauma Centres, for major incidents, but also training and exercising both management and clinical staff across all levels of seniority. This unique experience gave a better insight into front-line responder experiences, a thorough understanding of the background to mass casualty and fatality responses and further appreciation of organisational learning.

It was whilst working at Addenbrookes that the question regarding the management of unidentified patients first emerged. The solution proposed at the time, and that still remains, is to assign the individual with a unique reference number and use visual identification techniques to confirm the identity of the pateint. Whilst this ensured that clinical errors were reduced in terms of blood transfusion, patient tracking and so on, this did not assist in determining the actual identity of the patient. This remained a 'gap' in the care and treatment of these patients. As mentioned above, it was only after developing the research proposal for this field of study that the Author learned of the situation concerning her cousin.

Having worked in the field of emergency planning and response meant that the Author was able to apply both understanding and knowledge to ensure that her

actions as a researcher were not based on assumptions or what may be deemed an outsider's perspective (Pitard, 2017). Although experience in this field may constitute a bias towards the emergency services and front-line clinicians, the perspectives as a mother, wife and responder offer a more compassionate and understanding viewpoint. The Author's positionality has naturally shaped how the data have been gathered, studied and interpreted (Oxford Reference, 2017; Jafar, 2018) and what is presented is a balanced and grounded perspective looking at the issues in a pragmatic and realistic manner underpinned by thorough research across the themes covered.

CHAPTER TWO

Methodology

2.1 Introduction

Before the literature reviews are presented, this chapter outlines the methodological approach taken to the research in the form of a qualitative strategy based on ethnographic principles. The methodology chapter is at the forefront of this thesis to emphasise the qualitative nature of this research and the fundamental importance of the empirical data in determining whether DVI can and should be used to identify critically injured unknown patients. Furthermore, the methodological process taken contributes to the study of post disaster and disaster exercise scenarios and thereby adding to the Qualitative Disaster Research literature.

The approach was exploratory in nature and sought to ask questions to determine what was happening and how individuals could be misidentified. Scoping literature reviews were initially conducted on the theme of Incubation Period and error causation, however as the research within the field progressed additional objectives were deduced necessitating further literature reviews in the areas of psychosocial harm and organisational learning. The benefits of this approach to the present study are explained, and the potential pitfalls and limitations addressed. This is followed by ethical considerations regarding how data were sourced. Next, a detailed outline of the interview methods, the observation of two mass casualty and fatality incidents exercises and the document analysis alongside the gathering of contextual examples of this phenomenon are presented. Finally, the research process itself is reflected upon.

2.2 Developing the Research Questions

A review of secondary data, consisting of media reports and biographies, guided the development of the initial contextual examples (CE), looking at instances where identification errors took place. This focused the literature review, covered in Chapter Four, to understand the theoretical underpinnings of incident causation. As the fieldwork progressed, initial findings relating to psychosocial harms and the legal implications of identification emerged, leading to further research objectives being added. Finally, the evidence showing that lessons identified were not being learned in the field of DVI (specifically in respect of living unidentified casualties) led to the development of a research objective around organisational learning.

The research question and objectives outlined in Section 1.3 were based on theoretical concepts extracted from the literature reviews and observation in the field alongside information obtained from the CE of this phenomenon.

2.3 Research Strategy

The methodology chosen provided the best approach to answering the research question in a reasonable time frame and ensured that the data retrieved were credible, transferable, dependable and could be confirmed (Yilmaz, 2013; Fusch and Ness, 2015; Marshall and Rossman, 2016 Korstjens and Moser, 2018). According to Imenda (2014), the research strategy adopted must carefully reflect on the findings within the literature to ensure that it considers the essential theories to advance the literature. Similarly, as Grewal et al. (2016) assert, a good literature review provides the essential basis on which to develop the methodological strategy, with an aim to answer the research question. All three literature reviews covered in Chapters Four, Five and Six were conducted following Cooper's Synthesis (1998) with the strategy for each outlined in Appendix III for information.

Another desired outcome would be for responders to learn from the CE and findings herein and therefore implement change to prevent future identification errors. This latter outcome in particular guided the research strategy to ensure it had applicability and credibility across both the academic and professional domains. The qualitative ethnographic approach was chosen as a result of the initial findings from the CE analysis and the literature reviews relating to Incubation Periods and psychosocial harms. Therefore, the strategy chosen focused on a qualitative investigative approach combining ethnographic methods of observation and interviews to understand the perspectives and culture within emergency response. Fusch and Ness (2015) highlight the importance of triangulation to ensure reliability and validity of data.

2.3.1 Qualitative Approach

According to Silverman (2013) the overarching aim of qualitative research is to clarify ambiguity. To do so, qualitative methodologies explore situations and use techniques such as interviews and observations which try to make sense of unclear situations or phenomena. As will be demonstrated in the literature review in Chapter Four, the study of disasters or incidents and their causes, effects and outcomes have been examined and debated by anthropologists, historians, sociologists and scientists alike (Turner, 1976, Quarantelli, 1987; Toft and Reynolds, 2005; Vaughn, 2006; 2016). Studying the outcomes of disasters using a qualitative approach has been termed Qualitative Disaster Research, which is differentiated from other qualitative research by its context. Stallings (2007) maintains that three key factors are necessary to differentiate disaster research from ‘everyday’ research: first, timing or specifically when the process of observing or collecting data can begin within the disaster setting; second, access: to the responders / victims, the associated data and relevant material pertinent to the disaster; and lastly, as similarly reflected by Killian (2002, 54), “the ability to draw ‘valid conclusions’ from disaster studies”. Following her studies looking at psychosocial implications and emergency responders, Moran (1998, 39) asserts, “Research in emergency contexts is not as controllable as that in stress laboratories”. Therefore, although this research was not conducted in the immediate aftermath of a disaster, the access to a four-day live exercise provided

a realistic alternative given the ethical constraints and limitations, as outlined below in Section 2.5.

2.3.2 A Quasi-Ethnographic Approach

Ethnographic research delves deeper into qualitative research to study a specific culture and the everyday behaviour of the individuals within that culture. Ethnographic research also incorporates a balance of participant (in this case, the responders) and observer interaction to understand the culture from a participant's perspective. Furthermore, the feelings, beliefs and meanings of relationships between participants are studied as they interact within their culture or as they react to a certain phenomenon (Fusch et al., 2018). Amalgamating past experience alongside participant involvement in the field exercises, this inclusion of a quasi or mini-ethnographic technique was essential in understanding how emergency responder organisations behave and furthering the research in the context of incident causation and organisational learning in the aftermath of a mass casualty and fatality incident. As Rosen (1991) verifies, this is especially important when trying to comprehend behaviour across different organisations and countries where similar phenomena are occurring. To fully address the impact of identification errors it was necessary to adopt an ethnographic approach which would analyse and consider the feelings, beliefs and meanings of relationships between individuals as they interacted and reacted in response to the phenomenon. For example, observing first responders in the hot zone as they interacted with the casualties demonstrated how errors associated with personal effects could occur. Similarly, observing the handover of details from responder to responder provided evidence of how a name could be misinterpreted or misspelled triggering the initial error in identification. As discussed in s.1.6, considering personal biases, ideologies and values, qualitative elements where triangulated to ensure the interpretation of those actions was from the perspective of the responder and not subjectively influenced by personal previous experience in these settings (Silverman, 2013). The combination of interviews, document analysis alongside the ethnographic fieldwork provided a deeper understanding of the phenomenon. Therefore, although this research was not an ethnographic

process in the traditional sense, it did follow an ethnographic approach despite the relatively contracted timeframe (Jeffrey and Troman, 2002; Fusch et al., 2017).

2.3.2.1 Using interviews in qualitative research, specifically ethnography, is an essential requirement to gather answers to questions and to further understand why actions are taken or how documentation is interpreted (Silverman, 2013). Interviews are a direct mechanism for determining answers to the originating research questions and are, essentially "…a conversation that has a structure and a purpose" (Brinkmann and Kvale, 2018, 9). The findings from the literature reviews necessitated the use of interviews to further develop the theory of responder harms and to gain greater insight than that established through the literature on this topic. This in turn allowed this research to add to the body of literature within this field. For example, the inclusion of interviews was essential to provide direct evidence of responder feelings and beliefs concerning patient identification and how they felt about specific actions taken or not taken in the circumstances (see s.9.3 and 9.4). It was also a necessary tool to gather evidence regarding historical incidents that could not be observed by the Author, in this case the responses to the Paris, Brussels and Nice attacks. Furthermore, it was essential to understand, directly from those who responded, why certain actions were taken. The responses given also invariably led to further questions and the information and the subsequent answers provided enabled further theoretical sampling (Corbin and Strauss, 2015). Semi-structured interviews and conversational interviews (see s.2.6) were both used in this study. Semi-structured interviews were necessary in the context of this research because they offered flexibility around the original research question and thus allowed the participant to elaborate, as necessary, on their responses (Merriam, 2015).

2.3.2.2 Observations enabled first-hand accounts of the phenomenon being studied. As noted, gaining access to real incidents was not possible and therefore observing MI exercises gave the next best opportunity to study the treatment and care of patients who were unknown. To confirm and corroborate the evidence from the primary literature review regarding the complexity of the Incubation Period

(Chapter Four) and how and why mistakes could happen (RO1), it was essential to observe this unique point in a mass casualty and fatality incident. Furthermore, as Holloway et al. (2010) emphasise, observations enable researchers to become immersed in the culture being studied. This aspect was necessary to understand the perspective of the responder in these situations and assisted in gathering evidence of how identification errors could occur (RO1) and the psychosocial implications of such mistakes (RO2).

2.3.2.3 The use of document analysis alongside other forms of qualitative research is crucial to elicit meaning, develop understanding and accumulate first-hand knowledge that has been recorded without the researcher's involvement or intervention (Bowen, 2009; Corbin and Strauss, 2015). Furthermore, document analysis alongside interview and fieldwork forms an important part of triangulation to seek convergence and corroboration of results to ensure credibility and validity. Alongside data collected in the field, the documentation gathered as part of the literature review was also considered as part of the analysis process. As Bowen (2009) suggests, these documents are also evidence that yield data as a basis for analysis. Similarly, Merriam insists:

> Documents of all types can help the researcher uncover meaning, develop understanding, and discover insights relevant to the research problem (2015, 189).

In terms of this research, it was necessary to analyse responder documents to substantiate statements made in interviews and actions observed, for example, to ascertain whether a policy or practice existed regarding patient identification and what practices existed to assist the reconciliation process. Furthermore, documents produced for seminars or exercise conferences could demonstrate whether actions were being taken or discussed to address lessons. These types of data can add to the literature in terms of highlighting where improvements are being made or whether gaps remain in the theoretical concepts found within the literature review.

2.3.2.4 Contextual Examples were important in this research as they demonstrated the reality of error causation and the consequences of such failures. Analysis of the underlying causative factors in these unique situations helped to isolate potential operational links between events over time (Baxter and Jack, 2008; Diaz Andrade, 2009; Thomas, 2016; Yin, 2018). Unlike Langrish's (1993) approach, the CE in this research were not used to look at the different classes of phenomenon, or variables between examples. Instead, similar to Yin's (1994) case study methodology, examples were studied to highlight the issues and identify where improvements could be made. However, the CE were not able to offer primary evidence as an insight into the personal beliefs and perspectives of the responders, which is why interviews and other methods were employed. It is highly plausible that future cases will occur or that historic cases, not previously published in the public domain, will emerge. Therefore, any further examples should be examined for further insight into this area of emergency response.

An important factor to note is that some of these CE do not involve mass casualties and fatalities; misidentification errors are happening within day to day incidents such as road traffic collisions. However, as will be made clear through the subsequent chapters, it seems likely that the larger the scale of the mass casualty or fatality incident, the higher the probability of errors occurring. By analysing examples of reported identification errors, the findings presented here can be related to everyday incidents as well as mass casualty and fatality incidents. This research project accumulated as many cases of misidentification as was feasible to enable reflection on the findings from the interviews, observation and documents. By assessing the evidence gathered from all these different methods, a number of themes can be discerned, and these can help in establishing reliability and validity when these converge to the same results. The results of these findings are discussed in Chapter Eleven.

2.4 Consideration of Alternative Methods

Other methodologies were considered in the initial stages of research which were subsequently considered inappropriate and therefore disregarded. The direction taken was not necessarily a preconceived ideal approach, more a result of the opportunities afforded, specifically the opportunity to observe Exercise Unified Response (EUR) (discussed in more detail in Section 2.6.2.1) and thereafter interview relevant personnel and accumulate artefacts.

It was essential to use a qualitative approach as opposed to quantitative as there was a need to determine the underlying causes and effects of these occurrences. Whilst further research to analyse statistical prevalence of identification errors would be welcome, there is enough evidence demonstrated through real life experiences, as shown in the CE, to provide a basis to study the phenomenon. Although a mixed methods approach would have given some useful insights into the prevalence of these events, access to these data would have required a significant number of Freedom of Information requests and time was a limiting factor.

In terms of qualitative research, grounded theory was discarded relatively early owing to preconceived views and ideas about what might be found (Silverman, 2013). Although the methods used in grounded theory are the same as those used in this research, there was a reiterative process, incorporating a cyclical inductive, deductive, inductive approach which naturally ruled out the grounded theory core values. Similarly, phenomenological analysis was rejected as it requires more in-depth and protractive analysis of observations and interviews including interviews with victims to gain the phonological understanding of identification errors (Smith et al., 2009). As s.2.5 will explain, interviews with victims would need to be undertaken by specialist experts trained in trauma and as such were discounted.

The use of a triangulated approach, assessing interviews (without in-depth narrative interpretation), alongside observation of disaster exercises and the critical analysis of documentation, provided a plethora of evidence with which to

determine findings and ascertain whether DVI could be used to identify critically injured unknown patients. Fundamentally, qualitative research is considered essential to the development of policy and practice (Davies, 1999; Thomas and Harden, 2008; De Marchi et al., 2014).

2.5 Gaining Access and Ethics

To fully grasp the phenomenon surrounding unidentified critical care patients, it was essential to understand the perspectives of all agencies involved. This naturally resulted in some ethical challenges. To mitigate any potential harm to any of the participants considered in this study (victims, family members, responders, institutions and researcher), the research was conducted in accordance with the University of Lincoln's Research Ethics Policy (2011) and complied with the Economic and Social Research Council's (2010) 'Six Key Principles of Ethical Research', paying particular attention to the regulations relating to the use of observations. Although the Author has experience as a Trauma Risk Manager and has been trained in psychosocial harms and the assessment and referral of such cases, it was decided that the assessment of victims' experiences would be unnecessarily intrusive and would not provide significant benefit in researching this phenomenon. Therefore, the focus of this research was on those responsible for the care and treatment of these individuals. While there has been a significant amount of discussion regarding the ethics of conducting ethnography (Iphofen, 2015; Neyfakh; 2015; Van Maanen and de Rond, 2017), advice was sought from established academics and supervisors to ensure the approach taken withstood academic scrutiny and that the appropriate consents were gained.

Ethical approval was granted by the University of Lincoln in December 2014 for the study, which included fieldwork, observations, interviews and the examination of policies and procedures. The ethical approval also looked at the privacy of individuals and the potential harm that this study might have for both victims and

responders. Approval was needed for access to NHS staff and associated NHS documentation. As interviews were to be conducted with NHS staff, a Health Research Authority application was made. The outcome determined that NHS REC approval was not necessary, however, approval was needed from individual organisations. As a result, prior to interviews with contacts made through EUR, consent was sought and granted for interviews and document analysis from the London Ambulance Service. Furthermore, in 2017, ethical approval was obtained from the Paris Prosecutor's Office for an interview with the Head of France DVI, Elvire Arrighi (EA), who was responsible for the identification of the deceased in both the Paris (2015) and Nice (2016) terrorist attacks. Similarly, approval was granted for the use of correspondence from the Belgium DVI team, Christian Debouquec (CD) and Prosecutor, Ines Van Wymersche (IVW) detailing the response to the terrorist attacks in Brussels in 2017. Copies of these ethics approvals are contained in Appendix IV. Prior to entering the exercise environments for both EUR and Exercise Lock risk assessments were conducted. This included health and safety assessments for Personal Protective Equipment (PPE) and assessments to ascertain any potential harm or intrusion whilst in the exercise environment. As above, consent was gained prior to entry to hospitals, police and/or paramedic headquarters.

The overriding approach was to ensure conformity with ethical and research principles and to do no harm (Iphofen, 2015). Continual discussion with those responsible for reconciliation and patient care meant that the potential to reduce harm to unidentified individuals was continually maintained. Although the mode of inquiry into the failings to apply DVI was noted (and could be considered an essential component of ethnography (Neyfakh, 2015)), the imperative to do good and make a positive change in this particular area of response remained the core objective. For further details in this respect refer to Chapter Twelve (s.12.5).

In accordance with the University of Lincoln's ethics requirements, individuals were only observed in settings where they would expect to be observed by strangers, such as dedicated exercises. All those taking part in either the interviews or observations were asked for their informed consent and provided with information sheets outlining the nature of the research, what their involvement

entailed, the possible benefits and risks or disadvantages and what the research hoped to achieve, including further supporting information. The Medical Research Council and Health Research Authority (2014) Participant Information Sheet Templates and Consent Templates were used as guides in this respect. Examples of the information sheets and consent forms used are contained in Appendix V. Documents and data have been placed in a secure location in accordance with the UK Data Protection Act 1998 and 2018. Anonymity was negotiated rather than assumed and organisations and responders had the right to withdraw from the final study both during and after the data collection phase (Easthope, 2018).

The nature of this research means that sensitive data regarding deceased or traumatised individuals (including the nature of their injuries) has been encountered, discussed and recorded. Using Disaster Action's (2013) code of practice and advice available on their website, any potential harm to the participants has been mitigated. Therefore, regular liaison with gatekeepers took place and 'potential users' of the research were consulted to ensure that no information is released that is sub-judice or that has not been released to families. In addition, the privacy and wellbeing of all participants in this study has been carefully handled, for example when discussing the outcome of the research with supervisors, fellow students or when presenting or teaching.

As the results of the research will be shared with responders and government organisations, it is hoped that any proposed changes to the current process will be adopted and used both nationally and internationally. Although this will not change the treatment and experience of those who have been affected by misidentification in the past, it should offer some comfort that improvements are being made and the consequences of failure to be identified will be limited or even eradicated.

2.6 Collecting Data and Research Activities

2.6.1 Contextual Examples (CE)

Two instances of identification errors piloted the initial research and literature reviews, that of Gill Hicks following the 2005 London Bombings (CE-A) and Whitney Cerak and Laura Van Ryn in 2006 (CE-B). In addition, there was a personal connection to the topic that emerged only after the start of this study highlighted potential psychosocial harms.

Essentially, in terms of CE selection, the aim was to compile a comprehensive list of this phenomenon and not to adhere to a sampling strategy. Naturally, everyday cases of drunk and disorderly or drug induced forgetfulness did not warrant the rigmarole or thoroughness of a DVI procedure. However, incidents reported on the internet or via the media (such as the Humboldt Broncos in 2018 (CE-F)), or from personal accounts online, in print (Cerak and Van Ryn 2006 (CE-B)), or from the responders themselves were included (CE-E). This was essential, as examples which challenged the findings also needed to be considered to demonstrate that bias was not present in the results (Thomas, 2016). For instance, the circumstances in Nice (2016) and Belgium (2016) offer examples of what might be considered as ‘extreme’ cases, which provide important evidence of successful implementation of DVI with living patients. Analysis of both these events demonstrated that DVI was possible in mass casualty and fatality incidents and thereby initiated a new research objective asking why lessons were not being learned from these types of examples (RO4). As a reminder a list of reported identification incidents and errors is presented in Appendix I and the CE are presented in Appendix II.

2.6.2 Fieldwork

The emphasis of this research stemmed from disaster and mass casualty handling; therefore, it was pragmatic to focus associated fieldwork within this domain. Personal circumstances and the need to balance a family life with young children meant that protracted amounts of time in the field or international settings was infeasible. Therefore, all observations were restricted to the UK. As

mentioned above, gaining access to disaster zones to carry out research is extremely difficult and brings numerous ethical concerns to the fore. Likewise, gaining access to individual organisation exercises to observe is problematic, therefore any opportunity to attend exercises based on mass casualty and fatalities within the UK, regardless of scale or location, was taken.

2.6.2.1 Exercise Unified Response (EUR) 2016

The first opportunity to observe responders in a mass casualty and fatality exercise setting came in February 2016. An invitation was offered by the Head of UK DVI, Howard Way (HW), to observe DVI teams and front-line responder interactions as part of the exercise assessment. EUR was a live, multi-agency, multinational disaster exercise set over four days and allowed unprecedented access to a simulated disaster setting. Responders could be followed in their role extracting and treating patients in the hot zone through to casualty clearance and on to receiving hospitals for further emergency treatment and care.

Figure 1. Artist's representation of EUR layout provided by London Fire Brigade.

Figure 2. Photograph of the initial placement of train carriages on top of each prior to adding the rubble and disaster debris (London Fire Brigade, 2016).

Prior to the exercise, briefing events were held in London and via email. Afterwards a large conference was held on the 12 October 2016 (also in London) to discuss the outcomes and take lessons forward. All of these events were personally attended, and findings documented.

The EUR scenario was based on a building collapse over a main rail line and underground tube station in central London. It was designed to test all levels of an emergency response from strategic decision making (Gold) through to tactical (Silver) and operational front-line responders (Bronze). Participants from the UK included the police, the fire brigade (including speciality trained underground search and rescue teams), ambulance crews (including hazardous area response teams (HART)), helicopter emergency medics (HEMS), DVI teams, a coroner, local authorities, voluntary agencies and media agencies. In addition to UK

participants, emergency response agencies from the European Union (EU) also sent participants to take part. Italy, Hungary and Cyprus sent rescue teams and DVI teams from Belgium, France and Germany had the opportunity to work alongside the UK DVI teams in the mortuary. In total, over 4,000 responders were involved (London Fire Brigade (LFB), 2016). The focus of the exercise was the rescue scene within the inner cordon or ‘hot zone’ and the care and treatment of survivors and the deceased beyond the hot zone. Of particular importance was the ability to test rarely exercised plans. Thousands of tonnes of rubble were positioned around the eight carefully placed carriages to portray the collapsed building and train wreckage, as seen in the image below.

Figure 3. Wide angle black and white photograph showing the final layout of the scene, February 2016.

In addition, over a hundred actors portrayed casualties trapped within the carriages.

> The exercise had a strong ‘casualty focus’ and enabled functions such as a temporary mortuary, community support and hospital major incident plans to be tested simultaneously. This allowed participants to experience the complexities of delivering a response across a range of functions (LFB, 2016).

Essentially, in the context of this research, the setting offered an exceptional venue in which to test the theoretical concepts and determine the answers to the

research objective concerning the Incubation Period (Chapter Four and RO1) and once the data was re-examined following the interviews, organisational learning (Chapter Six and RO4). Responders were followed as they moved through the carriages and their interactions with the casualties and each other were observed along with their reactions to situations. This also gave the opportunity to ask the responders why they felt that a particular action was necessary. This process ensured individuals could be questioned about their beliefs and offer their own interpretations and words behind their activities and enabled an understanding of the psychosocial implications of their actions (RO2).

As the exercise was being observed by researchers, responders and media, notices were placed in and around the exercise site informing all personnel of this. This meant there was no requirement to request additional consent as this had all been pre-arranged in advance with the event organisers. The exercise organisers gave each observer an iPad to record notes and observations, including photographs and videos. Along with being asked to witness certain actions by the event organisers, there was also the opportunity to record personal fieldnotes.

Difficulties encountered included the extreme cold, the hazardous environment in which to operate and the cumbersome personal protective equipment (PPE) and clothing. Observers were expected to wear the same PPE the responders were wearing, including double layer gloves, face masks, eye and ear protection and hard hats or helmets. This was because, despite it being an exercise area, it was a high-risk working environment with multiple hazards present. The role as observer was very similar to that of the responders and shared the difficulties experienced in the same hazardous conditions. This gave a unique insight into efforts and impediments responders would experience operating in similar conditions whilst being expected to treat and care for casualties.

Figure 4. Photograph of a DVI team member in full PPE showing the cumbersome protective equipment needed in the hot zone.

In terms of data, photographs, short videos, fieldnotes and conversational interviews were all collected. Documentation pertaining to patient treatment and care was either collected in hard copy or photos were taken. S.2.6.4 provides detail regarding the documentation methodology. Fifteen patients were tracked over the course of the four days, the majority with known identities and a few with identities that were either unknown or had been shared by word of mouth. For example, Patient Stacey was an actor who had a coat belonging to a passing paramedic thrown over her. Appendix VI provides the fieldnotes regarding Patient Stacey's care and treatment during EUR. In addition to casualties, the UK DVI teams were observed to understand their role regarding the treatment, care and identification of the deceased.

Figure 5. Photograph of the presumed ‘Patient Stacey’ receiving medical treatment from international rescue teams.

2.6.2.2 Exercise Lock 2017

In 2017, an invitation was received to observe medical responders in a hospital emergency department (ED) during an exercise to test their MI plans. The scenario was based on the events of the Westminster Bridge Attacks (22 March 2017). The hospital was in the process of opening a new ED facility and senior management felt it would be an excellent opportunity to test the MI plan and facility at the same time. The exercise took place on 18 May 2017, approximately two months after the Westminster Bridge Attack in which a marauding terrorist used a vehicle to plough into innocent pedestrians on Westminster Bridge before trying to gain access to the UK Houses of Parliament.

Figure 6. Photograph of the patient handover of the unidentified patient from LAS to ED staff during Exercise Lock, May 2017.

The details of the exercise were kept secret from staff to ensure they made decisions based on what they were faced with without the ability to prepare. Although staff had been informed that an exercise would be held which would test the MI plan, the details were not shared beyond the exercise planning team. A successful request was made, in light of this research, to add a scenario inject into the exercise to test staff response concerning incapacitated and unknown patients, as the photograph below shows.

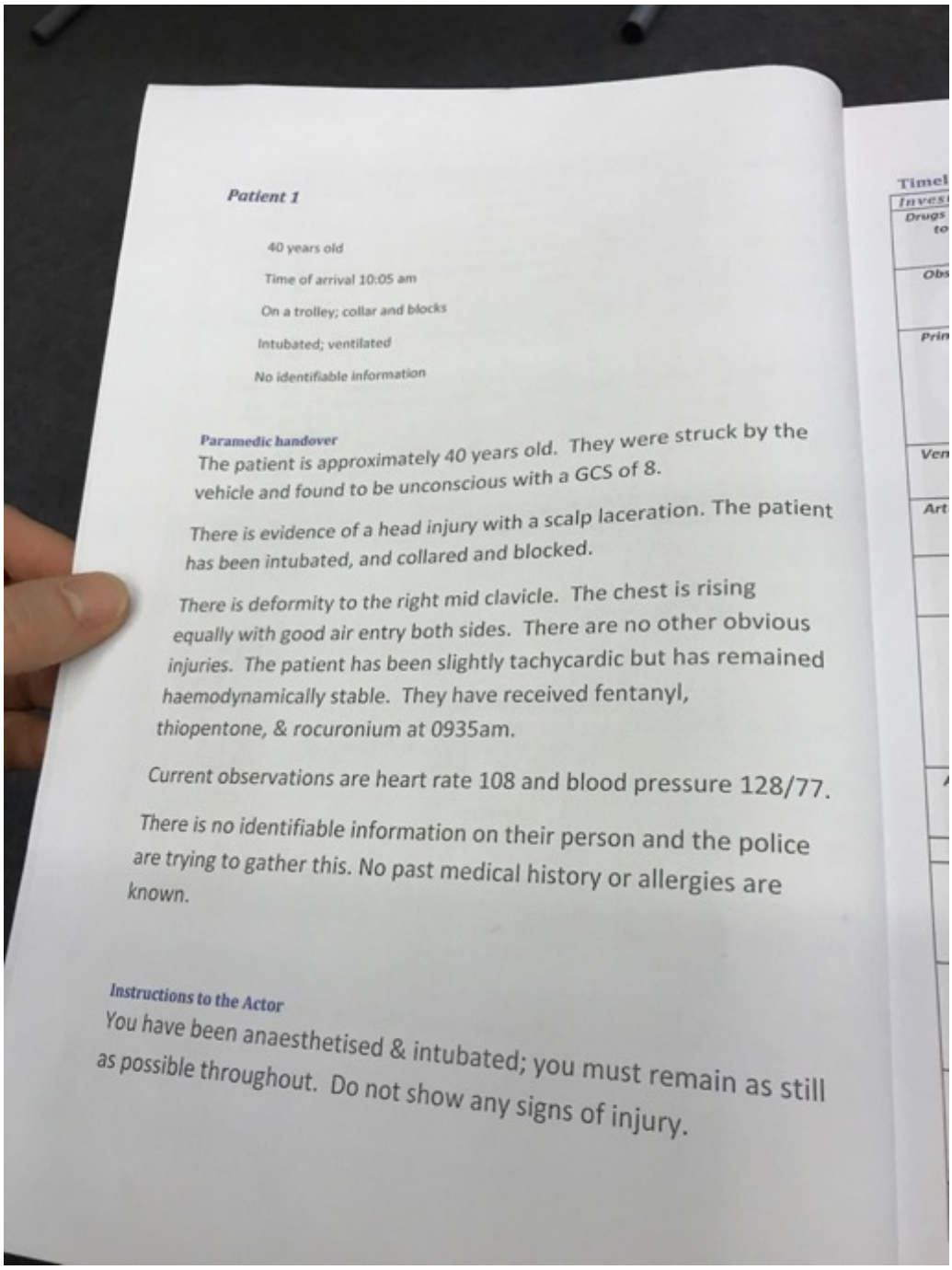


Figure 7. Extract from Exercise Lock Patient Inject documentation outlining the inject scenario for the unidentified patient.

The exercise ran over a six-hour period and involved hospital staff who would ordinarily be on a normal shift in an ED. Casualties were portrayed by semi-professional actors to provide a realistic sense of drama and allow the responders to perform their role in representative conditions. As in EUR, data were collected

using an iPad and notepad. The data accumulated included photographs, fieldnotes, patient documentation (which, as shown in Figure 8 below, clearly demonstrates that responders have not added a name to the patient being treated and refers to her as Female 01) and responder notes on hospital documentation.

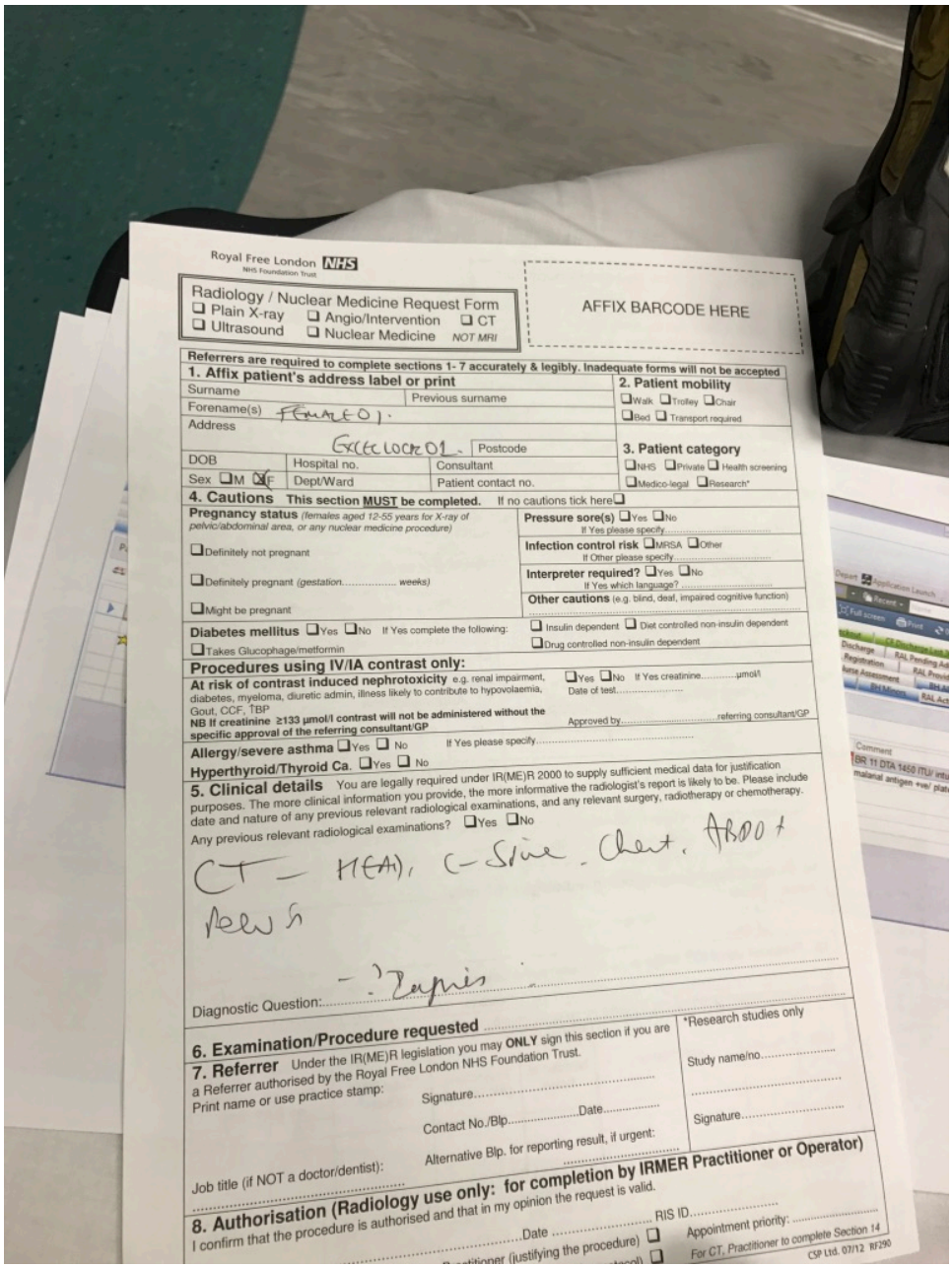


Figure 8. Patient notes for 'Female 1', the unidentified patient in Exercise Lock, May 2017.

In addition, conversational interviews were conducted with ambulance and hospital staff and the DVI documentation teams. This was essential, especially as it became apparent that no action was being taken with regard to an unidentified patient. Whilst the main aim was to observe the responders' actions, it was important to determine exactly why nothing was being done and whether it was due to hospital policy or personal choices. These interview responses and observations would add to the literature regarding patient identification and reconciliation.

2.6.3 Interviews

Despite the geographic focus of the thesis on the UK it was necessary to consider the perspectives of those who had successfully implemented the identification process in a mass casualty and fatality incident. Furthermore, it was essential to understand the perspectives and viewpoints of those who had been involved with identification errors previously. Therefore, interviews were carried out in France and the UK and telephone interviews were undertaken with DVI representatives from Canada, Belgium and Australia. In total 29 semi-structured and approximately 40 conversational interviews were conducted with both national and international participants, including one interview in France (for a full list see Appendix VII). Interviews were conducted with specialists in the fields of DVI and forensic services, and clinicians with extensive experience in Major Trauma Centres or within incident hot zones such as those in Pre-Hospital Teams or HART teams. Apart from DVI experts, all interviews were conducted with UK representatives. Participants were identified through various means; through snowball sampling, seeking recommendations from other participants or colleagues within the field of expertise, or via internet searches, or a combination of both. Snowball sampling was employed specifically due to its ability to target hard to reach populations such as those in the emergency services (Faugier and Sargent, 1997). Snowballing was an essential element in this thesis as in the first couple of years both clinicians and police contacts were generally reluctant to respond to emails unless they had been introduced via another participant or contact from previous experience. The difficulty in getting individuals to be

interviewed is a common issue in qualitative research and perseverance and alternative approaches need to be adopted to fully meet the requirements for thorough and valid research (Silverman, 2013; Thomas, 2017). In addition to these formal interviews, informal conversational interviews took place while in the field (Patton, 2002). These particular interviews allowed participants to be questioned on the spur of the moment with a minimal hold on their responses (Corbin and Morse, 2003; Jamshed, 2014). “Conversational interviews are a powerful way of gaining access to an individual’s interpretations of their personal experiences” (Burgess-Limerick and Burgess-Limerick, 1998, 65).

Conversational interviews with international DVI team members took place following a DVI Conference in February 2017. Despite these being classed as off-the-record, they yielded useful information and some of these contacts were followed up to conduct formal interviews. Interviews were audio recorded followed by transcription; in the absence of audio recording notes were taken. Semi-structured interviews lasted between twenty minutes and eighty minutes. Conversational interviews were much more opportunistically focused (Given, 2008) and were between thirty seconds and five minutes. Both interview styles and timings were dependent on the information required and the time the participant had available. All semi-structured interviews were formulated and derived from the findings in the literature review and were structured based on themes derived from the research objectives, therefore several questions were mirrored across each interview regardless of participant background. An example of the interview questions is contained in Appendix VIII. The thematic framework was designed to understand the participant’s perspective on the following areas: the causation of these errors (Incubation Period) and complexity of the response; the consequences of identification errors; the psychosocial harms as a result of identification errors; and lastly, how organisations could learn from errors. The last stemmed from the answers given by the interviewee concerning previous incidents or as a result of discussions centred around the attacks and use of DVI in France and Belgium. The flexibility afforded with semi-structured interviews meant that, despite the generic thematic basis of each interview, participants could discuss any themes or issues which may have been relevant at the time. The questions generally looked at experiences, behaviours and feelings (Merriam, 2015) focused

around the identification process operating in an incident and hypothetical actions that should be taken (in their opinion) when dealing with an unidentified individual. These hypothetical questions elicited responses based on the participants' actual past actions in similar situations, as seen in similar interview techniques conducted by Merriam (2015). This also meant that questions were generated around organisational learning. These interview responses led to the addition of RO4: why lessons were not being learned despite the acknowledgement that some of these detrimental issues had been encountered before.

Saturation was reached when the participants continued reflecting the same points previously noted. In all interviews, participants were asked whether they could recommend any further suitable contacts. Over the course of the research, numerous incidents occurred which subsequently meant that this process became easier as responder organisations began to see the merit of the work being investigated. This is discussed further in the impact section in Chapter Twelve (12.5).

As the interviews were all based on the original thematic framework, comparable data could be obtained. All interviews prior to November 2016 were based on hypothetical scenarios of the use of DVI in hospitals. The only interviews which differed significantly from the others were the ones conducted with the French DVI lead, (EA), and Belgian DVI expert (CB) and Prosecutors (IVW). These interviews sought to understand details regarding the actions taken following the identification of the deceased and living in the wake of terrorist attacks in both countries. The attacks in Brussels and Nice subsequently led to the successful implementation of DVI with the living. As the research progressed it became clear that the focus of psychosocial harm to the victim and their relatives also encompassed the harms inflicted on the responders and as a result interviews conducted in the later stages had an additional component of psychosocial impact.

Difficulties were initially encountered in the first few interviews due to sound quality and the recordings being incoherent in parts. Fortunately, notes were taken alongside the transcriptions and, therefore, although some parts of the interviews were not directly transcribed, the supplementary notes aided in capturing all the

relevant data. Furthermore, participants were sent the transcripts of their interviews so that they could clarify or check that their views had been captured correctly (for those where notes were taken) or to amend anything they felt had not been communicated effectively as mentioned above. This process of 'member checking' (Carlson, 2010) was conducted to develop trust and confirmability in the data gathered (Yilmaz, 2013; Korstjens and Moser, 2018).

2.6.4 Documentation

Documentation was collected from various sources both before and after interviews and fieldwork. These included organisational plans and policies, handouts from the field and supplementary notes (a full list is contained in Appendix IX). Presentations, seminar handouts and conference forms were also gathered as these provided useful sources for contacts for potential interviews, including links to further documentation. Extensive internet searches were also carried out for each organisation and these elicited numerous relevant reports and publications, including web-based communication. Some documents such as patient casualty forms were gathered during the exercises,line as seen in Figure 8. To avoid selective bias, every attempt was made to ensure that the forms and documents compiled by responders were gathered systematically during the exercises or were photographed so that they could be included if copies could not be taken. This is an important requirement according to Yin (2018).

Documents were also shared following interviews, such as the 'Circulaire interministérielle prise en charge des victimes d'actes de terrorisme'[1] (Republic of France Prime Minister, 2017) (Appendix X). This ministerial letter, shared by EA in 2017, outlines the requirements of French emergency responders when dealing with victims of terrorist attacks including, specifically, those who are unconscious. Other UK specific policies and documents were studied and gathered during the course of the research.

[1] [Translation: Inter-ministerial Circular – Taking Care of Victims following Terrorist Attacks]

All front-line responder and hospital plans and policy documents were scrutinised for details regarding patient identification and reconciliation. In addition, information relating to patient consent and actions to be taken in the event of an unknown patient were recorded and critically analysed. This analysis helped generate some of the questions for the interviews and provided an area to focus on in the observation, for example whether front-line responders would make a note of a patient's name or if they would class the patient as 'unknown' in accordance with their policy guidelines.

2.7 Data Processing and Analysis

According to Corbin and Strauss (2015), analysis should ideally begin after the first interview, observation or document review as this would assist in the development of relevant concepts and identify novel lines of inquiry. The qualitative methodology outlined above was used to determine the evidence necessary to address each research question outlined in s.2.2 above. These questions were used as a basis to guide the analysis and ensure coherence. Initially the objective was to assimilate as many cases of mistaken identification errors as possible to compare and contrast responder actions, apparent causes for the errors and determine consequences for those affected. Owing to ethical limitations of interviewing those directly affected, secondary data were used alongside the literature review of causation and consequences to guide the methodology above. Contrasting events such as mass casualty and smaller scale road traffic collisions, where identification errors occurred, were useful in terms of ensuring credibility of the findings and led to useful insights in terms of both theory and explanatory processes. This was particularly the case when looking at what 'normal business' is for a front-line responder as opposed to the actions taken in a mass casualty or fatality incident. As such, the approach was both exploratory and explanatory (Thomas, 2017). On completion of the initial analysis, a number of themes began to surface that had been identified in both the literature reviews and throughout the data gathered. These themes were discussed at length with

supervisors and peer PhD colleagues to ensure they reflected the findings from the data gathered.

Although the research followed primarily an inductive approach whereby themes emerged through the observations of empirical reality (Hussey and Hussey, 1997), there were times where a deductive process necessarily occurred. This was particularly the case when the adopted position was tested through further data analysis, specifically responder harms and organisational learning. This, Eisenhardt (1989, 536) advocates, is necessary to avoid “bias and limit the findings”.

2.7.1 Coding and Themes

Another important factor to avoid bias was the need to ensure that all the evidence retrieved should be examined exhaustively with exacting attention to detail (Yin, 2018; Silverman, 2013). Several themes were developed following the literature reviews, with some codes developed at this early stage and data sorted into these initial codes, such as ‘scene complexity’, ‘organisational exclusivity’, ‘sanitising world of hazards’ and so on (see Chapter Four). Other themes only became apparent following extensive analysis of the data. These generated objectives for further investigation.

As the study developed the theoretical framework was revisited and refined. This was mostly a result of the terrorist events of 2016 and 2017, coupled with the interviews with those responders (EA, IVW and CD) who had successfully implemented DVI for use with the living. This led to the transcripts, documentation and fieldnotes being reviewed a second time using the newly developed codes and themes around organisational learning. The themes and codes generated were then compared and contrasted with the CE that had been accumulated to cross reference and ensure validity of the findings (Yin, 2018). Furthermore, where codes had been generated that did not match with the CE presented, these were noted to highlight areas of further research. For example, although the literature focusing on emergency responders in the UK suggests resourcing and funding might be potential barriers (Wankhade, 2018), the data sourced did not raise any

particular examples relevant to DVI. This does not mean that resourcing or funding issues do not prevent the use of such techniques, simply that the research conducted did not find any evidence of this, and there remains scope for future research in this particular area.

To ensure credibility, transferability and confirmability, and triangulation of all the data, the results were also peer reviewed by supervisors and a panel of independent PhD candidates. Raw data from the fieldwork and interviews were analysed alongside the suggested codes and themes to either confirm findings or highlight where any bias or inaccurate analysis may have occurred (Silverman, 2013).

2.8 Considerations

The use of DVI in hospital settings in 2017 changed the impetus of the research from the hypothetical scenario of whether DVI could be used to a question of why it was not being used in the UK despite its success despite its success in France and Belgium. This finding naturally altered the research objectives and initiated a further objective based on why organisations failed to learn.

As interviews, conversations and conferences took place where the information researched was being discussed and presented, individuals and organisations began to reconsider their plans and policies. As a result, any future research in this domain may elicit alternative answers based on any changes that might occur in the reconciliation process.

Another consideration is the limited extent of fieldwork. Front-line responder agencies are only expected to test their MI plans once every three years (JESIP, 2018). Additionally, there is no directive to insist that these plans test mass casualty and fatality incidents or require the exercise to take any particular length of time. This research included two live MI exercises. One was four days in length

and encompassed extensive hot zone exercising and included casualty extraction and reconciliation. This offered an extremely valuable insight and research opportunity and provided extensive data to enable critical analysis of the issues being examined. Additionally, Exercise Lock tested an ED over the course of a day in a busy London hospital. This provided an exceptionally rare and beneficial opportunity to study this niche area of emergency response during mass casualty and fatality incidents. It should also be mentioned that these areas of response concerning unidentified casualties were considered to be relatively novel. Therefore, any analysis of actions and activities also took into account what had been encountered by the Author as the norm in previous major trauma hospital and emergency planning experience.

As discussed above, another possible approach to identifying examples of this phenomenon is a quantitative approach, whereby hospitals would be contacted through the Freedom of Information Act 2000 to discover cases of mistaken identities. However, as the findings will attest, the reporting of such events is not being carried out and therefore it is suggested that despite this approach possibly highlighting a few more examples, it would be unlikely to create an extensive or particularly useful list. This approach would be restrictive, as hospitals are not allowed to share identifiable patient data or circumstances without patient consent. Generally, those who wish to share their story have done so personally using news or social media.

2.9 Summary

This chapter has outlined the methodological approach taken to assess the research question and objectives. Examples of identification errors were accumulated and scrutinised to elicit understanding as to why and how such failings could occur and to understand the implications of such errors. Semi-structured interviews were conducted with subject-matter experts to deduce, based on their personal experience, how mistakes could happen and what could

prevent their occurrence in the future. Observation of two mass casualty and fatality exercises provided a unique insight into how unidentified patients are treated and cared for. Importantly, these exercises provided an understanding of the cultural interactions between responder agencies when faced with complex and challenging disaster response situations. In addition to the above, documentation was scrutinised throughout the research process to triangulate what was being seen and heard and to ascertain whether gaps remained in the policy and protocols to which responders are expected to adhere. The data from these sources, alongside the literature pertaining to these themes, was critically analysed to determine themes which reflected and categorised the evidence. As examples of DVI being used in hospital settings became apparent (such as those in France and Belgium), the interviews began to incorporate questions regarding how failings are identified and learned from and solutions implemented to effect change. Ultimately four main themes were identified; the Incubation Period where identification errors occurred; psychosocial harms to the victim, their families and the responder themselves; the barriers to the implementation of DVI including any legal issues which influence their decision making and lastly, the theme of organisational learning. The following chapter outlines the fundamental principles associated with disaster response in the UK and the respective responsibilities in terms of casualty and deceased management, to situate the concept of DVI within the field of mass casualty response and recovery.

CHAPTER THREE

Context of Casualty and Deceased Management

3.1 Introduction

This chapter outlines the casualty and deceased person's pathway following a mass casualty and fatality disaster. It provides the background to emergency response and introduces the role of the relevant agencies and how they interact in a multi-agency disaster situation. An explanation is given about the processing and treatment of these individuals, including triaging, which categorises and filters the individual for further care. This section also describes how the deceased are identified using DVI and provides a brief explanation of each of these processes for information. The chapter concludes with an explanation of the reconciliation and reunification process and how families and friends are reunited with their missing relative.

3.2 Principles of Emergency Management

As mentioned in the introduction chapter, the focus of this thesis is on UK responders and whether the DVI process can be used to identify the living under the remit of UK laws and legislation. Therefore, it is necessary to explain the principles of emergency and disaster management in the UK. It should be noted that although the specific legality of the response and detailed responsibilities of the agencies may be unique to the UK, the overarching principles of saving life are seen as the basic premise in all countries with established emergency response capabilities.

The UK Civil Contingencies Act (CCA) of 2004 establishes the foundations on which emergency response and recovery arrangements are built and managed from local to national level. It makes clear the roles and responsibilities of all involved in emergency response and provides regulatory and statutory guidance to ensure that those at the core of the response (Category 1 Responders) meet the six core civil protection duties as outlined below.

Category 1 Responders are made up of the emergency services (police, fire and rescue service and ambulance service), local authorities and NHS bodies. Under the Act, all Category 1 Responders are required to:

- Assess the risk of emergencies occurring and apply this knowledge to their planning arrangements
- Make relevant plans for those risks
- Establish business continuity arrangements to ensure they can operate and recover from said risks
- Have arrangements to communicate with the public about those risks
- Share information with other local responders
- Cooperate with other local responders

A seventh responsibility exists for Local Authorities to ensure businesses and voluntary agencies are supported in awareness and assistance in developing business continuity arrangements.

3.2.1 Emergency Responders – Category 1 Responders

The management of an emergency requires responders to adopt a hierarchical command structure to effectively control and co-ordinate the incident. According to the Joint Emergency Services Interoperability Principles (JESIP) (2016) doctrine, this does not establish rank or seniority but generates a level of command that is specific to the incident itself and based on roles and not specific individuals. It is broken down into three levels, strategic (Gold), tactical (Silver) and operational (Bronze) and reflects the basic responsibility of each tier.

All Category 1 Responders follow the same hierarchical command structure, although there may be intricacies within each organisation where specific roles are expected to branch across a level. For example, Emergency Planning Officers (EPOs) may be required to provide both strategic level awareness and guidance and work alongside tactical level commanders during the same incident.

3.3 Management of Emergencies and Incidents

Whilst the terms disaster, emergencies and major incidents (MI) are often considered synonymous and are frequently used interchangeably in common parlance, in the UK the CCA 2004 provides a clear definition which establishes what an emergency is, namely;

> An event or situation which threatens serious damage to human welfare… or … the environment or, war, terrorism, which threatens serious damage to the security of the United Kingdom (CCA, 2004, Chapter 36, Part 1).

It further defines the threat to human welfare as loss of human life, human illness or injury.

In terms of the response to such an emergency, responders in the UK will often use the term ‘major incident’ (MI), especially when the emergency response effort has the potential to overwhelm local resources. Inconsistencies in the terminology led the UK JESIP to provide a more precise definition to avoid confusion or error:

> An event or situation with a range of serious consequences which requires special arrangements to be implemented by one or more emergency responder agency (JESIP, 2016, 7).

Their reason for establishing a clearer definition was that “Agreeing and using common terminology is a building block for interoperability” (JESIP, 2016, 7). The

declaration of a MI would therefore trigger predetermined strategic and tactical response arrangements from multi-agency partners. The declaration would therefore offer the best opportunity for co-operation and co-ordination of the incident.

As to assessing the extent of an incident in terms of casualty and fatality planning, the Cabinet Office has established definitions for mass casualty and fatality incidents. According to the interoperability lexicon published in 2013, a mass casualty incident is "…an incident (or series of incidents) causing casualties on a scale that is beyond the normal resources of the emergency services" (Cabinet Office, 2013). Likewise, a mass fatality incident is, "Any incident where the number of fatalities is greater than normal local arrangements can manage" (Home Office, 2004, 3). Examples of mass casualty and mass fatality incidents are provided in Appendix XI.

When dealing with a mass fatality incident it is important to consider whether such an incident is an open or closed incident. An open disaster is one where the number of deceased is initially unknown and for whom prior records or descriptive data are unavailable, such as a train crash or city centre explosion (INTERPOL, 2018a). A closed incident has a fixed number of deceased with potentially identifiable data which can allow comparative identification to be made (College of Policing, 2018b). It is possible that a combination of the two events could occur, such as an aircraft crash in a residential setting.

Furthermore, whether the cause of the incident is terrorist or non-terrorist affects the management process in terms of identification and police priorities (College of Policing, 2018b). For example, terrorist incidents provide additional powers for law enforcement and may change the focus of the incident management process (Harris, 2016). In a non-terrorist related incident, the normal protocol would be to save life, minimise harm and then determine the identity of the deceased. Conversely, in a terrorist incident, the protocol would have the additional imperative of identifying the perpetrator/s to prevent further harm. This objective would take priority in policing terms over the identification of the deceased (Gehl and Plecas, 2016).

3.3.1 Standard Operating Procedures for an Incident: METHANE

The JESIP Joint Doctrine sets an expectation of UK emergency responders to work following common principles in terms of incident command and control. It provides a method for commonality and interoperability which, if used correctly, should enhance the response and recovery effort, not just for MIs but also for 'business as usual' multi-agency working (JESIP, 2019). In terms of the initial response to a MI, it sets an expectation that responders use a METHANE reporting method to share the crucial incident information. An example METHANE report is provided below for an example scenario such as a terrorist attack in central London.

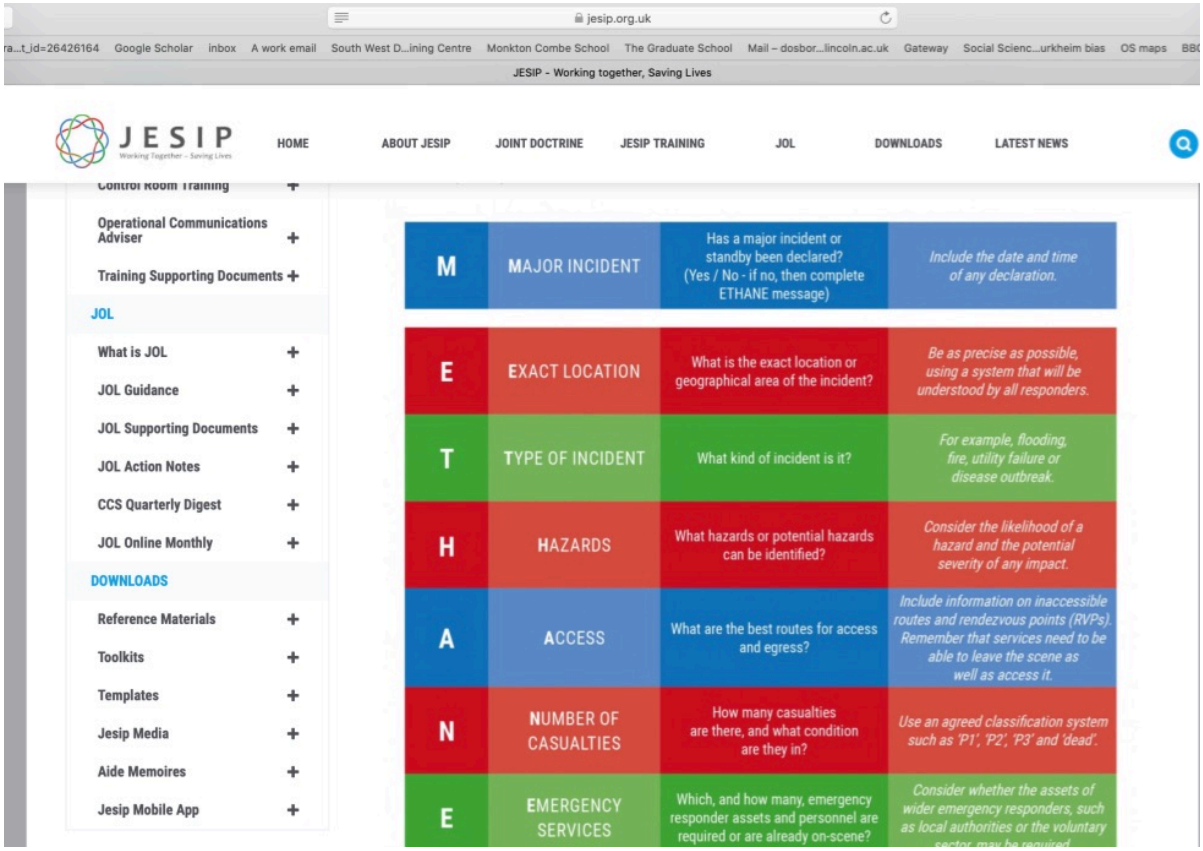


Figure 9. Screen shot of the METHANE acronym used to communicate an accurate understanding of the incident between responders (JESIP, 2019).

If a MI is declared, Category 1 Responders are expected to implement their individual command and control arrangements as outlined above. In the UK, the police would normally take overall responsibility for the incident.

At the scene of the incident, the operational level commanders will be working to control and deploy the resources of their respective service to meet the objectives established by their tactical commanders. Although each service has their core objectives and speciality such as fire service or policing, the primary responsibility, for all emergency responders, regardless of organisation, is always to save lives and reduce harm (JESIP, 2016, 16). Appendix XII provides a breakdown of the responsibilities of each service and those who may be present at the scene of a mass casualty and fatality incident.

3.4 Casualty Management

Those affected by the incident are, ideally, triage sieved by those responsible for their rescue where they are found, i.e. in non-medical locations. As all emergency personnel are responsible for saving lives, the triage system may take place at any point within the two cordons (see below) depending on access and availability of crews.

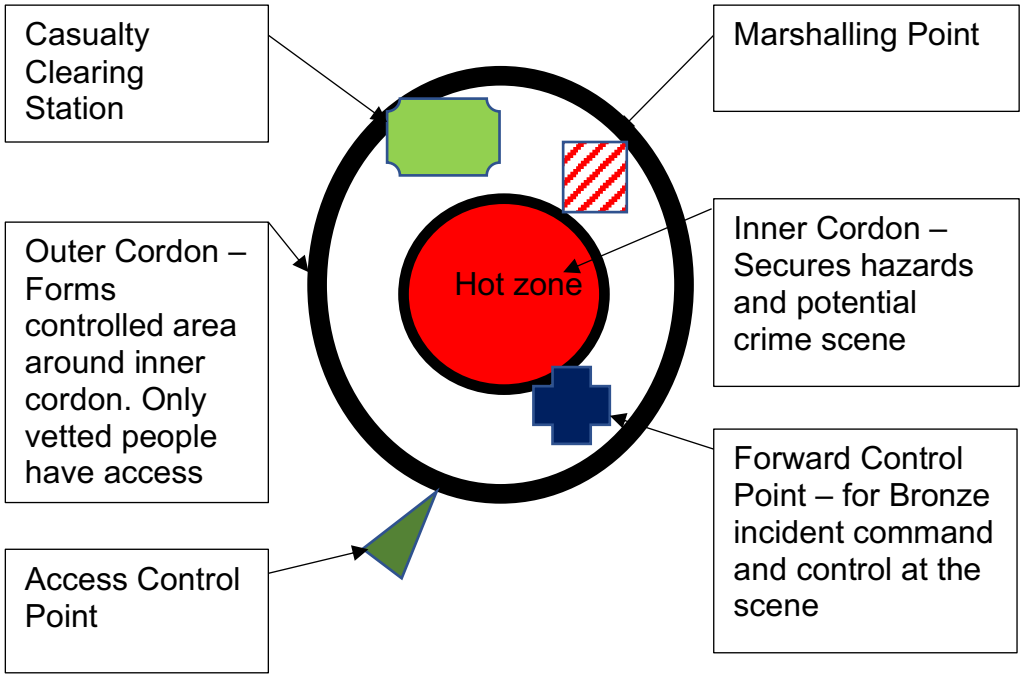


Figure 10. Diagram representing the inner cordon. Adapted from the LESLP Guidance (2015).

Ideally, ambulance crews or other medically trained personnel (for example HEMS or HART personnel) will sort or triage the injured individual, who will then be directed or moved to the appropriate tent/area in a Casualty Clearing Station for basic medical treatment and care where necessary.

Similarly, other triage emergency service documentation such as that used by the LFB 'Casualty Report Form' will be completed, to note patient details alongside any presenting conditions or treatment provided.

If the need to extract patients rapidly from the inner cordon takes precedence over any treatment or ability to record details, patient identification may not take place. Likewise, if a patient loses consciousness between handover of emergency responders, the name of the patient may not be recorded or handed over to crews who are able to record patient details. These patients may be recorded as UNKNOWN on any subsequent documentation. In other countries, the patients may be recorded as Jane or John Does (Janowak, 2018).

An unidentified patient admitted to hospital will be searched initially for clues to ascertain their identity. Wallets, coats and belongings will be scrutinised for any hint of an ID. If they are unable to verbally confirm their identity, and no identification is found on them or known to the persons who admitted them, they will be issued with a temporary alpha-numerical identifier and a best-estimate date of birth (NHS Improvements, 2018a). This will be the identity by which the individual is referred to throughout their stay whilst they remain unknown. A 'real' name such as Mark Smith is not used, as it may, by chance, be the same as another patient receiving treatment at the same time. The use of Jane and John Doe (as commonly seen in films and television series) is avoided in the UK due to the same potential for coincidence.

Medical teams will carry out all lifesaving procedures including X-rays, bloods (to ascertain blood groups), and surgery before stabilising the individual and transferring them to recovery and critical care. Although the majority of treatment can take place without knowing a patient's name, the limited access to prior patient notes and records can have serious consequences in terms of continuing care and treatment. Therefore, the police will normally be notified that a person without identity is being treated. The police will then proceed to try to determine who the patient might be. There have been a number of cases in the UK over the past five years which have demonstrated a procedure whereby social media and the local media have been used to try to determine the unconscious patient's identity. The brief details of these are contained in the examples listed in Appendix I. Furthermore, as demonstrated in the following cases:- Cerak and Van Ryn, 2006 (CE-B), Boston Marathon, 2013 (CE-D), Moulin, 2015 (CE-E) and Humboldt Broncos, 2018 (CE-F), there is a propensity for the hospitals and police to rely on visual identification techniques such as photographs of the person in a coma alongside a visual description of the individual and their personal effects. If there is only a single person in such a state, as above, it may be that a family will be easily reunited with the only individual missing. However, if there are larger numbers of patients and deceased affected, or even in the case where there are two casualties, there is scope for error.

3.5 Management of the Deceased

Those who die at the scene will be left in situ until such time as forensic and investigation teams have analysed and recorded their details. They are then transferred to a mortuary for further investigation of the circumstances surrounding their death and, more importantly, to determine their identity (World Health Organization (WHO), 2004; Dorries, 2014). The management of the dead is often cited as one of the most important aspects following a disaster, especially if there is a potential criminal aspect to the incident, such as terrorism (WHO, 2004; Pan American Health Organisation (PAHO), 2016; INTERPOL, 2018a). Despite the technical and logistical issues surrounding the retrieval and management of the deceased, the identification of the individuals is the most time-consuming aspect and often the reason why there is a delay in releasing the bodies to families. This is further compounded when there are body parts involved, as each body part is treated as an individual body (PAHO, 2016). There are both psychological (Eyre, 1999; Coles, 2014; ICRC, 2016) and political desires (Edkins, 2011, 2019; ICRC, 2016) to ensure the identification process is achieved quickly, yet a rush in both retrieval and identification can lead to serious consequences such as missing evidence, further damage to the individual and the potential for misidentification. In England, Wales and Northern Ireland, the Coroner will assume responsibility for the deceased. In Scotland it is the Prosecutor Fiscal. The Coroner is responsible for investigating unnatural, violent deaths or deaths where the cause is unknown. They are responsible for determining the identity of the individual and the circumstances of the death, including where, how and when the death occurred. They may decide to hold an inquest to further investigate the circumstances surrounding the death. In the UK, The Guide to Coroner Services (UK Ministry of Justice, 2014) provides an excellent summary of the role of the Coroner and those tasked with supporting this service. The coronial process is similarly applied in other countries, albeit with minor nuances which adjust for local requirements.

3.5.1 Identification

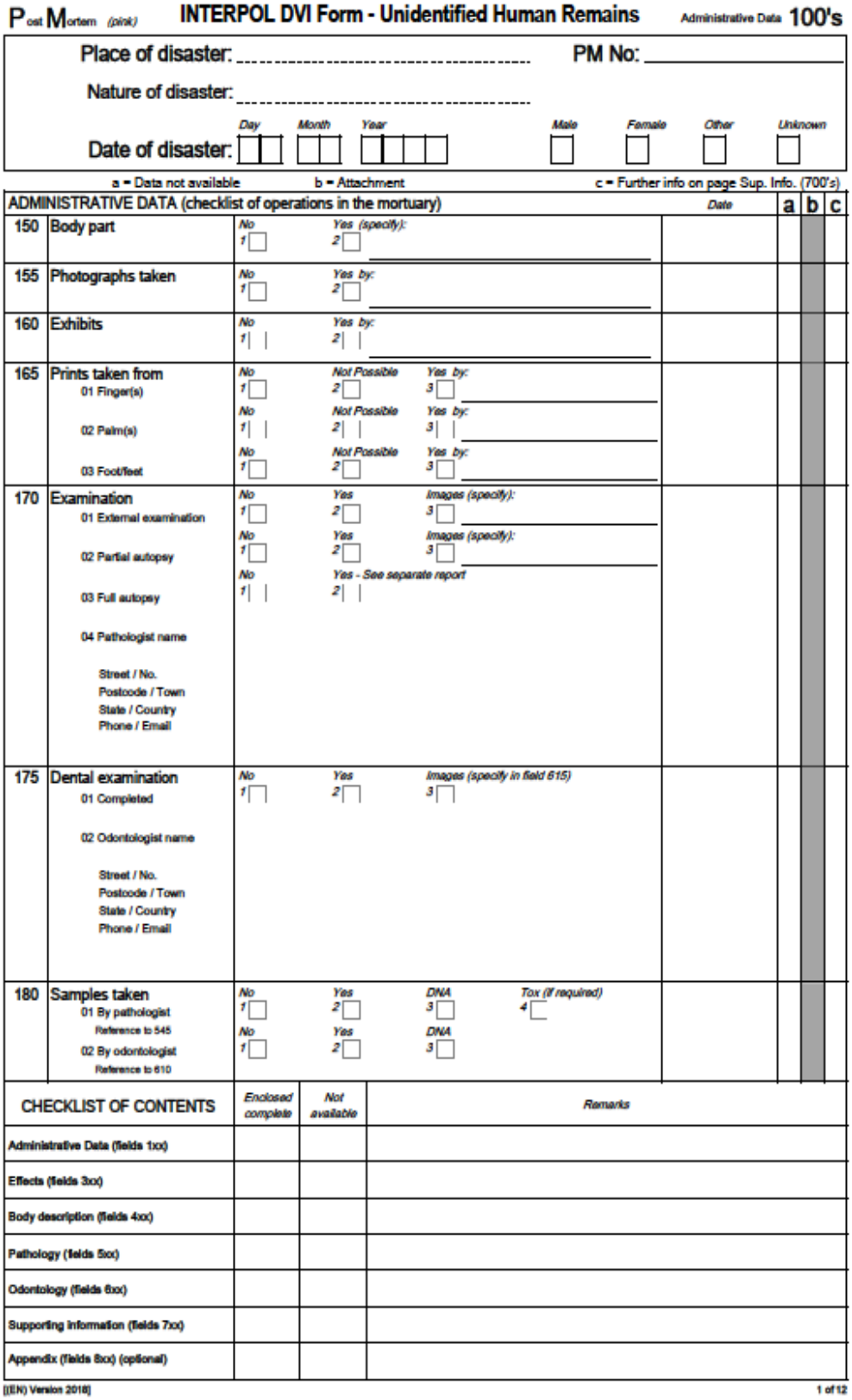
Under normal day to day circumstances where a death has occurred and the identity is unknown the deceased will be taken to the local mortuary until relatives are found (Coroner's Service for Northern Ireland, 2014; UK Ministry of Justice, 2014). In these circumstances, where there is only one deceased, it is often the case that families will come forward and quickly be reunited with the only individual matching the description. As the case of Whitney and Laura (CE-B) demonstrates, mistaken identification cases can occur in smaller incidents where the numbers of deceased are too small to be considered a mass fatality. Yet, it is only in mass fatality events where the role of UK DVI will be used to determine the identity of the deceased. As defined above, a mass fatality event is a situation where local resources are overwhelmed. The use of numbers of deceased to reflect a mass fatality event, such as the arbitrarily historic figure of 40 in earlier mass casualty plans, is now avoided as it is the ability to cope with the scenario that determines the outcome (Goh, 2017).

3.5.2 Disaster Victim Identification

DVI is an internationally recognised process which aims to use means of identification that are scientifically sound, reliable and applicable in the field. The INTERPOL guidance provides the basis upon which all national DVI documentation is based. This allows for variation in local organisational structure and enables different procedures to be used (Jennet, 2011; Ellis, 2019). INTERPOL, Jennet (2011) explains, does not dictate how teams and policy are managed, they merely expect the minimum international standard to be achieved. Ultimately, this results in variation between both international and national jurisdictions. For example, depending on a jurisdiction's post-mortem process, a DVI team might require one primary identifier accompanied by two secondary identifiers, or as recommended by INTERPOL, all three primary identifiers are used to confirm a match (Black et al, 2010). Similarly, there may be discrepancies in the protocols and standards used including the completion of the forms (proposed in English) and the quality of the work carried out in taking samples or conducting autopsies (Byard and Winskog, 2010).

The USA is the largest developed country not to sign up and uses its own organisational system known as the Disaster Mortuary Operational Response Team (D-MORT) to identify its mass fatality deceased. Despite not being an INTERPOL member, the process for identifying the deceased is very similar and collates fingerprint, DNA and odontology evidence alongside visual identification resources (US. National Transportation Safety Board D-MORT, 2011). Although many countries do not sign up to the international agreement many do agree to the principles, but due to limited resources, funding and religious differences may disagree on the policy process and paperwork. This, Jennet (2011) and Ellis (2019) point out, can lead to areas of tension in multinational disaster situations.

DVI consists of four phases; scene management, post-mortem, antemortem and reconciliation (INTERPOL, 2018a). The scene phase takes place during the recovery of the victim from the disaster area. All aspects of evidence capture and retrieval are conducted systematically along the lines of standard scene management in a criminal investigation (College of Policing, 2018c). The post-mortem phase requires the collaboration of a wide range of subject-matter experts, including pathologists, forensic odontologists, fingerprint expert teams, radiologists and DNA experts (Association of Chief Police Officers (ACPO), 2011). These interdisciplinary teams work alongside each other to collate as much information as possible to determine the identity of the victims and will enter the information on the post-mortem documentation such as that used by INTERPOL (see below). DVI Teams may also have access to Plass Data, a software tool, that corresponds to the INTERPOL forms and allows all AM and PM data relating to each tehnique to be input by members. These can then be crossmatched to determine matches (Plassdata.com, 2020).



Post Mortem (pink) INTERPOL DVI Form - Unidentified Human Remains Administrative Data **100's**

Place of disaster: _____ PM No: _____

Nature of disaster: _____

Date of disaster: Day Month Year — Male Female Other Unknown

a = Data not available b = Attachment c = Further info on page Sup. Info. (700's)

ADMINISTRATIVE DATA (checklist of operations in the mortuary)			Date	a	b	c
150	Body part	No 1 ☐ Yes (specify): 2 ☐ _____				
155	Photographs taken	No 1 ☐ Yes by: 2 ☐ _____				
160	Exhibits	No 1 ☐ Yes by: 2 ☐ _____				
165	Prints taken from 01 Finger(s) 02 Palm(s) 03 Foot/feet	No 1 ☐ Not Possible 2 ☐ Yes by: 3 ☐ _____ No 1 ☐ Not Possible 2 ☐ Yes by: 3 ☐ _____ No 1 ☐ Not Possible 2 ☐ Yes by: 3 ☐ _____				
170	Examination 01 External examination 02 Partial autopsy 03 Full autopsy 04 Pathologist name Street / No. Postcode / Town State / Country Phone / Email	No 1 ☐ Yes 2 ☐ Images (specify): 3 ☐ _____ No 1 ☐ Yes 2 ☐ Images (specify): 3 ☐ _____ No 1 ☐ Yes - See separate report 2 ☐				
175	Dental examination 01 Completed 02 Odontologist name Street / No. Postcode / Town State / Country Phone / Email	No 1 ☐ Yes 2 ☐ Images (specify in field 615) 3 ☐				
180	Samples taken 01 By pathologist Reference to 545 02 By odontologist Reference to 610	No 1 ☐ Yes 2 ☐ DNA 3 ☐ Tox (if required) 4 ☐ No 1 ☐ Yes 2 ☐ DNA 3 ☐				

CHECKLIST OF CONTENTS	Enclosed complete	Not available	Remarks
Administrative Data (fields 1xx)			
Effects (fields 3xx)			
Body description (fields 4xx)			
Pathology (fields 5xx)			
Odontology (fields 6xx)			
Supporting information (fields 7xx)			
Appendix (fields 8xx) (optional)			

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Figure 11. Image of the INTERPOL Post-Mortem 'Pink' form used by DVI teams to identify victims.

In the UK, a criterion will be established by either the Coroner or Procurator Fiscal in collaboration with the police Senior Investigating Manager (SIM). A SIM is a dedicated senior police officer who is charged with the accurate determination of the identities of the deceased. Depending on the circumstances the criterion in the UK may be a combination of primary identifiers or a single primary identifier supported by secondary identifiers (College of Policing, 2018c). The highest standard of evidence incorporates all primary identifiers to conclusively determine identity, however, there may be valid reasons why some primary identifiers cannot be used, for example when a body has been so badly disfigured that dental records or fingerprints cannot be accurately obtained (Black et al., 2010; Black and Bikker, 2016). The table below provides examples of what the INTERPOL DVI process considers to be acceptable primary and secondary identifiers, the latter of which is considered as circumstantial supporting evidence (INTERPOL, 2018a).

Primary Identifiers
• DNA • Fingerprints, footprints and palmprints • Odontology – forensic dental examination
Secondary Identifiers
• Marks • Tattoos • Scars • Unique nail art • Unique Medical Identifiers – pacemaker numbers, serial numbers on implants etc • Personal effects • Physical disfigurement such as amputations etc

Assistance
• Location • Description • Visual appearance • Clothing • Jewellery

Figure 12. Extract from the INTERPOL DVI Guidance (2018a) which establishes the acceptable scientific identifiers.

3.5.3 Explanation of DVI Process

The following outlines each of the primary identification processes used by INTERPOL to accurately determine the identities of the deceased.

3.5.3.1 Fingerprints, Palmprints and Footprints

The ridges present on an individual's palms, feet and fingers are unique to each person. The whorls, loops and arches have been used in forensic investigations for over 100 years to assist in determining identities (Kaushal and Kaushal, 2011). Prints can be categorised as known, latent or plastic impressions. Known prints are those that are retrieved from an individual directly by means of a fingerprint card or via a scan on to an electronic device (Federal Bureau of Investigation, 2016). These known prints are compared to the stored data prints that may have come from a previous known fingerprint or via a latent or plastic impression. Latent impressions are two-dimensional reproduction of prints created when the oils, sweat or other contamination on the fingers transfer the unique ridge impression of the finger to another object or surface. These replications are usually made visible when forensic equipment such as fingerprint powder, chemical techniques or specialist light sources are used. Similarly, plastic impressions are prints that have been captured in a wax or similar malleable surface (Kaushal and Kasushal, 2011).

The analysis, comparison, evaluation and verification (ACE-V) of prints needs to be conducted by the appropriately trained professionals to ensure conformity in the evidence chain (Dror et al, 2006; Ferraro, 2016). Prints that have not been captured correctly and are distorted or unclear may make the analysis difficult or impossible. Whilst the use of prints to determine identities has been historically the most highly regarded method for forensic confirmation of identity, it is not an infallible technique (Black et al., 2010; Black and Bikker, 2016). Following the release of a paper by the US National Research Council in 2009 highlighting the potential issues with the reliance on fingerprints as a mechanism for determining identities, a number of prominent international sources of experts, such as the European Network of Forensic Science Institute and International Association for Identification, amongst others, offered their opinions on the matter (Champod, 2015). Importantly, they all agreed that 100% reliability on fingerprints was to be avoided and generally all reflected the sentiment “that errors do occur and furthermore that claims of zero error rate in the discipline are not scientifically plausible” (Scientific Working Group on Friction Ridge Analysis, Study and Technology, 2009, 4). However, the general position from the academic and scientific community stressed the need for sound practices and competency in the ACE-V process.

3.5.3.2 DNA

DNA, or deoxyribonucleic acid, is commonly referred to as the building block for life and is present in all humans and almost all organisms on earth (US National Library of Medicine, 2019). The closer the biological relationship, the more the genetic similarities occur. For example, identical twins will share the same DNA profile, whereas siblings from the same family will only have a proportion, in the region of 60% of the DNA genetic profile similarity (Black et al, 2010). A child will have 50% of each biological parent. As there have been examples of situations where the apparent father of the child has, following DNA analysis, been found not to be the biological parent, the application of DNA testing is normally only conducted with the mother to avoid such circumstances.

The collection of DNA from the deceased needs careful management to preserve the sample. However, there are numerous methods to retrieve a deceased individual's DNA including extraction from teeth, internal bone material (spongiosa), blood and muscle tissue, amongst others.

In the case of a living individual, the recommended collection of DNA is via a blood sample or saliva (buccal or saliva). A buccal swab involves rubbing a swab (similar to a cotton bud) on the inside cheek of the individual's mouth. This painlessly removes the epithelial membrane cells which contain the individual's DNA. According to Cascella et al (2015), buccal swabs are a preferable option due to their stability and longevity in storage in comparison with saliva. Furthermore, buccal swabs are considered non-invasive, quick and relatively inexpensive in comparison to blood samples (Theda et al, 2018). The collection of a buccal swab would not normally require medical or police personnel's involvement. The individual responsible for collecting the sample should have a basic understanding of the forensic DNA evidence process, to ensure that the collection, labelling, preservation and chain of custody for the sample is adhered to. If there is any likelihood that there will be a delay in assessment or comparison of the sample, preservation of the sample should be carefully managed to avoid the need to repeat the process.

It is worth noting that the collection of DNA samples from hospitalised patients who have through the course of the incident, or disaster, been subject to amputation should be considered at an early stage. Where a body part is found at the scene of an incident, it is automatically given a unique reference number and considered a separate, potential victim. As this process increases the numbers of presumed deceased, capturing a hospital patient's DNA can assist in ruling out these body parts from being considered a separate potential victim.

3.5.3.3 Odontology

Forensic Odontology is described as the "application of dental science to the administration of the law and furtherance of justice" (Taylor, 1963). Odontology is not dentistry and it has been repeatedly noted that only those with specific skills in

forensic odontology should be allowed to examine an individual to accurately determine identity. The reason for this is that forensic odontology requires expertise and experience that ordinary dentists do not have (Taylor and Kieser, 2015). Although the pathway to becoming a forensic odontologist requires a degree in dentistry as a minimum, the actual application of forensic odontology requires more detailed understanding of what could be considered as the ACE-V for dental recognition. In other words, the identification of a deceased, or unconscious individual, through the detailed analysis of the jaw and teeth would need to satisfy the courts in terms of the admissible standard of evidence. It would be unlikely that a normal dentist's analysis would satisfy the evidential criteria necessary.

Determining identity via dental analysis is argued to be the cheapest, easiest and least invasive method of all the DVI methods (Adams et al, 2013; Manica and Forgie, 2017). Although this may be true for a deceased individual, it may be argued otherwise for a living person where the manipulation of the jaw required for a detailed x-ray or radiological analysis could be considered as a more physical interaction than that of obtaining a buccal swab. Furthermore, young children very rarely have detailed x-rays of their teeth until the majority of teeth have erupted. However, an analysis of an unconscious, or a deceased, individual's teeth could provide an estimated age range, even in new-borns, something DNA or fingerprint analysis would not (Adams et al, 2013). As Adams et al (2013) confirm, a family would simply need to provide the details of the individual's dentist for a comparison as opposed to providing samples of DNA or fingerprints. Yet, there is a possibility that the individual's lifestyle meant they had numerous dentists in varying locations, which would mean that gathering a full dental history of the individual may be a little more arduous for both the family and the forensic odontologist than previously supposed. Furthermore, not all dentists keep patient records and in the UK there is no centralised database. In addition, there are several countries where dental record keeping is not as detailed (Manica and Forgie, 2017).

Analysis for odontology would need to include a collection of dental photographs and a complete full mouth dental examination including odontogram should be

completed, including full mouth dental radiography (Adams et al, 2013). However, gaining access to the mouth and teeth when an individual is incapacitated may be problematic. This is especially true if the individual suffered injuries to the head and he or she has feeding and/or oxygen tubes attached. It is suggested that in such cases any supporting x-rays taken by the medical teams, along with notes on any unusual dental anatomy or specific fillings or positioning of the teeth and jaw, are noted as a minimum to aid possible identification.

There is no set minimum number of identified dental findings required for a positive odontology identification. The forensic odontologist will need to accumulate the evidence and make a judgement based on their relative expertise and knowledge within the field (Adams et al, 2013).

3.5.3 Visual Identification

Visual appearances and descriptions of a victim are only considered as assistive identifiers and not categorised as scientifically appropriate evidence (College of Policing, 2018c). As INTERPOL state in their DVI Guidance:

> Identification based on photographs can be notoriously unreliable and should be avoided as the sole means of identification. Visual identification by a witness may provide an indication of identity but is not sufficient for positive identification of victims of a large-scale disaster, as victims can be disfigured, resulting in the visual comparison being unreliable. The psychological stress frequently involved in confrontation with the deceased, by relatives, also makes this form of identification unreliable (2018a, 18).

Similarly, in their INTERPOL White Paper, the avoidance of the use of visual techniques is underlined, in bold type with double exclamation marks – highlighting the importance of this fact:

“**Based on these INTERPOL criteria, a victim can never be identified solely by means of visual recognition!!”** (INTERPOL, 2018b, 4).

The DVI process is dependent on good evidence retrieval, analysis and documentation. In terms of the deceased, the type of disaster will dictate the nature and protocols to be followed for determining identity. For those who are incapacitated in hospital the effective gold standard of identification would be a triangulation of the three principal identification methods combining DNA, fingerprints and odontology. Whilst the analysis, comparison, evaluation and (ACE) element of the investigation of the person, alive or deceased, is critical, so too is the process of gathering comparative samples, the validation (V) aspect (Ferraro, 2016). The absence of comparative samples would therefore impede the ability of responders to validate and confirm the identity of the individual concerned.

3.6 Reunification and Reconciliation Process

It is essential that a comparative sample is provided to determine the identities of the deceased and those found unidentified in hospital. In the majority of cases, these comparisons are provided by families seeking their missing relative. In the aftermath of a mass casualty and fatality incident, the details of the missing person should be entered onto the DVI AM Yellow form – for Missing Persons. This form consists of twelve pages and requires the relatives to complete a plethora of information. Alongside the standard nominal data, such as address and marital status, the family are expected to describe the individual's body, any personal effects that may have been with them at the time and their medical history including surgical implants or prostheses. The family are asked to fill in the person's family tree and provide their own DNA samples to enable a thorough DNA biological profile and corresponding match to be made. Furthermore, they will need to connect the Family Liaison Officers (FLO) with the individual's dentist to complete the odontology information.

Primary and secondary identifiers are only of use if they are compared against another identifier. Therefore, alongside the requirement to have thorough protocols

for ascertaining the identities of the deceased or unknown living patient, there must be rigorous processes in place to gather information about the individual prior to their current circumstances. In events such as tsunamis and mass fatality events caused by natural disasters, this can be extremely difficult, especially when entire families are lost simultaneously. Gathering information from families concerned about the wellbeing and welfare of their relatives is a daunting task and one that needs to be conducted with care and consideration (Richardson et al, 2017). As INTERPOL state:

> This process can involve many complex dimensions as the task involves interviewing families, relatives or friends to obtain sufficient facts on a potentially deceased loved one. In addition to this difficult and confronting task, representatives from this phase may need to closely coordinate their activities with other agencies, jurisdictions or nations, to secure ante-mortem data from remote locations (INTERPOL, 2018a, 16).

Whilst this statement is intended for information regarding the deceased, the same sentiment could be applied to any family searching for news of their relative.

3.6.1 Casualty Bureau

The Casualty Bureau (CB), according to the College of Policing, is “the initial single point of contact for receiving and assessing information about people believed to be involved in an incident” (College of Policing, 2018e). The CB is normally associated with mass fatality incidents, however, there may be occasions where there is a significant demand for information following an incident such as natural disasters abroad. The SIM is responsible for managing the CB and appointing the appropriate manager to implement the agreed strategy for handling the incident. The main purpose of the CB is to provide information on the investigation process, trace and identify persons involved in the incident and reconcile missing persons with survivor, casualty and evacuee records. The SIM will appoint a FLO to those families who are most likely to have an individual directly affected or missing as a result of the incident. The FLO will act as a liaison between the police and family in order to collate any personal effects or provide

information regarding the investigation and identification process (College of Policing, 2018e). The CB will use the HOLMES (Home Office Large Major Inquiry System) will be used to cross check, examine and confirm any potential matches .

3.6.2 Documentation Teams

In the aftermath of a mass casualty or fatality incident, the SIM is required to despatch documentation teams to those locations most likely to receive survivors, evacuees and casualties. These may include: the scene of the incident, survivor reception centres, receiving hospitals, Friends and Family Reception Centres (FFRC) and Humanitarian Assistance Centres. Not only are they required to identify those directly involved, they are also required to collect the relevant data on the missing persons, survivors, evacuees, casualties and any corresponding evidence (College of Policing, 2018d). These data need to be inputted into the CB online database as soon as possible to assist the Nominal Matching Unit and the respective FLOs in reuniting families with those involved in the incident.

3.7 Summary

This chapter has outlined the context of emergency response concerning the victims, both living and deceased. It provides a succinct explanation of the INTERPOL DVI procedure and who is involved at each stage of the identification process. The ACE-V needs to be conducted by the appropriately trained professionals to ensure the evidence chain is adhered to. This same process is essential for the identification and reconciliation of survivors and casualties and therefore the SIM and CB play a vital role in the aftermath of an incident. The current Interpol Yellow AM form provides an essential link and gathers vital information that can help identify and reunite the individual with their family. However, it may be worth considering the creation of a shorter, more succinct form which could fast-track the process for families and friends that have not yet been allocated FLOs in the immediate aftermath. This could be considered a

presumptive or tentative identification form which could then be used to aid in the preliminary identification standage. Documentation Teams can then help the CB and the Nominal Matching Unit allocate FLOs to the families most likely to be related to the unidentified patient.

The MIs over the past twenty years in the UK have provided an intense focus on the identification of the deceased and the respective treatment of the bereaved. Yet, it is argued by the Author, those who survive the incident and their respective families are not given the same level of consideration and support by responder organisations, despite the assertion that “the care and identification of casualties is a primary responsibility of the emergency service in a major incident” (London Emergency Services Liaison Panel (LESLP), 2015). Having reviewed multiple inquiry reports and investigations into mass casualty and fatality incidents, it would appear that the focus has been on the care and treatment of deceased and bereaved, not those who survive the incident. Investigations into mass casualty and fatality events tend not to investigate the level of care survivors receive. Furthermore, documentation referring to DVI tends to imply that a *victim* in the aftermath of a disaster is a deceased individual and that survivors and casualties are not considered victims. Yet, the LESLP Manual considers that the classification of victims can include any of the following categories: survivors (uninjured); casualties (injured); evacuees; or dead (LESLP, 2015, 30). There is a gap and a misunderstanding of the need to respond with equal impetus to all those affected in the aftermath, regardless of the terminology used to describe them.

To answer the research question as to what the problems associated with unidentified critically ill patients are and whether DVI should be used, the next chapter critically reviews the literature to examine the causative factors of identification errors and uses Turner’s (1976) Incubation Period Theory as a theoretical framework. The mistaken reliance on visual identification to determine an individual’s identity is simply a contributory factor in how these errors are made. The Incubation Period Theory considers other important causative factors such as organisational exclusivity, the way information is handled and how violations of regulations are treated and emergent dangers minimised.

CHAPTER FOUR

Causative Factors Within the Incubation Period

4.1 Introduction

This chapter seeks to understand the reasons why and how errors in identification can occur, which is key to establishing whether DVI is an appropriate alternative. There have been numerous accounts of individuals being mistakenly identified through the misguided belief that accompanying personal effects suffice for identity or the reliance on visual recognition, such as Cerak and Van Ryn in 2006 (CE-B), the Boston Marathon in 2013 (CE-D) and the Humboldt Broncos in 2018 (CE-F). Yet, these failures are simply one of the causative factors that can contribute to these errors. Consequently, a review of the literature on the causative factors in near misses, incidents and disasters was conducted to understand the theory relating to RO1; why identification errors are made. This review provides the academic context to the findings discussed in Chapter Seven and the findings add to the literature in this field of disaster response and recovery. Each literature review was conducted using Cooper's (1988) synthesis to ensure conformity and a thorough analysis. Appendix III outlines, for information, how this synthesis has been applied to each review.

Identifying the causes of mistakes, incidents, near misses and accidents is standard protocol for organisations in the aftermath of disasters(Coles, 2014, Institution of Occupational Safety Health, 2015). Discussions relating to the causes have often revolved around terms such as 'acts of god' or technological failures, both of which, it is argued, over-simplify the underlying issue. Vaughn (2016), amongst others, suggests that the causative factors are much broader and are most often an amalgamation of socio-technical failures incorporating *both* the human sociological and technological interactions at play. What is clear from the

majority of inquiries into emergencies and disasters is that the aftermath is chaotic and complex, and it is within this challenging arena that the sociological and technological interactions are tested to the extreme.

4.2 What Causes an Incident, Accident or Disaster

4.2.1 The Incubation Period

Following an in-depth analysis into 84 responses to natural disasters, Turner discovered that as the latent defects within the system built up, warnings were missed, resulting in accidents and disasters (Turner, 1978; Turner and Pidgeon, 1997). Turner termed the phrase the 'Incubation Period' (Turner, 1976). Latent failures are considered to be those remote from the 'sharp end' of the system, which would generate 'active' failures (Reason, 2016). For example, an ambulance operator incorrectly using a specific piece of lifesaving equipment would be considered an 'active failure'. The latent failure could be considered the lack of training and testing with the said piece of equipment or faulty design of the equipment forcing the operator to misuse it. Latent failures are considered more difficult to discern and as a consequence harder to determine as the cause of incidents, despite their significant role in causation. Perhaps more significant was Turner's profound awareness of the role of human behaviour in the Incubation Period and how the interaction with the technological systems played a crucial role in how failings occurred. This combination became known as the 'socio-technical problem' (Turner, 1976). The influence of human behaviour alongside the technical system is something that has been studied extensively. Reason's Swiss Cheese Model (1990, 2016) acknowledges that human error plays a significant role in technical and socio-technical failures. Human error is defined by Reason (1990, 9) as:

> A generic term to encompass all those occasions in which a planned sequence of mental or physical activities fails to achieve its intended

outcome, and when these failures cannot be attributed to the intervention of some chance agency.

Recent reviews of incidents show that, despite warnings being highlighted and lessons identified, the same failures seen in Turner's Incubation Period were being witnessed across a wider spectrum of industries and organisations including healthcare and policing (Vincent et al., 1998; Lawton and Parker, 2002; Toft and Reynolds, 2005; Macrae; 2014; The Kerslake Report, 2018; Grenfell Tower Inquiry, 2019). Whilst the use of Incubation Period Analysis is more commonly applied to high risk industries and those associated with technological and social causes of disaster, it is argued that the key themes and concepts are just as valid in their applicability to smaller scale incidents such as identification errors. Furthermore, the learning and outcomes are just as relevant (Coles, 2014; Pollock, 2013; 2017).

There are other theories which aim to determine how incidents and accidents are caused. One such theory is that of Root Cause Analysis (RCA). Although this has been heralded as an excellent mechanism for determining event causation (Rooney and Vanden Heuvel, 2004) and used extensively in the UK National Health Service in the last 10 years, there have been arguments more recently that this theory is flawed. Peerally et al. (2016) and Smith and Plunkett (2018) argue that its use is particularly unsuitable in healthcare settings. They cite issues such as the misguided belief that there is 'a' root cause, thereby narrowing the focus of the investigation and potentially ignoring the possibility that there may be a multitude of factors which lead to errors occurring. In addition, they argue that, based on the results of previous RCA investigations done in healthcare settings, there are issues with the suitability of investigators and the potential for political hijack as a way of swaying the focus of the investigation (Peerally et al, 2016).

Turner's (1976) Theory of the Incubation Period has a much broader scope for potential investigations. Within the Incubation Period four distinct areas were recognisable as being attributable to the development of incidents and the more serious disasters. Although the failure to correctly identify an individual in the wake of a disaster is not what one might class a disaster *per se*, it is, however, a serious

issue with ramifications for the victims (deceased and living), their relatives and the organisations which fail to act appropriately. It is proposed that Turner's Incubation Period Theory and the attributable causative factors could help explain why there remains a failure to adopt change within this area of disaster response, despite the numerous warnings of these events and their consequences. This is especially so in organisations which are highly complex and hierarchical, such as policing and healthcare settings (Braithwaite et al., 2016; Cox et al., 2018). Importantly, incident causation is not necessarily attributed to a single point of failure (Turners, 1976; Reason, 2016; Perrow, 1999; Vaughn, 2006, 2016). Organisations will typically have a number of systems and procedures in place to ensure that a single failure will be prevented from causing catastrophic errors. It is due to the accumulation of these errors, or the chance of the errors happening simultaneously or in a very short space of time, that these potentially minor issues can have serious consequences. Reason's Swiss Cheese Model (1990, 2016) provides an apt analogy for how a hazard can become a loss due to the circumstance of all the errors aligning, despite numerous safeguards in place. This, as mentioned above, is all the more common in the immediate aftermath of a mass casualty or fatality incident, where the response effort is commonly described in government reports and inquiries as 'complex', 'challenging' or 'difficult' (Coles, 2014; The Kerslake Report, 2018; Grenfell Tower Inquiry, 2019).

4.2.1.1 Organisational Exclusivity

According to Turner (1976), mistakes and errors may go unnoticed or ignored due to incorrect assumptions regarding the significance, or lack thereof, of the event or action. Ott's (1989) perception, albeit of industrial and commercial industries, was that organisations were impermeable and exclusive, creating an 'organisational rigidity' of beliefs and perceptions about the underlying cause of a hazard. Furthermore, management and personnel dealing with the issue may be distracted or misled by 'decoy' events. Turner explained that the 'decoy phenomena' occurred when:

> …a contributory factor to the disasters was the attention paid to some well-defined problem or source of danger which was dealt with, but which

> distracted attention from another dangerous but ill-structured problem in the background (Turner, 1976, 388).

Pidgeon and O'Leary (2000) reasoned that, especially in the aftermath, the stress of the sudden event has a tendency to cloud objectivity and distort facts. In addition, any concerns or warnings are misinterpreted, dispelled or ignored, especially if they originate from outside the organisation (Pidgeon 1998; Turner and Pidgeon, 1997). This element of organisational exclusivity exhibits a striking similarity to the medical term of 'cognitive rigidity', which is described as "holding onto initial explanations despite the subsequent accumulation of contrary evidence" (Klein, 2011, 270).

Examining post-disaster government reports and public inquiries, it is clear that organisational exclusivity has occurred and is, in part, attributable to the failings of various front-line responders (regardless of whether the incident error was in the moment or over a protracted period of time). A recent example was the delayed response by firefighters to the Manchester Arena bombing in 2017. A distortion of the facts and a belief that there may have been multiple terrorists meant firefighters did not attend the scene for fear of placing further lives at risk (The Kerslake Report, 2018). Similarly, from a healthcare perspective, many public inquiries cite warnings that are misinterpreted or ignored (Kerslake Report, 2018), such as the argument that the deaths at the Mid Staffordshire Hospital were merely 'coding errors' (Francis Inquiry, 2013).

4.2.1.2 Variable Disjunction of Information

Disaster emergency response is inevitably a complex field, with the need for a rapid intervention to save as many lives as possible whilst trying to manage the risk to responding personnel. Yet the myriad sources of information, fluidity of the situation, misinterpretation of facts, confusion and incomprehension within the complex response can result in a wholly incomplete picture (Turner and Pidgeon, 1998; Pidgeon and O'Leary, 2000) and thus can negatively influence decision making (Horita et al, 2018). Toft and Reynolds explain that:

> Variable disjunction of information' is a (complex) situation in which a number of parties handling a problem are unable to obtain precisely the same information about the problem, so that many differing interpretations of the situation exist (2005, 50).

These factors were very much present in the immediate aftermath of the 2005 London Bombings, where "multiple, often conflicting, reports were being made…" (7 July Review Committee, 2006, 12). The disconnectedness of information meant there were 25 minutes in the immediate aftermath devoid of the right level of response by emergency services. These errors have been reflected on in the public inquiries following the 2017 terrorist attacks in the UK and are noted in the media with headlines such as "'Chaos and confusion' hindered ambulance response to London Bridge attack" (SkyNews.com, 2019). Within hospital settings the confusion generated can often affect the handover of patient information and negatively impact patient care (Yu et al., 2016). Furthermore, the unpredictable nature of the public response to a frightening event and the influx of information (both true and speculative) via social media leads to further levels of complexity (Turner and Pidgeon, 1997; Pidgeon, 1998; Pidgeon and O'Leary, 2000; Collins et al, 2016).

4.2.1.3 Handling Violations of Regulations

Safety precautions may be disregarded and organisational codes of practice, regulatory norms or legal safeguards or laws may be 'bent', especially when events or situations are complex and individuals are pressurised (Turner, 1976; 1978; Toft and Reynolds, 2005). It could be argued that the ethical and moral desire to 'do the right thing' can result in a decision that conflicts with regulations. The following areas have been highlighted by researchers as contributory factors in terms of regulatory and policy violations: ambiguity, lack of understanding, conflict with other goals and outdated regulations (Turner and Pidgeon, 1997; Pidgeon, 1998; Pidgeon and O'Leary, 2000; Reason, 2000; Lawton and Parker, 2002; Toft and Reynolds, 2005). Each of these are briefly reviewed in turn.

Ambiguity: Doubt as to which area of the organisation holds responsibility for an action or set of procedures. There may even be lack of clarity between organisations as to who leads on a particular area of response (Randall and Procter, 2008). For example, in a hospital setting, there may be questions as to whether the medical teams should be notifying police of incoming patients to obtain their details, or police should be proactively dispatched to any and all declared hospitals if there is the potential for patients or families to arrive.

Lack of understanding: Not grasping the full implications of actions taken or why certain protocols should be followed or procedures taken. For example, responders may not know why identification of an individual is important or what the issues may be if an assumption was made about personal effects of an individual. Similarly, the confusion generated while individuals are trying to ascertain the answers in the immediate aftermath can further hinder the response effort. An example of where this has occurred was in the Grenfell Tower response, where METHANE reports were not utilised appropriately, resulting in a confused and insufficient response (Grenfell Tower Inquiry, 2018, 37).

Conflicting goals: This has been cited as an underlying cause in numerous incidents, especially where political and organisational pressures have dictated the focus (Vaughn, 2016). For medical professionals, their primary concern is that of saving life and the secondary concern is the treatment and care of a patient. This is an essential component in understanding why there may be a delay or a perceived apathy toward determining the identity of a patient. Likewise, for the police: crime scene investigation, evidence retrieval and identification of the deceased victims all conflict with the identification of casualties – the majority of whom would be able to communicate their identity effectively to their friends and families in the wake of an incident.

Outdated regulations: Technological advances and improved online data security constantly test the boundaries of regulatory policy control. Outdated and mismanaged information can hinder processes from being adopted across organisations. This is certainly the case when discussing the merits of bio-metric data: fears of data mismanagement and abuse of personal information are

repeated arguments as to why health organisations are delaying the implementation of online data sharing and the implementation of biometric security (Pato and Millet, 2010; Knaus, 2017; Kugler, 2018). Yet there is a strong argument that biometric data could resolve a significant portion of identification errors if the system is implemented and managed correctly.

In addition to the above areas, there may also be an element of selective *moral disengagement* whereby individuals do things that are clearly wrong but create a sense of acceptance when doing them or choosing to remain uninformed about said wrongdoings, to the point where "moral self-sanctions are selectively disengaged from inhumane conduct" (Bandura, 2002, 101; Bandura, 2016). It is proposed that this method of selective moral disengagement is a reason why individuals who are aware of the failures regarding the misidentification of individuals fail to 'raise their head above the parapet' to prevent reoccurrences or to make changes. The above point contributes to a wider issue of *organisational silence* where individuals realise there is a problem but they "…dare not speak the truth to their superiors" (Morrison and Milliken, 2000, 706) and where there is a managerial structure which fears and rejects negative feedback or feedback that may unsettle the status quo (Vakola and Bouradus, 2005; Harmanci Seren et al, 2018). This culture of resistance to raising concerns or 'whistleblowing' has been identified in numerous public inquiries and governmental reports across the board in emergency response organisations and provides a plausible reason as to why there may difficulty acknowledging problems regarding the identification of unconscious victims (Mannion and Davies, 2015; Mannion et al., 2018).

The Kerslake Inquiry in 2018, outlining the lessons identified following the 2017 Manchester Bombing at the Ariana Grande concert, highlighted some excellent examples of how some violations are handled (The Kerslake Report, 2018). It also demonstrated that there are some occasions where certain violations can in fact positively contribute to an evolving situation. In this particular circumstance the position of Police Gold was filled by an individual who had the right level of expertise to handle an attack involving a combination of terrorism and serious crime and who had experience as a strategic firearms commander. The challenging needs of this particular incident very much benefited from this

serendipitous allocation as it was noted that it meant “the right resources, solutions and personnel that would be needed to respond effectively” were prioritised (The Kerslake Report, 2018, 131). However, the response was “…inevitably complicated by the multiplicity of her roles” which as a result meant that certain areas of the response were affected. This included comments by partner agencies that the strategic co-ordination of the incident did not occur in a way that was “anticipated, planned or trained for” (The Kerslake Report, 2018, 131). It was not only the Gold level response role that demonstrated this particular situation of ‘right person at the right time but too much to do’. The Greater Manchester Police Force Duty Officer, acting in the role of Silver, made a series of decisions which were seen as crucial to the response. However, as the situation warranted multiple roles to be performed by the same Force Duty Officer, critical decisions and their implications were not passed to other emergency responders, such as the declaration that it was a Marauding Terrorist Attack (codenamed Operation PLATO) to the ambulance and fire and rescue service (The Kerslake Report, 2018, 66). The pressure to ‘get the job done at all costs’ could also be attributed to a mindset which seeks to disengage with the consequences of getting it wrong, because the focus is on achieving a positive end result. This could be seen to minimise or ignore the emergent danger or negative potential outcome.

4.2.1.4 Minimising Emergent Danger

The desire to downplay events to avoid considering the worst-case scenario can often lead to individuals and organisations trying to minimise the perceived impact (Turner and Pidgeon, 1997; Pidgeon, 1998; Pidgeon and O’Leary, 2000). This can be referred to as ‘sanitising their world of hazards’, making it a perceived safer place to live and work and thereby becoming over-confident about the risks they face (Toft and Reynolds, 2005). This would also lead to individuals ignoring the warning signs and, in some cases, creating psychological ‘blind spots’ (Bazerman and Tenbrunsel, 2011), as seen in the reports and investigations following both terrorist attacks and a number of failures in healthcare settings, most prominently the Mid Staffordshire Foundation Trust (Healthcare Commission, 2009; Francis, 2013; Macrae, 2014). Similarly, the Grenfell Tower Fire in London 2017 provides a

classic example of the minimising of emergent danger. Although there had been numerous complaints about the fire safety of these types of buildings, the risk of a catastrophic fire was ignored. Warnings not being heeded resulted in the deaths of 166 people (Grenfell Tower Inquiry, 2018).

According to Slovik (1987), risk perception is a subjective judgement made when distinguishing and evaluating hazards. Furthermore, an individual who has had a personal and direct experience with a hazard has a perceived idea of future risks and hazards and their potential consequences (Pidgeon and O'Leary, 2000; Toft and Reynolds, 2005; Knuth et al., 2013). It could be deduced that the likelihood of responders addressing and preparing for a risk they have never personally confronted is low and may explain why they might disregard the potential risk or outcome of a proposed risk. It is because of this low perception that the danger is minimised to the individual and potentially the organisation as well.

4.3 Groupthink

Before concluding this literature review it is necessary to briefly introduce the phenomenon of groupthink. In 1972, Irving Janis published a book outlining the principles of the psychological phenomenon that is groupthink. Essentially, groupthink occurs when a group's desire for cohesive working becomes irrational and dysfunctional. The 'ingroup' have the ability to steer decision making and become, in a sense, invulnerable to change that does not conform to their mindset. This particular theory has been used to explain how decision-making has been flawed in the run up to significant events and incidents (Esser, 1998; Whyte,1989; t'Hart, 1990), especially the issues around management and decision-making in governmental and healthcare organisations (Kaba et al., 2016). Whilst there is a danger in oversimplifying decision-making of laying the blame solely at the phenomenon of groupthink (Paulus, 1998; Hauz et al., 2016), it should be recognised that there are real antecedents in this theory that do exhibit themselves in complex and stressful environments such as those seen in the

immediate aftermath of the 2017 Manchester Bombing and the Grenfell Tower fire in 2017. Therefore, the theory should be considered as a contributory factor in the Incubation Period of an incident.

4.4 Summary

A critical component to determining whether DVI could be used to identify an incapacitated patient (RQ) was understanding how such a failure of identification could occur in the first instance (RO1). Although there may be a simple isolated active error such as assigning a nearby wallet to an unconscious individual, there may be numerous contributory latent failures which accumulate to the point whereby that same individual is reunited with the wrong family. This chapter has examined the theory concerning RO1 and how numerous causative factors in the Incubation Period can contribute to incidents and accidents (Turner, 1976). Furthermore, linked with the findings in Chapter Seven, it provides a new perspective on the literature relating to incident causation. From the review of recent major incidents in the UK it is apparent that these factors are still prevalent in emergency response and are contributing to the failures highlighted in the numerous governmental and organisational inquiries and reports. Whilst in isolation some of these may be accepted as simple and erroneous, as they accumulate, the potential for serious consequences increases. For example, failing to accurately communicate all the necessary details included in a METHANE report can result in an insufficient emergency response resulting in a potential loss of lives. Similarly, acting according to one's own agenda or goal, based on perceived risks and experience, may be extremely valuable in certain circumstances. However, if others are relying on the rules and procedures being followed to achieve a more strategic and longer-term goal, then this behaviour, whilst initially valuable, may have serious ramifications. The next chapter looks at the theoretical underpinnings of the potential consequences of these errors and the psychosocial harms that can result, further contributing to the argument that DVI *should* be used in place of current methods.

CHAPTER FIVE

Psychosocial Implications of Mistaken Identities and Failure to Identify

5.1 Introduction

To understand why there may be a need to use DVI as an alternative to visual identification, it is necessary to investigate the implications in terms of harms suffered by those involved in a mass casualty and fatality incident. This chapter examines the literature relating to the psychosocial harms and is divided into four sub-sections. First, the literature relating to psychosocial harms and stress following a mass casualty and fatalities as a whole is discussed. Second, a summary of the impact on the survivors themselves is appraised. This includes a brief review of the literature relating to the importance of identity to an individual. The psychosocial harms to secondary victims, namely the relatives, are then considered in the third section and finally the impact on responders is critically reviewed.

Although the term 'victim' is commonly used to describe individuals who have received the maximum exposure to the traumatic incident, there are, of course, others who may be affected. Taylor (1999), in line with similar legal classifications, classifies victims in a numerical hierarchy. For example, *Alcock v Chief Constable of South Yorkshire Police*[2] distinguished between primary and secondary victims; "those …involved, either mediately, or immediately, as a participant" and those who "…were no more than a passive … unwilling witness of injury caused to others." Similarly, *Page v. Smith*[3] required the primary victim to be "directly

[2] [1991] UKHL 5
[3] [1995] UKHL 7

involved in the accident, and well within the range of foreseeable physical injury". In this study, primary victims are those individuals directly involved and who have experienced maximum exposure. Secondary victims are affected relatives and friends and the third level is made up of rescue workers and first responders. Although Taylor (1999) classifies six levels of victim, for the purpose of this review, only the first three will be considered.

The CE provided in Appendix II provide examples of where and how the psychosocial harm to the unidentified individual manifests itself and is aggravated by the failings of the responders and those ultimately responsible for the patient's care and wellbeing. The method by which the review was conducted is contained in Appendix III.

5.2 Psychosocial Stress and Harm

Disaster analysis by the likes of Quarantelli (1987), North (2016), Paz García-Vera et al. (2016) and Tehrani (2019) have emphasised specific psychological outcomes encountered as a result of disasters, ranging from natural disasters through to man-made technological disasters. Of note were the increases in psychological harms and stress as a result of *intentional* disasters, such as terrorism or shooting sprees (Norris et al., 2002; Paz Garcia-Vera et al., 2016). This review looks at the literature on psychosocial harms in the wake of sudden acute onset disasters or incidents. However, as an identification error can take place over a prolonged period of time (such as the five weeks to determine the identity of Whitney Cerak (CE-B), it was necessary to ascertain how a protracted event may affect individuals.

Psychosocial refers to the emotional, cognitive, social and physical experiences of people in the context of particular social and physical environments (Department of Health, 2009a; NHS England, 2018a, 8), or "the close relationship between the individual and the collective aspects of any social entity" (International Federation

of the Red Cross, 2018, np). Therefore, psychosocial stress and harm is any situation which detrimentally impacts an individual as a result of destabilising their psychosocial wellbeing (Sandifer and Hayward Walker, 2018).

Post-Traumatic Stress Disorder (PTSD) sits at the extreme end of the psychological effects following a mass casualty or fatality incident. PTSD presents a pattern of symptoms following exposure to a traumatic incident. These include re-experiencing the event; avoidance and emotional numbing; negative thoughts and feelings; hyperarousal; and substance misuse (American Psychological Society, 2017; NHS, 2018; NICE, 2018). Other psychosocial issues include mental health issues, self-harming, destructive behaviours and physical symptoms which can result in work and social problems. Symptoms may persist from a period of a month to sometimes years (American Psychological Association, 2017). In the UK, the Cabinet Office describes PTSD as:

> The most destructive form of stress. Comes about as a direct result of unresolved critical incident stress and typically requires mental health intervention to overcome it (Cabinet Office Lexicon, 2013, 66).

The cause is generally attributed to exposure to one or more of the following scenarios whereby the individual: directly experiences the traumatic event; witnesses the traumatic event in person; learns that the traumatic event occurred to a close family member or close friend (with the actual or threatened death being either violent or accidental); or experiences first-hand repeated or extreme exposure to aversive details of the traumatic event (not through media, pictures, television or movies unless work-related) (American Psychological Association, 2013).

Ultimately, the development of PTSD depends on the subjective perception of the traumatic event alongside objective facts (National Institute for Health and Care Excellence (NICE), 2005; 2018).

5.3 Survivor

Those who survive a mass casualty and fatality incident will commonly experience some form of emotional shock and many will suffer from PTSD. A significant amount of research has demonstrated that individuals exposed to traumatic incidents experience a variety of after effects (Mcann and Pearlmann, 1990; Ledoux, 1994, 2003; Tehrani, 2019) and that these can lead to stress and trauma (Katz, et al., 2002; Benedek et al., 2009; American Psychological Association, 2013; Gartlehner et al., 2013; European Agency for Safety and Health at Work, 2014; Brewin, 2015; NICE, 2018). The physical recovery may take months to years depending on the severity of the injuries and, for some, full recovery may never be achieved due to loss of limbs, nerve damage or serious internal damage sustained. Yet, according to de Ceballos et al. (2005, 109), the psychological injury to victims should be considered as important as the physical injury and treated accordingly. Although the emotional shock is generally not lethal (excepting for suicide following the incident), there is significant potential for long-term psychological disability (Frykberg, 2002; de Ceballos, 2005; Makwana, 2019). Numerous studies have demonstrated that a large proportion of individuals admitted to ICU, such as an incapacitated disaster victim, are likely to suffer stress and emotional difficulties and many are at significant risk of suffering PTSD (Bienvenu et al., 2013; Hoffman, 2013; Ratzer et al., 2014; Langerud et al, 2017). Injured patients might be more vulnerable to PTSD due to factors such as: memories of the incident itself (Marra et al., 2017); the unfamiliarity of or discomfort with the clinical ICU environment (Van Ryn et al., 2008; Davidson et al., 2012); and loss of control, including individuals being restrained and medication to ensure sedation (Sackey et al., 2008; Hoffman, 2013). These factors can influence the emotions and feelings during their recovery process.

5.3.1 Incorrect Identification and the Importance of Identity

It is also necessary in the context of this research to consider the implications of being identified incorrectly or not at all. Whilst this is a novel area of research and, as previously explained, there is no literature that exists pertaining to this specific

field, it is essential to briefly examine literature which considers the psychosocial impacts as a result of misidentification.

Goffman, Elliot and Mead considered the “self” to be a product of society, social interactions and the individual’s environment (Mead, 1934; Erikson, 1963; Freud, 1963; Lamert and Branaman, 1997; Elliot, 2014). Similarly, English dictionaries consider the self as “the distinct individuality or identity of a person …” (Collins Dictionary, 2020) or “a person’s essential being that distinguishes them from others, especially considered as the object of introspection or reflexive action” (Oxford English Dictionary, 2014). Analysis of literature relating to the development of self and identity suggests there are four inter-related base-line components in the development of identity and self; nature, nurture, cognition and time (Howe and Feast, 2000; Rocque, Posick, Paternoster, 2014; Lodi-Smith et al. 2017; Nicolson, 2019).

5.3.1.1 Nature

In terms of nature, an individual’s genetic uniqueness is a product of their biometric blueprint, ascertained by DNA. An individual’s biometric identifiers include fingerprints, facial characteristics, voice recognition through vocal patterns, retinal scans and hand and foot geometry. These scientifically identifiable features are essential in determining the exact identity of an individual (INTERPOL, 2018a). Reflecting on Kagan’s (2018) extensive analysis of neurological development, it would appear that some brains are more easily triggered by events than others and may thus be more vulnerable to experiences and the impact of nurture, thereby leading to the postulation that nature and nurture are interlinked.

5.3.1.2 Nurture

Nurture consists not only of the bond between parent and child, but also includes the role of society and community in the development of identity and sense of self. Studies that have considered the importance of nurture and the potential damage that an individual can sustain through poor nurturing include studies of foster home care (Triselotis, 1973; Winter and Cohen, 2005; Vinnerljung and Hjern, 2011) and

research on foundlings or abandoned babies (Mullender et al, 2005) and adoption, including studies on babies and children, who 'fail to thrive' (Drotar, 1985; Homan, 2016). Studies into child brain development and the potential socio-emotional damage sustained through not being nurtured have demonstrated that there are critical outcomes which, at the most extreme, can be life threatening (Drotar, 1985; Perry, 2002; Homan, 2016). It is clear from the literature that the nurture of those who are vulnerable is essential to their development and that the deprivation of nurture has serious consequences for an individual's sense of self (Triseliotis, 1973; Mullender et al, 2005; Winter and Cohen, 2005; Homan, 2016).

5.3.1.3 Cognition

Cognition is fundamentally the concept of the self. In other words:

> … is a knowledge representation that contains knowledge about us, including our beliefs about our personality traits, physical characteristics, abilities, values, goals, and roles, as well as the knowledge that we exist as individuals (Stangor et al, 2014, np).

A crucial aspect of self-concept is the importance of an individual's name, which as Stangor et al. (2014) explain is why even in a bustling and noisy room a person can pick out when their name is mentioned. This cognitive awareness of our name and the importance we and others attribute to it (Bertrand and Mullainathan, 2004; Mahmood and Skogman Thoursie, 2006), provides some indication as to why an individual who is not referred to by name may be confused and uncomfortable.

5.3.1.4 Time

The development of an individual's identity and self are shaped by time (Lodi et al, 2017). As the brain develops, the influence of all the previous interlinked factors adds to the development. As Siegel (2015) identifies, the relationships between cognitive development, influence of nurture and the genetic uniqueness all enable increased neural activity as an individual develops. McAdam and Cox (2010) and

Lodi et al (2017) explain the connectivity of these factors and how they influence identity and the self across an individual's life span.

These four interrelated factors, it is proposed, determine an individual's identity whereby a negative impact to a person's nature, nurture, and cognition over a period of time can have serious consequences. It is argued that the failure to determine identity, by incorrectly naming or by not naming the primary victim at all, can cause emotional trauma. Furthermore, the absence of family and with it the denial of nurture at a crucially vulnerable point in an individual's recovery has serious consequences in terms of cognitive stability. Ultimately, as shown above, the importance of physical healing alongside mental recuperation, incorporating care, compassion and empathy by family and those the patient comes into contact with, is a crucial requirement in a critically injured patient's recovery (Merilainen et al., 2013). Therefore, determining identity and reuniting the individual with their family as soon as possible is an essential component of the patient's treatment.

5.4 Relatives

Relatives are also at risk of suffering emotional and psychological harm. PTSD can occur in an individual learning about the violent death of a close family member or learning of the unexpected injury or violent death of someone close (WHO, 1992; NICE, 2005; Royal College of Psychiatrists, 2015; American Psychological Association, 2017). The accounts and narratives by families in the aftermath of disasters all echo the same desperation and need for information (Edkins, 2011; Kerslake, 2018; Disaster Action, 2019) and families are also at risk of strong emotional distress (Norris et al, 2002; Wisner et al, 2018). Alongside the primary victim, relatives may have difficulty dealing with anger, distrust, contrition or blame, eventually resulting in severe mental health problems in the long term (Norris et al., 2002; Edkins, 2011; Wisner, 2018; Disaster Action, 2019). Furthermore, a study conducted into the Sewol Ferry Disaster in 2014 found that relatives of primary victims suffered changes in their own relationships and those

with society (Huh et al., 2017). These sentiments are all reflected in the accounts of families of the unidentified (see Appendix II). Clearly, the knowledge that their relative has been affected by a disaster is a cause of significant distress.

Though some families may be made aware that their relative has been located and is receiving treatment, others may be left without any information regarding their loved one's whereabouts. In the initial stages relatives and friends will begin the automatic process of searching for any news of their loved one (Edkins, 2011; American Academy of Paediatrics (AAP), 2018). At this stage "…the uncertainty is the cause of indescribable suffering…seesawing between hope and despair…" (International Committee of the Red Cross, 2014, 6-9). For those who are informed that their family member is deceased, a sense of finality is provided. Although there have been examples where the process of identification of the deceased has been protracted, there is a point where the search ends. The answer is no longer ambiguous, and the physical presence of a body can mean that the victim's suffering is over (Miller, 2011; Rubin et al., 2012). Although the families of the deceased may now begin the mourning process, the idea of closure is a myth and the families affected are still repeatedly reminded of the tragedy of their relative's death long after the news of their death has been given (Jackson, 2013).

Those who have no information will continue to search using all avenues in the hope that their relative will be found alive (Fatiya-Williams, 2006). As outlined in Chapter Three, relatives and friends will use all available means to determine answers. For those who are not physically able to search from hospital to hospital, online sources will be scoured for any news of their loved one's whereabouts (Edkins, 2011; Bikker, 2013; AAP, 2018), alongside frantic calls to Casualty Bureaus (CB). Fear, agitation and nervous emotions are all a part of the start of what is termed by some academics as 'ambiguous loss' – a space where loss is 'unfinished' (Kean, 2010, Wayland et al., 2015; Boss, 2016). Alongside the desperation for any sort of news is the deep sense of hope (Wayland et al., 2015). Numerous studies looking at ICU patient care and the involvement of families cite the need for relatives and friends to be involved in the relative's care (Agard and Harder, 2007; Davidson et al., 2012; Blom et al., 2013; National Institute for Health

Research, 2018). It can therefore be inferred that those families who experience obstacles to being able to provide support will experience feelings of guilt, frustration and a need to blame others for not providing information about their loved one's whereabouts. These sentiments have all been reflected in the statements by families of those who have been misidentified or not identified quickly enough (Fatiya Williams, 2006; Disaster Action, 2019).

For families searching for their relatives, the sudden knowledge that their loved one has been affected by the disaster may result in a 'sudden assault on the nervous system' (Rix and Cory-Wright, 2018). This is known in English Law as nervous shock, for which victims may be able to claim for compensation. Notwithstanding the legal basis for a claim, there is an acknowledged impact on those who may not be directly affected but similarly suffer emotional harm and distress as a result of the news. Some families are led to believe that their relatives are being treated in hospital. This may be as a result of another family identifying someone they thought was their relative, as in the case of Cerak and Van Ryn, 2006 (CE-B) and the Humboldt Broncos, 2018 (CE-F), or because a hospital staff member has unwittingly suggested that a photo bears a resemblance to a missing person, such as the case of Justine Moulin in Paris, 2016 (CE-E). It could also be because a responder has assumed the identity of the deceased based on personal artefacts on or near the body, as in the misidentification cases in Boston, 2013 (CE-C), Northern Ireland, 2006 (CE-D) and Scotland in 2018 (see Appendix I). An in-depth study (n=128) by Worsham (2009, 5) looking at the impact of medical errors from the family perspective found that relatives can "suffer enduring, emotional duress that diminishes their ability to enjoy life and are at increased risk of PTSD". Although little evidence has been found to directly support the findings that families suffer psychosocial harm following mistaken identification, the literature regarding the plight of families in the aftermath of disasters clearly indicates that emotional trauma is sustained as a result of their loved ones being involved. Furthermore, inferences can be drawn from research into medical and police errors: patients and their families suffer further harm as a result of these failures, particularly in what they believe is a safe setting (Vincent, 2003; Pierce, 2013). There is a sense of betrayal by those who were in a position of accountability and a perception that the authorities responsible for their

protection have failed in their duty (Casciani, 2015). Furthermore, the psychosocial implications of the feelings of blame and shame can cause trauma (Brooks et al., 2016). These negative effects of trauma can be further intensified when the people or organisations a victim depends on for their safety and survival have violated their trust. This is known as institutional betrayal (Freyd and Birrell, 2013; Martin et al., 2013; Smith and Freyd, 2014; Brooks et al., 2016).

5.4.1 Disaster Information Aftermath

Another potential area of stress for survivors and relatives, regardless of the issue of misidentification, is the combination of both the desire and need for information surrounding the primary victim (Eyre, 1999, Kerslake, 2018). Media reporting, which often sensationalises, misreports or reports out of context, is considered a prominent stressor (Paton, 2003; Scanlon, 2009; Scanlon and McMahon, 2011; Monahan and Ettinger, 2017), especially with the repetitive nature of media coverage (Holman et al., 2014) and the reports of media harassment to those affected (The Kerslake Report, 2018). Furthermore, the complex legal processes, including the identification procedure, potential autopsies, inquests, criminal trials, likely civil proceedings and numerous inquiries, are intrinsically linked and place a significant amount of stress on both primary and secondary victims (Miller, 2002; Disaster Action, 2019). Similarly, information will be required from numerous agencies such as financial service industries and police FLOs, as outlined in Chapter Three, all of which would be sourced from relatives of the individual. In some cases, the absence of pre-arranged powers of attorney and joint bank accounts can make life extremely stressful for those left resolving financial issues (Armstrong, 2014). In addition, there is often an insatiable desire for more personal information, often from relatives, friends and social media (Bikker, 2013; Kerslake, 2018). This accumulative demand for information can be described as the ‘Disaster Information Aftermath’ and, it is argued, is a significant cause of psychological stress in the wake of an incident.

5.5 Responders

To examine the interrelationship between the various psychosocial harms to the responders (as outlined in RO2), this next section appraises the literature looking at the associated variables which result not only in the stress as a result of the incident itself, but also the stress responders are faced with when dealing with a case of unknown identity or a mistaken identity. Furthermore, the understanding of how an error made by themselves or by their organisation leads to psychosocial harm to the responder is considered. These three separate stresses can significantly contribute to the development of PTSD if they remain unmanaged (Bond et al, 2006; Cox, 1993; Cox et al., 2006; Mind, 2018; HSE, 2019). As mentioned previously, there are many causative factors that can result in stress and emotional trauma in the wake of a disaster. There is no quick fix for stress and the remedial action to help individuals is as varied as the causes. It is therefore essential that organisations understand the causative factors and are legally obliged to apply preventative strategies to ensure their workforces are resilient and supported. As outlined above, PTSD is an extreme manifestation of emotional harm and is a significant area of concern for responder agencies. This is especially true when responders are dealing with the seriously injured or the deceased (Miller 2011; Brookes et al., 2016; Soomro and Yanos, 2018; Velazquez and Hernandez, 2019; Tehrani, 2019).

To ascertain the causative factors of psychosocial harms, the following section will be broken down into six sub-themes as identified by the Health and Safety Executive (HSE) ‘Business Case for the Management of Stress Report’ (Bond et al., 2006) and which continue to reflect the current workplace causes of stress (MIND, 2018; HSE, 2019). Whilst very few of these stressors are unique to responders as a whole, these respective sub-themes provide a suitable framework to guide the literature review and present the findings specifically related to psychosocial harms as a result of identification errors.

5.5.1 Demands

The first significant cause of responder stress in the workplace relates to demand. This can include work overload or underload, inflexible working patterns and poor physical working environment (Bond, 2006; Mind, 2018; HSE, 2019). A number of workplace environment studies have found that the physical environment in terms of temperature, noise, familiarity and comfort have all played a role in the causation or prevention of workplace stress (Seidman and Standring, 2010; Bluyssen et al., 2011; Health and Safety Professionals Alliance, 2012; Brookes et al., 2016; Gatersleben and Griffin, 2017). As Tehrani (2019) asserts, there are multiple stressors which contribute to the potential for emotional harm in a mass casualty and fatality event. These include the complexity of the scene, the unpredictable nature of mass casualty and fatality events, time pressures, casualty handling, management of the deceased and the demand for information from multiple sources, much the same as those described in the 'Disaster Information Aftermath' above (see 3.4.1). The last is particularly stressful as the demand to provide relevant and accurate information quickly is essential but doing so can cause substantial emotional harms if the individual is not absolutely certain of the facts. This was confirmed in by a study carried out by the HSE (1999) which investigated the implications of mental fatigue and possible ill health as a result of error causation. Fatigue and long working hours are a common feature of responders (Mind, 2018), especially in the wake of complex disasters plagued with uncertainties (Wilkinson and Bell, 2015;). Furthermore, the psychosocial environment where individuals may be faced with people who are aggressive, in fear or distressed can further exacerbate stress and harm to the responder (Tee et al., 2016; Newbury-Birch et al., 2017; Macguire et al., 2018). This can include a phenomenon known as vicarious trauma, where professionals are required to deal with and listen to both primary and secondary victims' fear, pain and suffering and as a consequence may feel fear, pain and suffering because they care (Figly, 1995; Violanti and Paton, 1999). "In effect, people can be traumatised without actually being physically harmed or threatened with harm" (Wilson and Gielissen, 2004, 201). In terms of managerial support and pressure, both Nieuwenhuijsen et al.'s (2010) review of 2426 studies and Theorell et al.'s (2015) systematic review of the literature looking at workplace environment and stress related disorders support the above findings, but also determined that high demands with limited

support from management demonstrated a strong basis for psychosocial harm. These same findings were reflected in the recent analysis on front-line responders conducted by the charity Mind in the UK (2018).

5.5.2 Control

How much or how little staff members have a say in how their work is carried out was also considered by Bond et al. (2006) and the HSE (2019) to be a significant factor in stress. Job control is the perceived ability to exert some influence over the work environment, thus making it more rewarding and less threatening (Ganster and Fusilier, 1989). When responders were given little control over a highly demanding role, the evidence suggested that there was a high risk of long-term health impairment (Fox et al., 1993; Sverke et al, 2017; Mind, 2018). Other factors included little or no input into decision-making processes; little support when undertaking a new function; or an expectation to simply do something beyond their control (Ayres and Flanagan, 1994; Lloyd, 2018), including the possible risks associated with unknown danger (Blau, 1994). Although there are conflicting views over whether individuals consider the work demands and corresponding control as challenges or hindrances, Jackson and Frame (2018) believe that this ‘decision latitude’ or the lack of control creates an antecedent to stress within the workplace. Of course, these may also depend on the individual’s personal ability to cope based on their own past experiences or mental resilience, as discussed below in s.5.7.

5.5.3 Relationships

The HSE statistical report on work related stress (2019) also found an increased risk of stress owing to the way in which responders interacted with others in the workplace. Berlin and Carlstrom (2011) analysed the collaboration of first responders and identified that there was a rhetorical ideal in terms of the expectations of responder organisations that did not reflect the reality of the response. This, they argued, was due to a number of influences, including differing priorities, silo mentalities in terms of organisational goals, fragmented and sporadic information flows resulting in mismanagement of the incident and

ultimately strain. Brooks et al.'s (2015) systematic literature review of social and occupational factors associated with psychological distress also found that a lack of interagency agreement was an additional stressor during the disaster period. Another interesting finding was that the quality of inter-organisational interaction and team working affected stress levels. In a disaster, responders from multiple agencies are expected to work together often with little or no prior contact. Differences in cultures, terminology, expectations and organisational needs are all substantial sources of stress (Paton and Flin, 1999). They assert:

> This issue is particularly salient when agencies operate collectively only during a disaster, when conflicts emanating from accrued diversity in skill, professional knowledge and philosophy, and personalities, can undermine the effective implementation of structural response models and increase demands on those in leadership roles (1999, 264).

Inadequate communication resources will introduce unnecessary delays in the capacity to adequately respond. Similarly, a response will be severely hampered if there is a failure to obtain accurate and relevant information in a timely manner and poor communication between responders will result in stress (Myer, et al., 2007; Mind, 2018).

5.5.4 Role

Expectations placed on responders to step out of their respective roles may induce fear or doubt on the part of the responder, resulting in 'role conflict' or 'role ambiguity' and ultimately stress (Cox, 1993; Ayres and Flanagan, 1994). For example, FLOs are expected to support those directly affected by an incident whilst simultaneously being required to be part of the criminal investigation, which may include investigating the same family being supported (HM Inspectorate of Constabulary for Scotland, 2003). As Cox (1993, 38) asserts, role ambiguity "manifests itself in a general confusion about appropriate objectives, a lack of clarity rewarding expectations and a general uncertainty about the scope and responsibilities of the job". Individuals who are inadequately trained or have

unclear job descriptions are likely to feel confused and under strain (Mitchell, 2011).

5.5.5 Support

When responders felt unsupported, through poor management or a general lack of leadership, especially during a high demand situation such as a disaster, there was a high risk that those responders would feel under pressure and undervalued and have a strong chance of being psychologically affected (Brooks et al., 2018a). This treatment would leave staff feeling disregarded, hurt or unappreciated by their supervisors (Mitchell, 2011; Mind, 2018). The converse was also true; leaders who had wildly unrealistic expectations of what could be achieved by their teams also induced unease and discomfort (Mitchell, 2011). Lack of adequate communication and collaboration resulted in stress, especially where staff members were given responsibility without the authority to make decisions, or were unclear, or were not consulted about the wider implications of their role and actions during an incident.

Another factor related to support was the influence of the feelings of guilt amongst individuals. Barton's research into the impact on organisational staff in the aftermath of an incident identified that where an individual was exhibiting signs of stress or even PTSD, the additional perception that an error or mistake "occurred on their clock" would elevate the complexity of any disorder suffered (Barton, 1994, 20). Research looking at medical errors found that clinicians and staff who were involved in near misses or incidents had similar feelings of guilt and suffered as a result (Harrison et al., 2014; Bari et al., 2016). It can be inferred from the research of Dewa et al. (2017) that the level of harm suffered by the primary victim had a correlation to the stress the responder suffered.

The need to train in advance of incidents and disasters was a crucial predictor of stress for responders. Inadequate, little or no training meant that staff members were unprepared for the difficulties and uncertainties commonly seen in the wake of disasters (Mitchell, 2011; Macguire et al., 2018). Both Brooks et al's systematic reviews of the literature looking specifically at how training for disaster affected the psychological impact of an incident found that pre-disaster training could improve

the confidence of individuals and their ability to cope with disasters (Brooks et al., 2016; Brooks et al., 2018b). Similarly, they found that when pre-disaster training was offered, employees were better able to recognise the signs of distress amongst responders and understand where the organisation might be vulnerable. This would better support colleagues in future incidents and reduce the risk of psychosocial harms.

Paton (2003) reports that stress vulnerability increased when organisations remained inflexible, did not delegate appropriately and senior management interfered with processes to try and protect the organisations from blame and criticism. The way in which an institution supports its staff can greatly affect how staff members perform their role, but also how mistakes and errors are handled in the wake of an incident. As reflected in the aviation and nuclear industries, no blame cultures and incident reporting aimed at determining the truth without apportioning blame or guilt have been shown to improve staff wellbeing and satisfaction (Reason, 1998; Helmreich and Merritt, 2017). Institutional culture and the influences of subcultures within an institution (such as those of medical and non-medical staff) can alter the likelihood of disclosure, as the individuals feel pressure from reprisals (Fein, et al., 2005). When an individual's perceptions, needs and reactions came into conflict with the organisation's demands, stress increased (Emanuel and Ursano, 1999, 57). Similarly, where the organisations took action against those who made errors, individuals were left feeling betrayed and unsupported; known as betrayal trauma (Platt et al., 2009; Freyd and Birrell, 2013). In the same way that survivors and families can be left feeling betrayed by the institutions that hold a role of protection, as discussed previously, individuals in the workforce can experience frustration, anger and sadness when they feel unsupported. These feelings all exacerbate the stress and levels of harm suffered by individuals.

5.5.6 Change

Stress can also occur as an outcome of how changes are managed in a team (HSE, 2019). Clearly incident response is coupled with uncertainty and how well responders are consulted in terms of expectations and issues can have a direct

impact on their ability to cope (Treurniet et al., 2012). To assist with dispelling uncertainty, METHANE reporting (see s.3.3.1) is intended to pass information to responders (JESIP, 2017). Yet, the METHANE can only report information that is currently known and the complexity of incidents will always have elements of uncertainty and the situation will be in a constant state of change. The fast-paced nature of emergency response means that personnel lack the opportunity to discuss the issues, contributing to stress (Bond, 2006).

Another factor for high levels of stress is the lack of understanding of the rationale for changes, including the lack of communication and updates (Bond, 2006; HSE, 2019). Brooks et al. (2016) explore how concerns regarding the provision of resources and allocation of time to implement changes with minimal resources similarly affected responder wellbeing.

5.5.7 The Role of the Responder and the Influences of Stress

Research has shown that emergency responders may well be able to remain task focused and able to ignore negative emotions for a limited time (Moran and Britton, 1994; Mind, 2018). However, there is agreement that these traits are limited and tend to be self-destructive, and there is a risk that these coping mechanisms will eventually reach a critical point (Paton, 1989; Moran and Colless, 1995). According to Moran (1998, 38), there is an automatic assumption that individuals who choose a career in emergency response are “hardier than most” and good at suppressing their feelings. However, studies have demonstrated that there is little correlation between experience and psychosocial impact (Eyre, 2004; 2006, Mind, 2018) and that, as shown with primary victims, the multitude of factors that can cause negative emotional impacts are so varied that any supposedly desensitising effect is reduced or negated (Moran, 1995). In the management of the critically injured and the deceased, it was found that the physical exposure to death, the presence of dead bodies and those critically injured and dying appeared to be a universal risk factor for more severe post-traumatic stress reactions (Miller, 2011). Furthermore, personalisation and identification with victims in those circumstances demonstrated a particular risk factor for psychosocial harm.

Ultimately, perceptions and interpretations of events around us contribute to our experience of stress and how individuals perceive and process the emergency environment in different ways. How these may account for different stress reactions must all be taken into consideration. Paton and Flin's (1999) study looking at the stress responders faced when responding to disasters found that a lack of plans and protocols initiated ad hoc decision making and significantly increased stress. Similarly, when individuals relied on poorly written plans or procedures (which were based on untested assumptions) they were at risk of executing poor decision-making processes. Similarly, responders were vulnerable if there was role ambiguity as a result of poor plans and a lack of training. These would lead to inappropriate assumptions regarding role expectation, especially when operating in unfamiliar conditions (Kruger and Dunning, 1999; Paton, 2003; Brookes et al., 2015; Miller and Pescaroli, 2018).

5.6 Summary

Unsurprisingly, exposure to traumatic incidents is significantly associated with the psychosocial wellbeing of primary victims, their relatives and responders. Whilst there is a substantial amount of literature looking at the impact to victims of all categories following a traumatic event, the research looking at errors regarding the identification of the critically injured is under researched. However, studies looking at the effects of stress on the responder community are growing. As responders are a part of the disaster and subject to the same physical environment, fears for their own safety and that of those around them should be considered as valid (Richardson and Ardagh, 2013). This explains the necessity to include them under the blanket term of 'victim' or affected; responders have the additional burden of being a victim who has a role to perform in traumatic and often tragic circumstances. While there is evidence to show that some are better able to cope due to their profession, there is also evidence which demonstrates that there is an interrelationship between the working stress in their normal front-line role and an increased risk of PTSD stress as result of a traumatic event or repeated traumatic events. Nevertheless, there is a need to assess how identification errors can

impact a responder. There is also a need to determine how the lack of planning and development of protocols and similarly training within this specific area affects those staff responsible for the care and treatment of victims. Ultimately understanding the psychosocial impact of identification errors supports the argument that DVI *should* be used as an alternative to visual identification and will remove some of the causes of stress outlined in s5.5.

The next chapter examines the literature regarding why organisations fail to identify errors and, more importantly, learn from previous incidents. There is a misguided belief that the law relating to patient consent is preventing the use of DVI in cases of incapacitated individuals. It is necessary to understand why organisations may be using this as a barrier to the implementation of DVI in mass casualty and fatality response situations (Chapter Nine).

CHAPTER SIX

Organisational Learning

"The social costs of accidents make learning very important; the politics of blame, however, make learning very difficult" [Sagan, 1994, 238].

6.1 Introduction

Sagan (1994) sums up the dilemmas within the emergency response field regarding incident reporting and, more importantly, the barriers to learning from them. There is a desire to ensure that responders are identifying and collating lessons relating to an incident, but rarely is the actual learning embedded into the organisation (Birkland, 2009).

Objectives RO3 and RO4 are necessary to understand if DVI can be used in the UK to determine the identity of unknown patients(RQ). This is a particularly important factor to investigate, especially to understand whether DVI *can* been used in response to such disasters (RQ). As outlined in Chapter Three, the technical application of DVI is already established and utilised in the mass fatality response domain, therefore understanding what other factors may be preventing its application in mass casualty responses is important. This section analyses the literature on how organisations within the emergency response industry practically set about trying to identify lessons in the wake of a near miss, incident or accident RO4). It considers how the lessons are documented and information reported. Furthermore, how individuals and organisations learn from a disaster in terms of active or passive styles of learning is discussed and the mechanism of isomorphic learning as a method is considered.

6.2 Learning in the Aftermath of an Incident

In UK emergency response organisations, there are clear guidelines as to how organisations are to gather feedback following an incident and identify the strengths and weaknesses of that response (JESIP, 2019). As the guidance states, “It cannot be emphasised enough that debriefs are a critical source of capturing lessons identified” (JESIP, 2017, 5). These debriefs are conducted to gather specific challenges and operational considerations whilst the event is still acutely memorable. ‘Hot’ debriefs tend to take place in the first 24 hours following an incident and ‘cold’ debriefs take place in the following weeks when individuals and teams have had a chance to reflect on their actions so that further lessons may be identified and hopefully addressed.

6.2.1 Types of Learning

An important aspect of learning lessons is not only the manner in which the information is accumulated but how it is processed and then assimilated. There are, according to the literature on learning, two distinct types of learning, passive and active learning (Mitchel et al., 2009; Antonetti and Garver, 2015). Passive learning occurs when a problem is simply known or identified and active learning takes it a step further (Antonetti and Garver, 2015). Similarly, the knowledge gained through an accident occurring spurs remedial action to rectify the issues at fault. As Toft and Reynolds (2005) admit, there is little point in knowing that a disaster has occurred without actively trying to remedy the discrepancies, and they add that lessons are not learned without putting into place *active* learning.

6.2.1.1 Passive Learning dominates the education landscape (Boyer, 1990, Bonwell and Eisen, 1991; Mitchell, 2009; Tedessko-Schneck, 2012; Macdonald and Frank, 2016). Work conferences, seminars and lectures through to the mere act of reading are all forms of passive learning (Billings and Halstead, 2016). Macdonald and Frank’s 2016 experiments testing the sequence of passive and active learning found that there was in certain circumstances a direct benefit to

receiving passive types of learning, prior to incorporating the active process of embedding and practising the learning activity. It could be summarised from their experiments that simply learning about a problem helps the learner to assimilate a better way of resolving it because it generates a hypothesis about the issue in advance. However, simply knowing about an issue through passive learning does not give an individual or an organisation the skills to handle or respond to the threat or hazard. Macdonald and Frank (2016) claim that a more active form of learning can be adopted based on knowledge gained through the passive experience. Yet, there is a plethora of academic literature that argues that the active form of learning is far more comprehensive and beneficial to those seeking to fully comprehend an issue (Bonwell and Eisen, 1991; Mitchel et al., 2009; Johnson and Johnson, 2017).

6.2.1.2 Active Learning places an expectation on the learner to be involved in and responsible for their own learning (Mitchel et al., 2009; Antonetti and Garner, 2015) where it “engages students in the learning process” (Prince, 2004, 223). Bonwell and Aisen (1991) have been at the forefront of active learning and have argued that the methods incorporated in active learning such as debate, visual learning, cooperative learning and the simple method of writing during learning provide a far more successful way of learning. Active learning can incorporate a number of sub-types, including collaborative learning (Gokhale, 2012; Laal and Ghodsi, 2012), cooperative learning (Slavin, 1980; Johnson and Johnson, 2017) and problem-based learning (Coombs and Elden, 2004; Yew and Goh, 2016).

6.2.2 Single and Double Loop Learning

Prior to discussing the various ways in which organisations can elicit lessons from various events, it is necessary to briefly introduce the concept of single and double loop learning. There are multiple theories that replicate the single and double loop learning model, such as lower and higher level (Fiol and Lyles, 1985), and first and second order (Arthur and Aiman-Smith, 2001). Despite differing originating perspectives, the fundamental principles are all reflected in single and double loop learning. Furthermore, the terms single and double loop learning are more

commonly seen in emergency response literature and are therefore considered a more pragmatic approach to use in the context of this research.

Single loop learning can be described as superficial learning (Chourlaton, 2001; Coles, 2014) and is commonly seen in organisations (Argyris and Shon, 1978, Romm and van Witteloostuijn, 1999; Rouse et al., 2017). Single loop learning reflects the inability of organisations to see that there are latent errors that need resolving and that a simple correction of the obvious failure will not suffice. This reflects an organisational blind spot (Vaughn, 2005, 2017; Fotaki and Hyde, 2014) to the need to critically assess the Incubation Period, as outlined in Chapter Four. Double loop learning involves reframing the scenario or situation to see it in a new context or, as Argyris (1999, 68) describes, "'when mismatches are corrected by first examining and altering the governing variables and then the actions". Double loop learning allows the organisation to question the underlying values, beliefs and initial assumptions driving the action it takes. Finally, triple loop learning is argued to be a method whereby processes and methodologies for arriving at the assumptions are re-imagined (Romm and van Witteloostuijn, 1999).

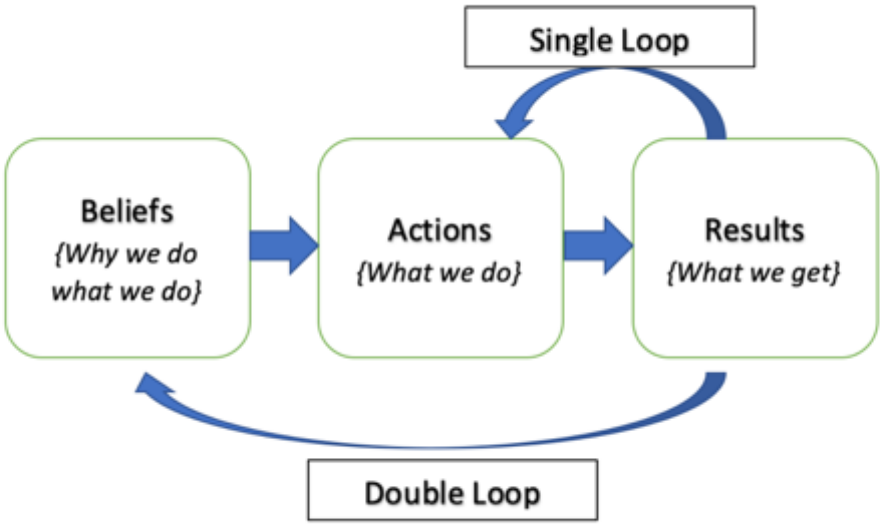


Figure 13. Single and double loop learning. Adapted from Bryant (2009).

6.2.3 Levels of Learning

Toft and Reynolds explain that there are four ways in which an organisation can learn from disasters or accidents (2005). Isomorphism is a term used to describe the ability to transfer “lessons between situations which at first hand appear very dissimilar” (Kirkwood, 1999, 34). It is important to reflect that every incident or disaster may appear to share the same traits, yet each will be unique owing to the multiple factors with the potential for change, for instance people, resources and timings. Therefore, isomorphism is not the study of ‘sameness’; it is the analysis of similarities that can enable learning and therefore change.

Kirkwood (1999) argues that the use of isomorphic thinking has resulted in organisations using it to define system boundaries and that it is not used to guide the decision-making process. However, it is argued that his perspective is flawed. The process should, if used correctly, achieve both; an understanding of the limits and boundaries and a mechanism to enable decision-makers to consider the options available (having learned from positive or negative outcomes in other events) if such an incident were to occur in the future. What Kirkwood (1999) has failed to appreciate is that it is not the isomorphism that is at fault, it is the organisations failure to enact double loop learning, as discussed above. In Kirkwood’s view the failure is noted in a similar organisation, and a system boundary is created to try and prevent its occurrence in their own. However, if the organisation were to consider the causative factors of the incident and drill down into their own organisation to see if similarities were present, then the full extent of higher order learning (or the double loop) would have made proper use of the isomorphic technique which could be shared again. Therefore, it is essential that this management learning technique should be considered as a sound method for understanding how lessons can be learned to enact change. Yet, it may not be the level or type of learning that is at fault, there may be more intangible barriers which inhibit learning, as discussed later.

The first level of isomorphic learning is classed as event isomorphism, where two different events occur which create similar hazardous outcomes (Toft and Reynolds, 2005). Again, using the CE in Appendix II, Cerak and Van Ryn, 2006 (CE-B) and the Boston Marathon, 2013 (CE-D) mistaken identification cases are

clear examples of two different types of event, one being a terrorist attack during a marathon and the other a road traffic collision. Both exhibited failures that were the result of the assumption that the identification in the pocket of the victim was that of the individual carrying it.

The second is cross organisational isomorphism, which exists in organisations in the same industry (Toft and Reynolds, 2005). An accident in one organisation provides the opportunity for the other to learn from its mistake. The case of Moulin (CE-F) is an example of where experiences in one DVI unit (France) led to learning and positive changes in another DVI unit (Brussels); this is discussed in more detail in Chapter Ten.

The third type of isomorphism is that of common mode isomorphism (Toft and Reynolds, 2005) where organisations can belong to completely different industries, yet the processes, procedures, tools or techniques may be the same. For example, reports and inquiries following major disasters can highlight issues such as communication and command and control issues which are common to all responders. Therefore, all organisations can learn from the mistakes highlighted in the reports, despite being a separate organisation.

The fourth type of isomorphism is that of self-isomorphism where the organisation is so large that sub-departments and sections can have accidents and incidents which provide an opportunity for learning in other parts of the organisation (Toft and Reynolds, 2005). This particular isomorphism is very useful in NHS and police environments where the uniqueness of the organisation does not often provide the opportunity to learn from the other types of isomorphism, yet self-isomorphism may offer that opportunity.

Ultimately, by acknowledging isomorphism, the opportunity for organisational learning can be increased and errors can be reduced or eliminated (Toft and Reynolds, 2005). Despite all these opportunities to learn from previous events and incidents and the plethora of research which highlights how these organisations can embed learning, a barrier remains to *actually* learning. There is, as Macrae and Stewart (2019) point out, clear justification as to why there are difficulties or

why some of the methods of isomorphic learning simply do not engender change. The second half of this review looks at what these impediments to learning are in order to reflect on the data found in Chapter Nine as to whether the UK emergency responders were exhibiting similar barriers to implementing DVI techniques with the living.

6.3 Barriers to Learning

There is a multitude of reasons as to why an organisation could be at the mercy of an incident recurring. An analysis of the organisational learning literature found there are a number of potential areas at fault. First, because errors go unreported (Mancini, 1998; Sanne, 2008) and second, because organisations are unable to identify the latent conditions within the system (Jacobsson, et al., 2009). Third, individuals and organisations may seek a scapegoat or find excuses as an alternative to the actual incident causation (Sagan, 1993; Pidgeon and O'Leary, 2000), and fourth, due to political and organisational decision processes (Hovden, et al., 2011). Lastly, there may be issues of hindsight bias and a failure of foresight (Toft and Reynolds, 2005). As highlighted in the analysis in Chapter Four as to why an incident can occur in the first place, it would appear that the same reasons are reflected in why an organisation fails to learn from other organisations or from internal incidents within the same organisations. Furthermore, the accumulation of evidence following an incident or crisis can be vast and may include witness statements, texts, media artefacts, reports and other various documents, which amounts to a diverse and multi-faceted array of information that all needs to be synthesised and contextualised. This is both time consuming and resource intensive and requires significant dedication from an organisation to ensure it is done effectively. This is a notable issue reflected across the literature and is considered a barrier to organisations effectively learning from an incident (Dechy et al., 2015). As Macrae (2016, 75) points out, "We collect too much, but learn too little". Similarly, Birkland (2009) argues that organisations are quick to write up the post incident reports and identify learnings, but in essence these are "fantasy

documents" (Clarke, 1999) which enact little change. In addition to all the above, there is scepticism of research and evaluation practices, which are seen as too far removed from the realities of everyday operational life (Fleming and Wingrove, 2017). Nevertheless, it is important to understand why we make mistakes and to acknowledge that mistakes are being made. Accepting that these occur shows humility (Dhaliwal, 2016). Failure to acknowledge them demonstrates hubris, proves that organisations are bound to repeat the same mistakes which can lead to reputational suicide and the potential for criminal convictions.

6.3.1 Unreported Incidents

Toft and Reynolds note that staff may feel their job is in jeopardy if they highlight risks in their organisation and therefore avoid reporting incidents for fear of reprisal (2005). The aviation industry has addressed this to ensure individuals are praised for highlighting potential failures and use schemes of Confidential Incident Reporting or CHIRPs (Civil Aviation Authority, 2019; CHIRP, 2019) to ensure that near misses and incidents are swiftly addressed. This also aligns with the Authors own military experience. However, as highlighted in Chapter Four, organisational silence and selective moral disengagement will ensure that certain lessons are ignored for a variety of reasons, from fear of reprisal to an outright desire to avoid 'more work' due to laziness or organisational pressure in other areas (Morrison and Miliken, 2000; Bandura, 2002; Vakola and Bouradus, 2005, Lebel, 2016). This is something that has been noted in current clinical practice (Tarrant et al., 2017; Harmancini et al., 2018) and where, despite a voluntary reporting system for incident reporting in healthcare organisations, fewer than 5% of patient safety incidents were reported, with reasons cited as "patient harms were inevitable, about which nothing can be done" (Yu et al., 2016, 4). There is a recurring thread of scepticism in much of the literature focused on medical and police responses as to whether there is an appetite to learn from any incident which is not newsworthy or has not gathered enough political impetus (Pollock, 2013; Macrae, 2014; Waddington, 2015). Conversely, there may be a fear of reporting mistakes and errors out of concern for criminal prosecution at a later stage (Waddington, 2015). Where numerous failures are identified, those that are considered less important at the time may be overlooked or ignored as the focus is drawn to those perceived

as more serious or politically damaging. However, these more subversive, or latent conditions could, in other circumstances, lead to significant failures in other settings. Birkland (2009) noted that in some cases errors may have been observed on numerous occasions prior to an incident yet remained unreported. It is only in the aftermath that these failures are acknowledged and only then incorporated into the incident reports as lessons.

6.3.2 Inability to Identify Latent Conditions

Pidgeon and O'Leary (2000) found that in the Incubation Period leading up to a disaster, difficulties in understanding the information circulating, or the 'intelligence', skewed judgements about the actual causes of the disasters after the events. This can limit the learning to be gained from a disaster, as the analysis in the aftermath is determined by the perceptions of the Incubation Period or cause leading up to the disaster.

Furthermore, as Macrae (2014) points out, the more an organisation focuses on capturing and communicating about the relevant lessons, the more likely it is to miss the warning signals of other potential incidents. Waddington (2015) laments that rather than a 'call to arms', the process of learning lessons in the wake of a disaster is mere pandering to the public, a device for avoiding criticism that costs little and allows an organisation to avoid culpability without appearing "arrogantly dismissive" (Waddington, 2015, 117). These arguments were commonly reflected in the press in the aftermath of incidents such as the Hillsborough Disaster and the Grenfell Tower Fire where it was argued that responders and the political players tried to deflect attention from the cause of the incidents (Scraton, 2013, Bloomer, 2017; MacLeod, 2018).

6.3.3 Political and Organisational Decision Process

The intensive and extensive nature of collecting evidence following an incident requires significant dedication from an organisation to ensure it is done effectively (Stern et al., 2014; Macrae, 2016). Pope and Burns (2013, 677) noted that even

when the evidence is accumulated and presented to senior management within healthcare organisations, there is a “resistance to hearing evidence of a problem and taking effective action”. In their literature review of organisational dysfunction, it was highlighted that this was not a unique issue within the NHS and that it was also reflected in non-UK healthcare organisations. In the aftermath of some events, the learnings may be hijacked by unrelated political motivations that pander to a need to find something to amend but in actual fact have little relevance to the underlying issues (Birkland, 2009). Birkland argues that this political opportunism plays on a societal expectation that ‘something be done’. However, at a more grassroots level, as mentioned in Chapter Four, organisations and their staff can exhibit selective moral disengagement (Bandura, 2016), organisational silence (Pope and Burnes, 2013; Seren et al, 2018), an avoidance of issues to protect reputations and image (Francis, 2010) and what is described as a normalisation of deviance (Vaughn, 2016). Vaughn’s study of space agencies and the decision-making surrounding some of the most catastrophic space industry accidents revealed, in addition to the above, how organisations create blind spots and enable “a way of seeing but simultaneously not seeing” an error for what it is (Vaughn, 1996, 394) or as Chikudate refers to it, a “collective myopia” where management are collectively unable to see that a problem exists (2015). This normalisation of deviance accounts for how errors can be simultaneously recognised and then ignored. This phenomenon has been noted in clinical practice and is gaining increasing interest in the medical sector (Banja, 2010; Schwappach and Gehring, 2014; Price and Williams, 2018). Whilst the normalisation of deviance contributes to incident causation, it also accounts for how lessons fail to be learned and how they are simultaneously ignored when highlighted. In many circumstances, lessons identified may fail to be learned due to the organisation’s political justification that enacting change is too costly or infeasible or, as highlighted above, simply better off being ignored. Birkland’s study of organisational learning noted that it is possible for lessons learned to “decay over time” (2009, 153) and, unless the lessons are institutionalised and built into law, this issue will be at risk from degradation.

6.3.4 Blame and Tendency to Seek a Scapegoat

Historically, the language used to reflect the cause of disasters has focused on statements such as operator or 'human error', however, this can often limit the amount of learning possible, due to not considering the wider perspective of the incident and the factors behind it (Harvey et al., 2001). As previously mentioned, 'latent' (or organisational) failures often underlie the (individual's) 'active' errors (Reason, 1998). In the event that all the relevant information relating to the crisis has been accurately captured and critically appraised, there is some debate as to the effectiveness of the reporting practice in the aftermath (Macrae, 2016; Macrae and Stewart, 2019). As Leistikow, et al. (2017) point out, there is a question as to whether it is there for punitive purposes or to enable an organisation to learn from its mistakes. While disaster 'hot' and 'cold' debriefs assist in recognising the success or failure of the recent response, and hospital incident reports analyse the cause of the individual incident and the nature of the response, rarely do they incorporate the latent causes or the subtler organisational intricacies that can contribute to the mistakes made. Often, scapegoats are used to deflect attention from the true cause (Elliot, 2009; Scraton, 2009) and a blame culture may use arguments or excuses of under resourced and over stretched staff (Elliot, 2009).

6.3.5 Hindsight Bias and Failure of Foresight

In the aftermath of accidents and disasters, there are often individuals who claim to have known that an accident was inevitable due to the decisions made at the time (Toft and Reynolds, 2005). However, from the perspective of the decision makers, it is all too easy to claim a hubristic discernment of hindsight when no action or disagreement was made at the time. Turner and Pidgeon (1997) argue that the decision should be based on whether it was reasonable or rational and not judge the decision-makers with the biased reasoning of hindsight. This is particularly important in terms of organisational learning, as there may be a tendency to try to apportion blame. When judging the decision-making process, reasonability and rationality need to be used. Although some good may come from changes immediately following an event, these should be implemented cautiously. It is extremely difficult to implement rapid change in the culture of an organisation; although the procedures or policies may change, the underlying beliefs and

attitudes may take months or even years to change (Guldenmund, 2000). Furthermore, enforcing a rapid amendment to a process can lead to an incorrect or even harmful corrective strategy (Dhaliwhal, 2016). A high-risk approach that results in success can be hailed as confident, strategic, experienced or gutsy, yet if the decision results in an error, the same decision could be called narrow minded, foolish, over-confident or negligent (Meshkati and Khashe; 2015; Weick, 2015). This reflects what Flin and Fruhen (2015) argue as lack of clarity of decision-making in a crisis. According to Randall and Proctur (2008), ambiguity can trigger ambivalence and while heuristics and biases are both natural there should be a pragmatic accounting process for decision-making (van Stralen and Mercer, 2015). Furthermore, the 20/20 hindsight (Turner, 1976) can often be overly judgemental, especially if the complexities and the context of both the subject-matter and the influential factors at play in the Incubation Period are not appropriately factored, which Stern et al. (2014) argue are essential for extracting the lessons from an incident.

6.4 Summary

This chapter has critically reviewed the literature looking at how organisations may be able to learn from previous events, other organisations or even errors that have occurred within the same organisation. This chapter reflects many of the underlying reasons why errors, incidents and accidents can occur in the first place, especially within the Incubation Period as seen in Chapter Four. Furthermore, this chapter has outlined some of the most commonly recognised methods through which an organisation can reflect on what it does and therefore implement double loop or higher-level learning. There are understandable barriers to not only identifying lessons but to actually learning from them and ultimately taking action to prevent re-occurrence. It may be, as Macrae and Steward (2019) reflect, a combination of the complexity of introducing a change, or that organisations simply cannot accept that it will happen to them, or a hubristic superiority over other's failures. To become informed, organisations need to actively learn from the disasters within their own organisations and from those beyond their

environments. By overcoming the barriers to organisational learning, industries can accumulate vast amounts of knowledge which can be utilised in the creation of contingency and business continuity plans. Expansion of this knowledge can enable an organisation to protect itself from a wide range of latent errors and develop foresight by working alongside other organisations. As Lagadec (1997) argues, it is important not to become attached to any particular model or to compare them too critically. Organisations need to adopt a method of learning that takes into account the evidence and addresses the specific needs of the organisation, and not become overly focused on attempting expansive and unachievable results. This needs to be achieved through in-depth understanding, interpretation and integration that reflects the needs of the organisation in a manner that identifies and corrects the errors (Crossan et al., 1999). Whilst this thesis does not explore the legal impetus that can drive change, it was noted during the course of this review that there appears to be frustration at the lack of enforcement by the authorities to govern change as a result of lessons identified (Elliot and McGuiness, 2002; Elliot, 2009; Burgess, 2011; Coles 2014; Belle, 2016; Pollock, 2017). Although public inquiries and government reports make recommendations and prepare guidelines, these are “often to little avail or impact” (Elliot, 2009, 165). Furthermore, regulators and the regulated often hide behind statistics and as a result an in-depth analysis of actual change and whether lessons have been learned is not conducted. This remains a serious concern and warrants further research.

The following chapter presents the evidence relating to the first objective (RO1) concerning how errors in identification occur and submits the findings supporting the argument that DVI *should* be used as an alternative.

CHAPTER SEVEN

Findings
Research Objective 1 – Incubation Period

7.1 Introduction

The principle aim of this research was to understand whether DVI can and should be used to identify critically injured unknown patients (RQ). This chapter amalgamates evidence that helps to explain the numerous interlinking causative factors that contribute to a patient initially being unidentified and then potentially misidentified (RO1). This chapter uses Turner's Incubation Period Theory (1976) as the guiding analytical framework along with the theory discussed in Chapter Four on incident causation from the likes of Vaughn (2016), Perrow (2016), Reason (2016) and Toft and Reynolds (2005). The data presented here add to the growing literature on the Incubation Period and accident causation within the response effort and look specifically at the interagency work between policing and front-line medical practice.

Observation of Exercise Unified Response (EUR) in 2016 and Exercise Lock in 2017 gave unique insights into the dynamics at play in the initial aftermath of an incident and how the complexity of the incident scene and the clinical setting all influence decision making. These exercises provided an abundance of data which, following extensive scrutiny, was used to understand the nuances that affected the decision-making and response effort. Adding to observation in the field, interviews were also conducted with numerous responders, which provided essential qualitative data in terms of personal perspectives on why incidents occurred. As noted in a conversational interview, "*All emergency responders are tasked first and foremost with saving of lives*" (Conversational Interview, London Fire Brigade Silver, EUR, 2016). These interviews helped to explain what was witnessed in the

field. In addition, these interviews were essential to determine the underlying nature of incident response and decision-making during this critical period. The third methodological process used document analysis as a basis for understanding responder actions and the expectations of those tasked with the care and treatment of critically injured persons. Coupled with the accumulated data sources described above was the use of contextual examples of actual incidents where identification errors occurred. The data presented here provide a basis for understanding why a patient could be unidentified and not reconciled with their relatives in the aftermath of a mass casualty and fatality incident and ultimately seeks to ascertain whether DVI can be used (RQ).

In the Incubation Period (Turner, 1976) there is a “gradually increasing (and yet unrecognised) risk” of errors occurring (Dekker and Pruchniki, 2013, 534). It is within this early stage of an incident that assumptions, misunderstandings, rigidities in belief, disregard of warnings and the outcome of distraction all contribute to errors and failings. Furthermore, the organisations themselves are often inherently complex and bureaucratic, with systemic cultural issues which inhibit the sharing and cooperation between organisations. What was noted during the analysis of the observations, interviews and documentation was that these factors were interlinked. Some were consequences of the complexity of the response and others were influential factors which, as will be seen in this chapter, often result in further confusion and misunderstanding. Ultimately, the combination of these resulted in repercussions which further influenced the outcome of patient identification and care. These causative factors coupled with the legal uncertainty also contribute to organisations failing to identify and learn from previous incidents, as demonstrated in Chapter Nine.

7.2 Variable Disjunction of Information

The first causative factor discussed is what Turner (1976) describes as the ‘variable disjunction of Information’ whereby different organisations are unable to

obtain precisely the same information about a problem, inhibiting effective response. Chapter Three outlined the legal remit under the CCA 2004 for Category 1 and 2 responders to co-operate and share information before, during and after an incident. Similarly, the JESIP joint doctrine outlines the key requirements for effective response, which include co-location, communication, co-ordination, joint understanding of risks and shared situational awareness (JESIP, 2016). The expectation is that all UK responders are to use the guidance alongside their normal procedures to ensure an effective joint response to an unknown hazard (JESIP, 2016; The Kerslake Report, 2018). Yet, the evidence presented below demonstrates that there are multiple influences which negatively impinge on the ability to meet these legal requirements and, as a consequence, information and communication is compromised which can lead to errors such as misidentification.

7.2.1 Complexity of the Scene

The difficult nature of the response and its complexity was evident throughout this research. Documentation relating to mass casualty and fatality incidents such as inquiry reports, responder plans, protocols and academic articles all refer to a mass casualty and fatality incident as ‘complex’, ‘challenging’ and ‘difficult’ (7 July Review Committee, 2006; Pollock Report, 2013; The Kerslake Report, 2018; Grenfell Tower Inquiry, 2019). Interviews with responders confirmed that the fluid and uncertain nature of the situations and the number of unknowns meant that these particular incidents were exceptionally complicated and offered little opportunity to grasp the exact nature of the situation. This was reflected in statements such as those used by initial responders during the early stages of EUR:

> *This situation is blowing my mind, I can’t make out where I’m supposed to be or how many patient’s we are expecting in there, it’s an incredibly complex situation and I’m struggling to make head or tails of it*
> (Conversational Interview HART paramedic, EUR, 2016).

It would appear that despite JESIP's (2017) recommendations, the knowledge of METHANE reporting (Chapter Three, Section 3.3.1) is uncommon, especially its use in Emergency Departments (ED), leading to responders dealing with unknown hazards and resulting in inadequate command and control of these complex incidents. During observation of Exercise Lock, it was evident that it was not being used by Bronze level staff in the ED itself to help them ascertain the facts as they stood at any given moment. It was unclear whether it was being used at strategic levels of hospital management to gain better insight into the situation as it was not possible to co-locate to the Silver meeting area and watch the patient treatment process simultaneously. However, as the information was not being shared with operational or Bronze level responders, clarity over the incident cause and the potential ramifications was lacking. This was of concern as staff had no knowledge of what exactly they were dealing with in terms of patient numbers and, more importantly, potential hazards to staff themselves. This was especially worrying as this was a terrorist incident exercise and the perpetrator was at a later stage being treated as an injured survivor.

In terms of the unidentified patients, there was no reporting mechanism in the chaos to highlight that an individual was admitted without relatives or identity. As will be discussed later, this is due to there being no protocol which directs staff in these instances. Therefore, in amongst the chaos, the 'unknown identity' patient, P1, and their specific circumstances, in terms of lack of identity, went unnoticed.

Similarly, almost every CE analysed is accompanied by statements from responders explaining that the mistake occurred due to the complexity of the scene and confusion and chaos in the hot zone (see Appendix II).

7.2.2 Sharing Information

The chaotic nature of the event impacts on what information is known and how it is consequently shared amongst responders. Information sharing within an organisation itself is essential to ensure that the situation is managed appropriately, and that resources and help are provided in a timely manner. As seen in Exercise Lock, these were issues experienced among hospital staff, but it

was also an issue between responder organisations. Whilst information sharing between paramedic crews and hospital staff was very good and reflected the normality of this aspect of casualty management, this was not the case in terms of interagency working with the police. The attending police documentation team was not informed or in fact involved in any aspect of the casualty documentation process during the exercise. The hospital plan outlines this role in a MI and requires the management of documentation teams in the hospital to be overseen by senior ED staff. However, this did not occur during the exercise and the knowledge that it should occur was lacking as will be shown later. As a consequence, information concerning patients being treated in this hospital would not, in similar circumstances, be passed to the Casualty Bureau (CB) and consequently relatives would be unaware that their family member was being treated in hospital.

Observation of EUR also highlighted issues in terms of sharing information, such as the failure of the Tactical Command Team to notify the police SIM that the first 'joint' tactical meeting was taking place. This resulted in the SIM not being able to share information and to pass the intelligence pertaining to the hot zone to his respective teams, thereby impacting on the overall victim identification process. Similarly, poor information sharing was identified in the duplication and timings of meetings overlapping. Key personnel were required to be in two places at once and this expectation ultimately added to the variable disjunction of information.

7.2.3 Poor Communication

The simplest of communication issues in terms of noting a person's name, annotating it and handing it over were seen to have serious consequences if the patient subsequently lost capacity. Observing two police officers during EUR (2016) who were dealing with a casualty with a head injury (in and out of consciousness), the Author's fieldnotes state:

> *As the police officers handed over their patient to a paramedic and walked away, I stopped them and asked whether they knew the person's name they had been looking after. After thinking for a little while, the officer*

responded with his name [with a look of relief on her face]. I then asked if she had passed his name to the paramedic who then took charge of the patient. [A look of surprise crossed their faces as they looked at each other]. They admitted that, "No, I'm not sure we did". I asked if they had written his name down anywhere and again, they responded that they had not (EUR Fieldnotes Day 1, D.Osborn, 2016).

Despite there being an issue with the documentation process, it is also apparent that patient's names were not being passed on to the CB as recommend (see s.3.6.1). This is an example of how an individual could become an unnecessary 'unidentified' and unknown victim and can impact on the reconciliation process.

Although the CB system was not tested in Exercise Lock or observed as a component of this study during EUR, it is evident that its function is an essential element that relies on accurate and timely communication being passed from the scene and the hospital.

7.2.4 Hierarchy

It was also noted that chain of command affects the way an incident is managed and controlled as witnessed during EUR in a multi-agency meeting. There were also occasions where certain personalities would cause friction and a definite display of 'groupthink' (Janis, 1972) was present in meetings, resulting in tension. These strained relationships between the responder organisations could have resulted in a sense of resentment by those on the receiving end, thereby hampering the communication and information sharing requirements. An extract from the fieldnotes elaborates:

In the meeting, [NAME REMOVED] *from the Local Authority joined the conversation via teleconference. It is clear the individual is not fully aware of the current Mass Casualty and Mass Fatality plans as they are asking questions which are outlined in the policy documents. The Chair of the meeting has just rolled their eyes and deridingly explained the process. Another representative from the Local Authority has asked about funding.*

> *This has been met by a response which has made them look ill-informed and incompetent, despite it being a legitimate question from his area of expertise. There is a real sense of the decisions being swayed by a very forceful character in the position of Chair. There is very little opportunity for a decision to be made that is not in the interest of the individual in control…* (EUR Fieldnotes Day 1, D. Osborn, 2016).

The interview with the head of France DVI, EA, also highlighted that the influence of hierarchy played a role in the actions taken by the French DVI teams in the aftermath of the Paris Terrorist Attacks in November 2015 (see CE- F). The seniority of the Paris Prosecutor meant that any discussion regarding the need to accurately identify everyone was over-ruled by a senior individual who favoured what seemed a quick and easy approach. As EA stated:

> *But right from the start we had said, we should work on all the cases even the ones that had names on them, we should DVI process them. And we were told* [by the Prosecutor] *that we 'shouldn't do that because it wasn't quick enough, and it was very obvious that people with the name were already identified'* (2017).

This decision led to the mistaken identification of Moulin (L'Express, 2016). This sort of pronouncement demonstrated a hierarchical difference between organisations, in this case the Prosecutor and the Police DVI Teams. However, it also exists within organisations themselves where hierarchy and seniority influences decision making (Cox et al., 2018).

The culture within clinical practice is also riddled with claims of hierarchical influence, as noted in the literature review (Schwappach and Gehring, 2014; Braithwaite et al., 2016). This was corroborated in both the fieldwork and interviews and was seen particularly in the decision-making and discussions between nursing staff and clinicians during Exercise Lock. Although examples of camaraderie and team working existed, there were times when seniority and position influenced the consultations taking place. For example, deciding whether using DVI was considered necessary 'treatment' to determine identity highlighted

an area of tension, stemming from confusion of the law, as will be discussed further in Chapter Nine.

Another issue linked to hierarchy and seniority is that of hubris and a sense of entitlement to respect. The expectation that an individual or organisation has a sense of supremacy over a situation has in the past created conflict and has required judicial involvement, such as the events in the aftermath of the Shoreham air-crash, where the police litigated the Air Accident Investigation Branch for witness statements and associated test crash data, including blood samples. The courts upheld that the AAIB was not compelled to share this data. Both Exercise Lock and EUR demonstrated misplaced confidence in what could be achieved, their own abilities and responsibilities (over and above another agency), including what their organisations could do in the given circumstances. These negative hierarchical influences during the response resulted in poorer communication between organisations and individuals and could have harmed the reconciliation process.

7.2.5 Influx of Information Requests

Personal experience of attending multi-agency meetings as an EPO and witnessing the first multi-agency meetings in the initial stages of EUR confirms that there is a constant need for information regarding the incident and the whereabouts of those affected. The uncertainty of the scene and what has happened leads to further questions that need answering. As a result, there is an influx of demands for information, which in themselves add to the pressure and confusion present in incident response. A small incorrect or missing detail can lead to the wrong information being shared countless times, as seen in many of the public inquiries.

In the interviews with CB staff it was noted that this inundation of requests places a significant strain not only on the technical system but also on the teams responsible for the reconciliation process. As both the interviews with CB experts (MH, 2016 and MD, 2017) corroborated, this is an additional burden placed on CB

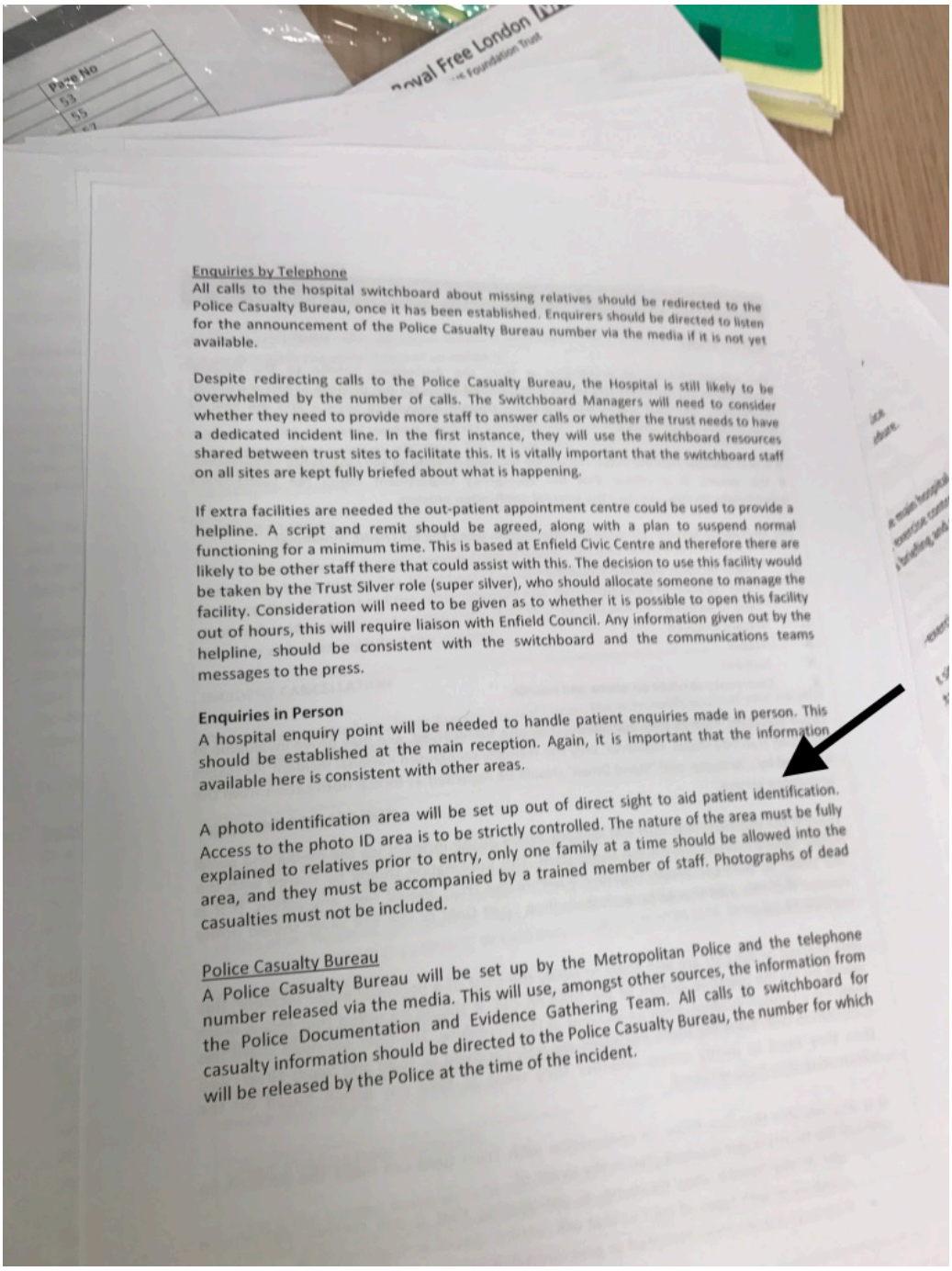
staff during a stressful, yet vital, stage of the information gathering process. As they explained, in many cases, CB staff may have an accurate idea of what has happened to the missing individual, but unfortunately are not allowed to divulge it over the telephone and are required to pass it to the police identification teams to ensure the 'right' person within the police informs the relatives. What the findings show is that without these teams, the reconciliation process and the ability to find the families of the incapacitated patients would be seriously hampered, yet the role of gathering information in the wake of a disaster is further restricted by the sheer demand to provide it.

Similarly, incorrect information passed between agencies in the wake of the Manchester Bombing in 2017 resulted in emergency responders not attending to the injured (The Kerslake Report, 2018). It has also been seen in the cases of CE-C, CE-E and CE-F, where responders have been under pressure to provide answers and have made assumptions regarding the significance of a nearby wallet or ID to fill the void of not knowing.

7.3 Organisational Exclusivity

7.3.1 Beliefs or Perceptions about what is or is not a Hazard or Issue

A fundamental issue uncovered as a result of this research is that the phenomenon of unidentified and unconscious patients is relatively unheard of by responders and the wider public. As a result, plans and policies do not outline the actions that individuals should take when confronted by such cases. Scrutiny of both the responder documentation provided over the course of this research and that found via internet searches revealed that no plans or policies even mention the issue (See Appendix XIII). Analysis of hospital emergency response plans (n=57, See Appendix XIII) corroborated the perspective that visual identification was seen as (and still is in some cases) the solution to the identification issue. Where they do refer to the reconciliation process, the plans highlight the use of visual identification, as shown below.



Enquiries by Telephone

All calls to the hospital switchboard about missing relatives should be redirected to the Police Casualty Bureau, once it has been established. Enquirers should be directed to listen for the announcement of the Police Casualty Bureau number via the media if it is not yet available.

Despite redirecting calls to the Police Casualty Bureau, the Hospital is still likely to be overwhelmed by the number of calls. The Switchboard Managers will need to consider whether they need to provide more staff to answer calls or whether the trust needs to have a dedicated incident line. In the first instance, they will use the switchboard resources shared between trust sites to facilitate this. It is vitally important that the switchboard staff on all sites are kept fully briefed about what is happening.

If extra facilities are needed the out-patient appointment centre could be used to provide a helpline. A script and remit should be agreed, along with a plan to suspend normal functioning for a minimum time. This is based at Enfield Civic Centre and therefore there are likely to be other staff there that could assist with this. The decision to use this facility would be taken by the Trust Silver role (super silver), who should allocate someone to manage the facility. Consideration will need to be given as to whether it is possible to open this facility out of hours, this will require liaison with Enfield Council. Any information given out by the helpline, should be consistent with the switchboard and the communications teams messages to the press.

Enquiries in Person

A hospital enquiry point will be needed to handle patient enquiries made in person. This should be established at the main reception. Again, it is important that the information available here is consistent with other areas.

A photo identification area will be set up out of direct sight to aid patient identification. Access to the photo ID area is to be strictly controlled. The nature of the area must be fully explained to relatives prior to entry, only one family at a time should be allowed into the area, and they must be accompanied by a trained member of staff. Photographs of dead casualties must not be included.

Police Casualty Bureau

A Police Casualty Bureau will be set up by the Metropolitan Police and the telephone number released via the media. This will use, amongst other sources, the information from the Police Documentation and Evidence Gathering Team. All calls to switchboard for casualty information should be directed to the Police Casualty Bureau, the number for which will be released by the Police at the time of the incident.

Figure 14. Page from the Royal Free Major Incident plan outlining actions staff should take to reconcile relatives with patients and referring to the use of photographs to assist identification.

In both the interviews and the fieldwork, it was found that responders had either not considered the problem (and its consequences) or had an incorrect perception of the harm visual identification methods pose when trying to identify deceased or unconscious individuals. As confirmed in the interview with EA, there appears to be a rigidity in the belief that a photograph of an uninjured individual would bear a

clear resemblance to a critically injured person, or that families would automatically recognise their relative who may be seriously wounded and disfigured. As she noted, these beliefs are grounded in the assumption that visual features remain unchanged, which as discussed in the introductory chapters is incorrect. As outlined by DVI experts in the interviews, if front-line medical responders rely on photo ID software to identify individuals, mistakes will continue to be made (Ritchie et al., 2015).

Furthermore, the interviews with international DVI experts at the 2017 UK DVI Conference demonstrated that as a result of numerous identification errors, the belief that the visual method was satisfactory for disaster victims is slowly changing. Yet, interviews with forensic pathologists (BH, TA, JP) in 2017 confirmed that this does not extend to the identification of deceased in day to day fatal incidents. There is mistaken confidence in visual identification for the everyday deceased and this method is correspondingly sanctioned in hospital environments as observed during Exercise Lock (2017).

7.3.2 Incorrect Assumptions Regarding Significance

Errors due to assumptions regarding personal effects can have serious consequences in terms of determining identity. The INTERPOL DVI standards clearly make reference of the requirement to not make assumptions regarding personal effects of the deceased (INTERPOL, 2018a, 18). However, as corroborated by interviews with forensic pathologists, this protocol has neither been shared with nor heeded by other forensic teams who deal with death and identification on a daily basis. These warnings are not reflected in hospital plans either, with respect to the deceased or the living, as discussed above. This therefore leads to responders making incorrect assumptions regarding the suitability of visual identification or personal effects to determine identity. This was witnessed during EUR as shown in Appendix VI (Patient Stacey) and noted in the international cases of mistaken identities, whereby emergency responders made the automatic assumption that the accompanying personal effects belonged to the patient. Conversely, during Exercise Lock in 2017, there was no concern that the patient lacked ID and could not be identified. The assumption in this case was that

it would be someone else's issue to resolve, and no effort was made to highlight the problem as a significant threat to the patient's wellbeing or safety; it appeared that patient treatment and care centred only on physical injuries.

There is clearly a lack of awareness of how serious the consequences of assuming an individual's identity is across the spectrum of responders. This became readily apparent in the early stages of conversational interviews and the more in-depth interviews as the research progressed. However, as will be demonstrated over the next two chapters, the findings presented here may assist in highlighting the significance of these errors.

7.3.3 Decoy Phenomenon

It was noted that the physical treatment of patients was a clear priority of clinical staff and as a result the issues associated with assigning a name to the patient were either not considered or downplayed. Turner (1976, 378) used the term 'decoy phenomena' to suggest a lapse in focus. However, in the context of this study, the term is misplaced, and it would be remiss to consider physical treatment of the individual as a decoy when there is also a need to determine their identity. Of course, there were distractions witnessed in all fieldwork settings which hindered the response effort, such as the need to fill in paperwork, which divided a person's attention. In some cases, there was an imperative to write a name at the top of the triage and response cards, with assumptions being made regarding personal effects such as wallets or ID badges, as confirmed in the interview with EA when discussing how Moulin was mistakenly identified (CE-E). This was also observed in the handling of Patient Stacey during EUR (Appendix VI). Paramedic responders were convinced her name corresponded to the jacket wrapped over her and thus named her Stacey, which was incorrect. The mistaken identities of Cerak and Van Ryn (CE-B) and the Humboldt Broncos (CE-F) were also as a result of being distracted by nearby belongings or photographs of the victims when attempting to learn the patient's names. In other circumstances responders simply did not complete the personal details at all, as noted in the paperwork completed in Exercise Lock and in the handover notes between police and paramedics during

EUR. The focus, as highlighted above, was the need to treat physical injuries and worry about identities later.

Similarly, the demand for information created a decoy and a distraction, as reflected upon in the interviews with responders and CB staff. During interviews with EPOs following the spate of terrorist attacks in London during 2017, it emerged that hospital staff were being bombarded by requests for information and there was no provision in place in hospitals to fulfil those requests. As EPO 1 admitted:

> *I had to run around looking for the police to assist with all the enquiries from families who were searching for their loved ones. The police hadn't sent a Documentation Team… in the end I found a policeman in the carpark and dragged him in to help me* (Interview EPO 1, 2017).

7.3.4 Concerns or Warning from Others Misinterpreted, Dispelled or Ignored

Another issue which contributes to mistakes being made is that concerns or warnings from others are misinterpreted, dispelled or ignored (Toft and Reynolds, 2005). EA, in her interview (2017), declared that despite the warnings from herself and her fellow DVI practitioners, INTERPOL Standards were ignored following the Paris attacks due to the pressure to quickly provide families with identities. Her advice and caution based on experience were not heeded and the decision was made by the Paris Prosecutor to use any accompanying identification with the deceased, resulting in identification errors.

It was also apparent from the fieldwork and interviews that identification mistakes were not considered to be serious. Comments such as *"It's not really a problem"* and *"The families would turn up and find them anyway"* were frequently cited in conversations in both exercises in 2016 and 2017. These types of remarks were quite common in the early stages of the research, despite a few cases having occurred which should have acted as a warning. Interestingly, after presenting the issues surrounding identification of the living at a number of conferences, changes in some DVI organisations took place, albeit slowly. In the final stages of the study,

those DVI practitioners spoken to were more aware of the need to identify the unconscious, yet many were still confused as to who would fulfil the obligation and concerns over the legality of the process remained. However, as will be demonstrated in the Impact Section in Chapter Twelve (s.12.5), there have been improvements within this field resulting in amendments to policies on both a local and national level in the UK.

7.4 Handling Violations

7.4.1 Risk Perception

A key finding of this research was that emergency responders were simply not aware of the risk of identification errors or had not perceived it as a concern in light of all the other outcomes from mass casualty and fatality incidents. There was also, as a result of not knowing of the issue, a lack of awareness of the subsequent harms to the individuals, their families and the responders themselves if an identification error occurred. Exercise Lock demonstrated the effect of this misconception as clinical personnel were unsure of the actions that should be taken when confronted with Patient 1, who had no personal effects on her. What must be borne in mind is that nowhere in the hospital plan did it mention actions to be taken in these circumstances, therefore the risk could be argued to be unknown. This is supported by the comments such as, "*Wow, I hadn't thought of that!"* and *"But surely we and their families would be able to tell by looking at them?*" (Conversational Interviews with responders; 2016, 2017).

7.4.2 Ambiguity

An area where there appears to be ambiguity in terms of managing a mass casualty and fatality incident lies with the police's role in terms of victim identification. During the course of this study it became apparent that there is an overriding belief internationally that the victim in DVI concerns only the deceased. In responder documentation, there is no mention of living victims as the layperson would understand the term. When discussions have taken place with DVI teams

regarding the potential for them to work in the hospital setting to identify the living, there have been protests and a genuine discomfort with this suggestion. Through scrutiny of responder documentation and the interview data, it can be deduced that the overriding culture within DVI is concerned with the deceased victim and the potential requirement to work on a living patient makes DVI practitioners uncomfortable. As EA explained:

> *…but on the unconscious side of the issue was [she pauses], they were, and I will say they are still quite reluctant… I mean it's hard to have firm mentalities change… So, I had to take a post-mortem team and send them to hospitals, and they say, I don't know if it's of interest to you for your work, but they say psychologically it was very hard to go from the dead to the living. So that is one more lesson learned. So, if I had to deal with the case tomorrow, I would dedicate a team to that. I wouldn't mix post-mortem strictly and unconscious people* (Interview EA, 2017).

7.4.3 Conflicting Goals

There were other areas within the hospital setting that contributed to reluctance or avoidance of identifying the individual. This was seen when clinical staff actively avoided involving the police. When nursing staff were questioned as to why the police were not being used to help with casualty identification, there was a misperception that the police would conflict with the overall goal of the ED and would *"…get in the way because this is not the time or place to question people"* (Conversational Interview ED Nurse in Charge, Exercise Lock, 2017). Her understanding was that the police were simply present in a criminal investigatory role, to determine who the criminal suspects might be or to restore peace should there be any violent activity.

As reflected in the statement made by EA in the preceding section (s7.4.2) there was the reluctance of the DVI experts interviewed to consider the need to implement and expand their protocols to include the living victim. There was an over-riding sense that this was outside their remit of responsibility. Although there were limitations to how many DVI experts could feasibly be consulted, the email

from INTERPOL DVI headquarters (see s.9.3.1) demonstrated an apathy for the subject, despite clear examples of good practice from France and Belgium. It was apparent that despite having the necessary scientific skills and resources to identify both the living and the deceased, the focus of DVI teams would remain on the deceased. Whilst public inquiries have for many years emphasised the need to identify the deceased in a rapid and respectful and, most importantly, accurate way, there is clearly a gap in terms of this same respect for living, incapacitated and unknown victims.

7.4.4 Moral Disengagement

Despite Bandura (2016) proposing moral disengagement as a potential factor in error causation (Chapter Four, 4.2.1.3), there was little evidence in either exercise to support this theory when it came to patient care and treatment. In all circumstances clinical staff and emergency responders were concerned for patients. Where ambiguity and confusion were present, their attitudes and actions were focused on what they perceived to be in the best interest of the patients. When the potential consequences of errors with regard to misidentification were explained, the majority spoken to indicated a change in attitude and an acknowledgement that this was an issue that needed resolving. Statements such as:

> *Yes, I can see now why you're doing this as a topic, this wasn't something I'd come across before but there should be something done about it* (Conversational Interview HART Clinician 1, EUR, 2016).

Any hesitation or potential avoidance of the identification issue was not due to a reluctance or reticence to do the right thing but a difference in priorities, perceived or real.

Similarly, as noted by a paramedic's actions during EUR, there was an almost moral imperative to find out who the person was, despite the assumed protocols outlining the need to label a patient as 'Unknown'. Assumed, as no evidence has been provided by Paramedic Organisations with regards to established

identification protocols, see s.11.2.3. When the paramedic was questioned as to whether she was allowed to search a patient's pockets and go through their mobile telephone to determine their identity, she admitted:

> *Not sure it is, but I'd want to know who they were as they might have families who would be desperate to know they were okay after something like this.* (Interview EUR LAS Paramedic 1, 2016).

7.5 Minimising Emergent Danger and Sanitising the World of Hazards

In the initial stages of this research there was a very clear misunderstanding by responders of the issue of patient identification for unconscious and unidentifiable patients. As referred to by Turner (1976), individuals make attempts to downplay the issue and minimise the problem, for example, a senior clinician dismissed the subject stating:

> *I really don't think this is a significant issue. The identification of unconscious patients doesn't cause a problem in routine clinical practice* (Email Correspondence Clinician JB, 2015).

This implied that, first, there was a suitable method for identifying patients, yet, despite a direct request, he failed to elaborate what this method might be or provide any documentation used in routine clinical practice to highlight how it was conceivably done. Second, mass casualty scenarios are a very different situation in terms of response for hospitals and responders as a whole. However, JB claimed:

> *In extremely rare disaster scenarios there is a societal expectation that identification will occur by any means necessary, and in reality, nobody will be sued for using the available techniques* (Email Correspondence Clinician JB, 2015).

This would suggest that a solution would eventually be found that might assist in the identification of a patient. However, as this research shows, there are numerous factors which would seriously hamper and hinder this effort. His last comment effectively dismissed the need for any concern with regard to this issue and demonstrated a complacency that society would be content for responders to simply 'wing it'.

Another area where there was an element of avoidance was in terms of the remoteness of the issue.

> *The chances of something happening like that are so remote, and the families would find their relatives without it becoming a problem* (Conversational Interview HEMS Clinician 1, EUR, 2016).

Similar opinions were reflected in conversational interviews during Exercise Lock and EUR regarding the identification errors and were commonly experienced when working in the field of emergency planning and response. This idea of remoteness is linked with the area of risk perception and how individuals do not consider the risk identification errors as significant or worthy of attention. However, as noted above, once the situation and the consequences of identification errors were explained these perceptions and attitudes changed.

The frequency of use of visual techniques also demonstrates a form of psychological blindness that prevents responders from considering alternatives. Despite numerous examples (as seen in the CE) that have highlighted the significant harms associated with the use of visual identification, very little has been done to change the status quo. Hospitals and corresponding DVI documentation do not consider any alternatives to visual techniques despite the potential for error.

Similarly, the assumption that the families would be able to identify their critically injured loved ones, regardless of the potential impact of injuries, medication and swelling, is of concern. As one interviewee stated, *"The families would just turn up and the situation would sort itself out"* (Conversational Interview Clinician 1, Exercise Lock , 2017). Whilst there were some responders that did agree that the situation was unsatisfactory and a change was needed, there was a reluctance by these individuals to raise it to senior members of staff. A conversational interview with a DVI expert outlined the issue:

> *I'm not sure those above my pay cheque would agree to it, I don't think they'd want to spread the resources too thin and take teams away from the mortuary side of it… we're being asked to slice the edges as it is… and I'm not sure I'd want to rock the boat* (Conversational Interview UK DVI 1, 2017).

This demonstrated the aspects of organisational silence which, when supported by misconceptions of legality, created additional barriers that, it could be argued, prevent solutions or changes being investigated. This was the only occasion where resourcing or funding for DVI was raised as an issue.

7.6 Summary

In addressing the research objective (RO1) regarding how individuals can be mistakenly identified, these findings demonstrate that there are numerous causative factors which can contribute to the Incubation Period in mass casualty and fatality incidents. As the more recent examples have demonstrated, responders and relatives continue to rely on the use of photographs or visual checks to determine a person's identity. The delusion that visual identification is an acceptable method to confirm identity has for years underpinned the causation of errors. As evidenced above, these visual identification errors are compounded by

numerous other factors. The supremacy of *physical* treatment to those injured has resulted in the *emotional* wellbeing of the individual being demoted or ignored. Furthermore, those who may be in a position to help alongside the clinical treatment are being ignored due to organisational exclusivity, conflicting goals and hierarchical issues. As discussed, the plans and policies which should provide guidance on the issue do not adequately include reference to unidentifiable patients, despite international cases highlighting the risks of misidentification, resulting in the problem being minimised. This is in part due to the ambiguity pertaining to the potential harms and the misconception of the law relating to patient consent and assault. Finally, the relatively infrequent nature of mass casualty and fatality incidents and, in particular, within these situations the small numbers of unidentifiable patients, have meant that responders minimise the risk and argue that it "*won't happen*". These findings show that despite being infrequent, these cases do occur and there is a need to ascertain whether using DVI would resolve the problems identified (RQ).

The following chapter considers the findings that demonstrate the psychosocial harms to responders when this supposedly minimal risk becomes a reality.

CHAPTER EIGHT

Findings
Research Objective 2 - Psychosocial Impact on Responders

8.1 Introduction

This next chapter aims to address the research objective (RO2) looking at the extent of psychosocial harm as a result of identification errors, particularly the impact on responders. Chapter Five outlined the literature relating to psychosocial harm and stress. This included an analysis of what is meant by the term psychosocial harm (5.2) and who, in terms of victims, could be affected by psychological and emotional trauma. However, what has not been addressed in previous research is the psychosocial stress and harm to responders as a result of the issues arising from determining the identities of critically injured and incapacitated patients and the potential emotional impact that can result. Media interviews with clinicians in the wake of the Manchester Bombings in 2017 verified that there was real discomfort in treating individuals who had no identities, compounded by the fact that many of the patients were children (Pidd, 2017). As admitted by a clinician following the Manchester bombing:

> I think one of the hardest things was looking after children when we didn't know who they were, we didn't know their name, and we couldn't identify them. I can't imagine what their parents were going through until we did do that, but it was remarkably hard - somehow worse than doing the medication. Not knowing the name of the person you were looking after and not knowing who their parents were so we could talk to them and share with them what was going on. It was a number of hours before we could identify

> everyone... and to see what the relatives were going through, along with the patients, was very difficult (Baker, 2017).

Furthermore, there is a level of shame, guilt and embarrassment amongst responders when mistakes are made in determining identities as explained in the interview with EA (2017)

> …*and even worse we had to talk to the family that never actually came to us in the first place and to explain to them that the person they had been on the side of wasn't their daughter. Which is definitely not a DVI job either* (Interview EA, 2017).

Similar feelings of remorse and shame were noted in the CE of Van Ryn (CE-B) and as expressed in the Saskatchewan's Coroner's Offices statement following the Humboldt bus crash error (CE-F):

> …I can't even imagine putting myself in those families' shoes… I can't even fathom, I don't think enough could ever be said. All I can do is offer our sincerest apologies (Bartko, 2018).

The findings presented in this chapter add to the literature on psychosocial risk and emotional trauma to responders and present primary data relating to the treatment and care of unknown victims, including the risk to and impact on the responders when an individual is mistakenly identified. This chapter outlines the emotional turmoil associated with a lack of understanding of the legality of their actions when using visual identification and demonstrates that there can be stress, especially amongst junior clinicians, associated with dealing with unclear or ambiguous laws and protocols.

8.2 Responder Harms

The data regarding responder harms, whilst growing, remains under researched. The findings in this chapter add to the increasing body of literature and present the potential psychosocial impact on responders as a result of the stress associated with dealing with unidentified victims, both living and deceased, and the psychosocial harms resulting from errors made in the identification process. The interviews with DVI practitioners who have successfully used DVI to identify incapacitated victims present valuable data on the potential impact on responders, positive and negative, of using this technique more widely.

The events in the aftermath of the terrorist attacks in Paris in 2015 and Brussels and Nice in 2017 highlighted a significant change whereby DVI was applied beyond the realm of the deceased and was used to determine and confirm the identities of *both* the living and the deceased. Interviews with senior international DVI team members gave a unique opportunity to understand the psychosocial consequences of the use of DVI in a hospital setting and the factors affecting staff in the process of successfully determining identities and reuniting victims with their relatives. These results are critical in determining the overall research question of whether DVI procedures are an appropriate method to identify critically injured victims of a mass casualty and fatality incident. Without the ability to accurately determine identities, DVI responders and clinicians remain at risk of not only having to admit that errors have been made, but also of having to inform a family who had previously been told their relative is alive that their relative is in fact deceased. This, it is argued, and as primary and secondary data demonstrate, can lead to potentially significant emotional consequences and is therefore a psychosocial risk to responders and those directly affected by the errors.

8.3 The Psychosocial Consequences of Identification Errors for Responders

This section presents the evidence to support the growing body of literature on psychosocial harms and, importantly, adds a new dimension to the research on disaster response. As previously explained, the identification of living victims is a relatively untried and untested element of mass casualty planning. Historically, the impetus has focused on the use of visual identification or assumptions using personal effects found on or near the body. The findings presented here demonstrate that, in addition to the harms to victims and their relatives, there are also substantial psychosocial risks to the responders as a result of identification errors. There are also hazards associated with the lack of planning and preparation for the care and wellbeing of such individuals. The research report for the HSE (Bond, 2006) suggest antecedents of psychosocial harm and stress and is utilised as a thematic guide to systematically present these findings. The same key areas of the causes of stress in front-line responders were also recently highlighted in the extensive investigation carried out by the charity Mind between 2014 and 2019.

8.3.1 Demands

According to Macguire et al. (2018) and Newbury-Birch et al. (2017), the demand generated by the emotional environment is a potential cause of psychosocial harm. Responders may encounter people in distress or fear, which can exacerbate stress and harm to the responder. In addition to the pressure and demand to physically care for and treat the patients, there is also the need for information from families desperate to know the whereabouts of their loved ones. According to EA, relatives were:

> *…desperate, they have a strength that could move mountains, so they will get access to hospitals and they will obtain what they want if you don't do it, for themselves* (Interview EA, 2017).

The CE consistently reflect that the demand for information regarding their loved one's families leads to staff reconciling relatives with the wrong patient through the use of accompanying personal effects as confirmation of identity. As confirmed in the interview with EA and outlined in CE-F, the reconciliation of a patient with their family meant that the patient's details were removed from the 'missing list'. As a result, Moulin's family were led to believe their daughter was deceased as there were no longer any unreconciled cases in hospitals. As EA stressed, this was incorrect, and Moulin was the patient who was with the wrong family in hospital. Unfortunately, Moulin died before the mistake was realised.

These demands on responders to determine the identities of the unknown patient, when no protocols or plans exist to support their efforts, add to their emotional burden. The pressure from families desperate to find their loved ones only makes the situation harder when there is no mechanism to resolve the issue. This example reflects the repeated DVI quote *"Where there is one, there will be two"* (UK International DVI Conference notes, 22 February 2017) and consequently adds to the 'vicarious trauma' (Figley, 1995) for responders. This, EA confirmed, is especially compounded by the knowledge that a family is waiting for news and the fault must be admitted.

8.3.2 Control

Determining identities on an individual case basis is normally quite simple, as reflected by a UK Coroner's assistant:

> *Normally with one body, there will be one family searching for their missing relative, it is relatively straightforward* (Interview mortuary manager JP, 2017).

However, during a mass casualty and fatality incident, determining identities becomes exponentially more complex and difficult due to the increased numbers of those involved. The rapidly changing circumstances and the complex environment can cause responders to try and implement alterative arrangements that are beyond the norm and may be something beyond their control (Lloyd,

2018). As the events in the Paris 2015 terrorist attacks demonstrated, the outcome of multiple locations and casualties spread across the city created a very confusing picture for the responders. As EA explained:

> *On the first days we realised a lot of people were in hospital and that probably a lot of people on the ante mortem side were still alive but they were spread over a lot of hospitals and there was not one single way of actually getting the big picture of who was in hospital, where and how many people in what hospital* (Interview EA, 2017).

Although those responsible for the identification process in France tried to request the transfer of casualties who had died in hospitals to a single location, this was a slow process that hampered the investigation. Furthermore:

> *…families didn't have answers from the police in the very few hours after the event…and it's natural, they would go by themselves to hospitals with pictures of their family member and ask, 'Do you have this person in your hospital?'* (Interview EA, 2017).

In addition, without a clear understanding of what is going on, responders feel they have little control over the event, especially when METHANE reports are not used to share details of what is occurring and who is in charge, as observed in both EUR (2016) and Exercise Lock (2017).

Similarly, responders who have little control or those who are expected to perform outside of the scope of their normal function are at substantial risk of psychosocial harm (Lloyd, 2018). EA's DVI team in France experienced this frustration when their normal protocols of fulfilling the INTERPOL DVI requirements were ignored by the Paris Prosecutor:

> *Right from the start we had said, we should work on all the cases even the ones that had names on them, we should DVI process them* (Interview EA, 2017).

The accountability for identification lay principally with EA's DVI team, yet it was the Prosecutor who had dictated how the dead and their identification should be dealt with. This led to heightened levels of stress and anxiety amongst the Paris DVI teams.

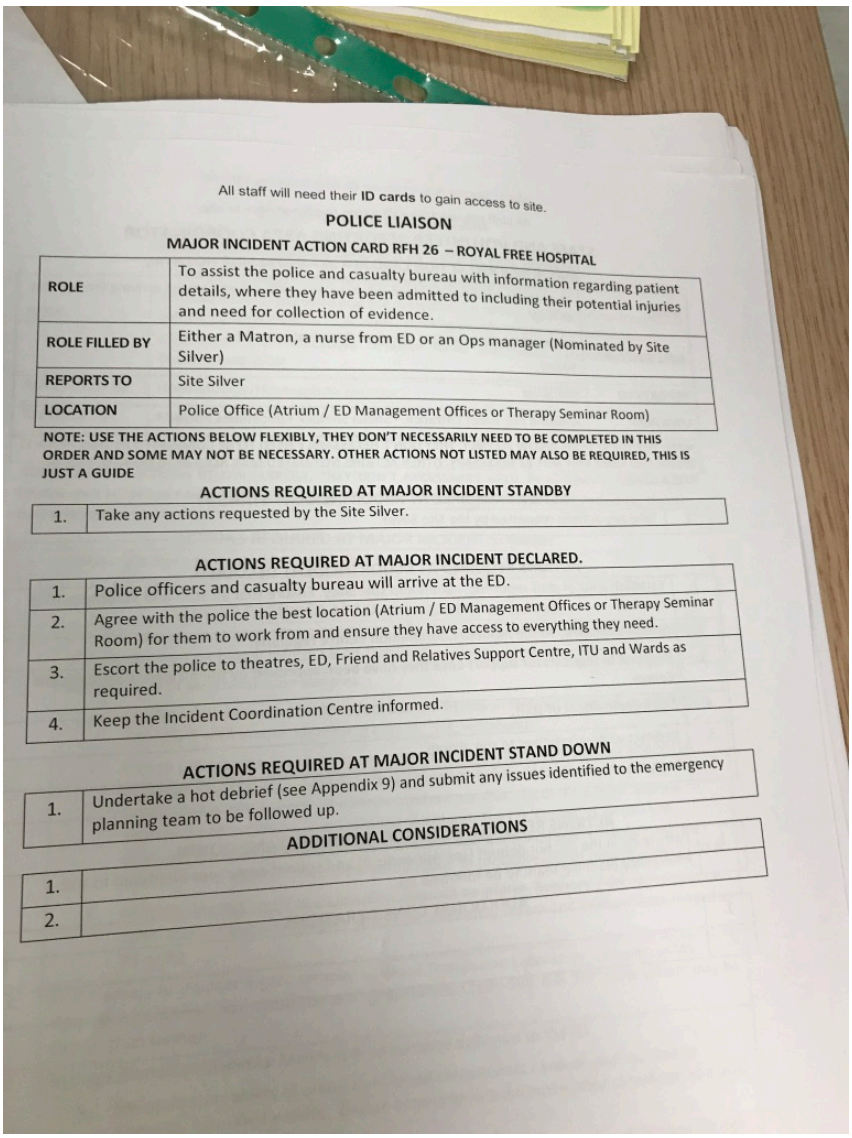
Another example of where the influence of control, or lack of, was noted was during Exercise Lock. The police documentation teams in the hospital were unable to function in accordance with either the CCA 2004 (s.3.2) or the hospital's MI plan. They had no input into the decision-making with regards to any of the casualties and were effectively ignored. This, as shown in the literature, can cause emotional strain and psychosocial harm (Jackson and Frame, 2018; Lloyd, 2018).

8.3.3 Relationships

Knowing who is responsible for which element of the plan is an essential requirement of fostering good relationships (Berlin and Carlstrom, 2011). First, many responders interviewed during the exercises were unaware of identification errors and police and hospital documentation corroborated this lack of awareness; they either signposted to unrelated identification procedures or referred to visual identity. More importantly, the expectation that the police would be involved was proven to be inaccurate, certainly within the early stages of a complex mass casualty and fatality incident. As disclosed by an EPO following the 2017 London attacks, *"I had to run around looking for the police"* (Interview MW, 2017). The insistence by clinicians that the matter should be resolved by police reflects inconsistencies which, as outlined in the literature review, adds to psychosocial stress. As seen in Exercise Lock, when the police were present in the hospital setting, they were not being engaged.

Reflecting on the finding above from Exercise Lock, it was also interesting to note that the unfamiliarity with the MI plan meant hospital staff also missed the reference to the police CB and were not aware that the plan requires cooperation with police team arrangements. The 'Police Casualty Bureau' section (shown at the bottom of Figure 14) explains what the team does and the corresponding

action card (Figure 15) outlines the basic actions to be taken by hospital staff to help fulfil this requirement.



All staff will need their **ID cards** to gain access to site.

POLICE LIAISON

MAJOR INCIDENT ACTION CARD RFH 26 – ROYAL FREE HOSPITAL

ROLE	To assist the police and casualty bureau with information regarding patient details, where they have been admitted to including their potential injuries and need for collection of evidence.
ROLE FILLED BY	Either a Matron, a nurse from ED or an Ops manager (Nominated by Site Silver)
REPORTS TO	Site Silver
LOCATION	Police Office (Atrium / ED Management Offices or Therapy Seminar Room)

NOTE: USE THE ACTIONS BELOW FLEXIBLY, THEY DON'T NECESSARILY NEED TO BE COMPLETED IN THIS ORDER AND SOME MAY NOT BE NECESSARY. OTHER ACTIONS NOT LISTED MAY ALSO BE REQUIRED, THIS IS JUST A GUIDE

ACTIONS REQUIRED AT MAJOR INCIDENT STANDBY

1.	Take any actions requested by the Site Silver.

ACTIONS REQUIRED AT MAJOR INCIDENT DECLARED.

1.	Police officers and casualty bureau will arrive at the ED.
2.	Agree with the police the best location (Atrium / ED Management Offices or Therapy Seminar Room) for them to work from and ensure they have access to everything they need.
3.	Escort the police to theatres, ED, Friend and Relatives Support Centre, ITU and Wards as required.
4.	Keep the Incident Coordination Centre informed.

ACTIONS REQUIRED AT MAJOR INCIDENT STAND DOWN

1.	Undertake a hot debrief (see Appendix 9) and submit any issues identified to the emergency planning team to be followed up.

ADDITIONAL CONSIDERATIONS

1.	
2.	

Figure 15. Image of the Police Liaison action card from the Royal Free Major Incident plan 2017.

However, both sections fail to provide clear guidance on how and why the police teams would operate in the hospital. This might explain why hospital staff had no idea of why the police would be present in the hospital in the initial stages of a mass casualty incident and how they could assist in the reconciliation of patients and their families. It is unknown whether other training events would have covered

these in more detail. As highlighted in the previous chapter, there appeared to be confusion regarding the role of other emergency responders. When the senior clinical nurse was approached as to why the police were not being involved, the nurse very pointedly asked:

> *Why should the police be in here?... This is a place for medical treatment not witness statements, they can do that later. They just get in the way* (Conversational Interview Nurse in charge, Exercise Lock, 2017).

This response by a visibly agitated senior clinical nurse was overheard by a member of the police documentation team who happened to have been standing in a corner waiting to be tasked by the hospital staff. The policeman was in plain clothes, which would perhaps explain why the nurse had not noticed there were police in the exercise. However, as a result of this statement, the policeman raised his eyebrows in amazement and stepped forward to politely but firmly explain that his role was to:

> …*facilitate the flow of casualty information to the Casualty Bureau and to help the 'hospital'* [his emphasis] *reunite your* [hand pointed at her chest] *patients with their relatives* (Observation of conversation between Police Documentation Team and Clinical Staff, Exercise Lock, 2017).

There is naturally a question of whether the comments made in Exercise Lock were a result of previous antagonistic incidents or whether it was simply a result of the stress the nurse was under. It could have contributed to the frustration felt by the police of being seemingly undervalued. Nevertheless, this exchange demonstrated how individuals were unable to make full use of their reconciliation skills and generated a sense of obstruction and ambiguity in major exercise arrangements between partner agencies. It was evident from these exchanges that the individuals were emotionally impacted by their strained relationships and the inability to perform their roles satisfactorily. This impassioned conversation between police and clinical staff displayed a level of animosity between the organisations and added to the stress already present. Whilst this was a particular incident between two individuals in an acute setting, it was not an isolated moment of tension. In an interview with an anaesthetist, the conflicting roles and

responsibilities between police and hospital teams during both normal business and in MIs proved to be an area of contention. He affirmed:

> *There is general distrust when it comes to the police in a hospital setting. From my experience they are very much viewed with suspicion in a clinical setting* (Interview Clinician MB, 2017).

These factors all reflect the findings in the literature relating to the psychosocial harms created by lack of control, demanding situations, strained relationships and so on in the workplace, as identified by the Bond (2006) and Mind (2018) and outlined in Chapter Five.

8.3.4 Role

It was established in Chapter Seven that while some ambulance crews believed that unidentified individuals should be labelled as 'unknown' when handed over to hospital admissions teams, others were unsure. It was also observed and confirmed in interviews and following real incidents that many first responders in a mass casualty situation automatically made assumptions regarding belongings on or near victims leading to potential misidentification. The lack of planning for incapacitated patients is something reflected on throughout this research and substantiates the fact that responders will be unclear about their role in such cases during a MI, adding to psychosocial harm (Cox, 1993; Kamarudin et al., 2018). Furthermore, a lack of awareness of what actions should be taken in these situations can increase the psychosocial risk of role ambiguity and confusion (Bond et al., 2006), as described in Chapter Five (s.5.4.4).

EA confessed that a diversion from her normal role made her unhappy. This was obvious by her continually repeating how "uncomfortable" the situation was for her and her team because:

> *…obviously we were the ones that had to go and tell them* [the families] *what had happened. Which is definitely not* [stressed] *a DVI job* (Interview EA, 2017).

Her team were not only made to be the scapegoats for the errors, they were then required to acknowledge these errors to two families, one of whom had missed the opportunity to be by their daughter's bedside before she died in critical care.

8.3.5 Support

The failure to consider the harms that can occur as a result of identification errors can have serious consequences for responder organisations and their staff. Responders who are not supported in their actions, especially where the errors caused are due to institutional failures, can experience significant stress. For example, EA and her team were blamed by the media and others for the error and felt extreme frustration and shame, despite it being beyond their control. As the literature review in Chapter Five attests, feelings of blame and shame can cause trauma (Ehring et al., 2011; Brooks et al., 2016; 2018b). Furthermore, it could be argued that this was evidence of institutional betrayal trauma (Bloom and Farragher, 2010; Smith and Freyd, 2014; Brooks et al., 2016), where the trust between Prosecutor and DVI teams was jeopardised and potentially tarnished.

8.3.6 Change

As the data relating to the identification errors following the Paris terrorist attacks in 2015 show, the DVI teams were made accountable for the mistakes. This led to an emboldened desire to change perception, not only of DVI as a whole, but more importantly the errors associated with visual techniques and a need to ensure that scientifically accurate approaches formed part of the solution. As EA acknowledged, the outcome of that anger and frustration of being incriminated for the error:

> *…gave us the strength to lobby and fight a lot afterwards to explain why we should DVI process everyone. Cases that seem so obvious* (Interview, 2017).

The psychosocial consequence of being blamed for something that was not their fault provided the impetus for a major reform in the DVI process across the entirety of France. Previously, EA (2017) admitted:

> *DVI awareness was very low in France at the time. It was more a specialist issue, so we were doing our job on our side, but people didn't know what we were doing.*

Significantly, other responders did not realise the inherent dangers associated with visual identification.

Again, the new DVI protocol established was to ensure the victims could be reunited with their families quickly, and crucially, she wanted the process to be carried out in a more measured and calm manner, especially as the events in Paris created so much turmoil amongst her teams. She stated:

> *… we insist* [stressed] *… that people are not identified on the scene because you don't know what happens afterward and you really want the right person to be in the right coffin. So, it's important to identify people in a calm atmosphere afterwards* (Interview EA, 2017).

Yet, the mechanism of identification, specifically ensuring visual identification of the deceased was avoided, was only part of the solution. The other factor was ascertaining the correct identity of critically injured, incapacitated individuals. This, she admitted, was not a simple process, nor without stress for her staff:

> *So, one thing I wanted to underline was that I had the full support of my team as far as not putting a name on the paper was concerned but on the unconscious side of the issue was they were - and I will say, they are - still quite reluctant (Interview EA, 2017).*

This hesitation, she explained, was due to DVI specialists from the post-mortem teams (normally used to working with the deceased) being sent to work with the living, as noted in the quote by EA (2017) (s.7.4.2). In addressing this point, some

of the issues highlighted in the observations of both Exercise Lock and EUR, including interviews with clinicians and DVI teams, suggest why this might have been an issue. As an example, families are not normally present in mortuaries, whereas in hospital wards relatives are frequently visiting patients. DVI staff do not normally have to encounter the victim's families in these circumstances. This additional pressure and unfamiliarity with the environment and other responders can add to psychosocial stress, as noted in the literature review.

Another potential reason for the reluctance EA and her team had could have been purely from the knowledge that the techniques, when strictly applied in the cases of the living, normally concern criminal investigations and not identification. This was described in the literature as conflicting goals or could be considered a 'decoy phenomenon' (Turner, 1976) (s.7.3.3). Yet, *"The idea was to do everything they could do, from the prints, DNA and dental"* (Interview EA, 2017). Nevertheless, there was an apprehension by the DVI team that they would be treated negatively by clinical staff. They worried that they would be considered outsiders who were interfering in the best interests of 'their' (the hospital's) patients or that the techniques applied could invade the rights and privacy of the casualty. In fact, these fears were unfounded. EA explained: *"I would have thought that there could be some issues around that, but there were not."* That she had a preconceived idea of how her staff would have been received reflects the findings that there are occasions when there is animosity between clinical staff and police, including DVI teams. However, EA noted that in the aftermath of the Nice attacks there was a different spirit of engagement between responders:

> *I think it is really because in those situations they just don't want any identification mistakes. They are so happy that someone is actually doing it for them…. everyone had heard about November (the Paris attacks) and what had happened, so it helped a lot and you know they don't want the burden of a mistake* (Interview EA, 2017).

Another interesting outcome from the application of the process was the realisation that her team needed to be deployed rapidly. She recognised that there was an unsatisfactory time delay in her teams response that needed improving:

> *The other thing I would do differently if I had it again is that it was very new, when you're applying lessons learned it did take us 24 hours to act* (Interview EA, 2017).

The Nice attacks made her, and her team realise the importance of fast and accurate response. There was an acknowledged realisation that waiting for the critically injured to recover was not an option they could afford to rely on. She stressed:

> *It's sad to say that persons who are dead, will remain dead, so they can be processed afterward… (Interview, 2017).*

The stress and apprehension suffered by EA and her team were the impetus for positive change of policy and protocol in the use of DVI. There was a clear rationale for amendment and, as a result, significant improvements have been made in this arena in France and Belgium. In the presentations to the DVI conference in early 2017 from non-UK DVI team leaders, including EA, CD, and IVW amongst others, there was an obvious satisfaction and genuine pride in their ability to adapt the protocol used to identify the deceased to the living. The knowledge that families and victims had been spared the psychosocial harms seen in previous cases of mistaken identities gave them pleasure and relief.

8.4 Summary

This chapter presents the data demonstrating the potential harm and psychosocial risk to responders, specifically the issues arising from determining the identities of critically injured and incapacitated patients and the potential emotional impact that can result. In addition to the primary data presented here, the CE and reports in the media following events such as the Manchester Bombings in 2017 verified that there can be real discomfort in treating individuals who had no identities. Any proposed methods that aim to alter an aspect of an operational role (such as

expecting DVI teams to work with critically injured patients) need to take into account and adequately consider the potential psychosocial impact of such changes. Whilst the findings present the psychosocial consequences associated with errors made in the identification process, there is also evidence to show that there can be emotional implications when responders are expected to work with unidentified patients (Pidd, 2017; Baker, 2017) and in unfamiliar settings, with no clear protocols or established processes to follow, such as when using DVI techniques on living individuals who have not consented (Interview EA, 2017; Interview HW, 2017).

Based on the secondary data in the CE and supported by the evidence from interviews with EA, there is a level of shame, guilt and embarrassment amongst responders when mistakes are made in determining identities (Van Ryn et al., 2008; Moon et al., 2018). The findings presented in this chapter add to these sources of secondary data to support the conclusion that responders are affected by misidentification. Plans and protocols are needed, not only to provide guidance on this specific issue, but also to ensure that staff are not left floundering and uncertain of who needs to be involved and at what stage. Furthermore, it is essential that training and exercise events are held frequently to test and audit the plans and the knowledge of the plans. Failure in this respect leads to frustration and confusion which, as previously highlighted, further compounds the response effort and adds to an already stressful event.

CHAPTER NINE

Findings
Research Objective 3 – Barriers to the Accurate Identification of the Incapacitated Unknown Patient

9.1. Introduction

RO3 considers the barriers from the responder's perspective in accurately determining identity, including the perception of the implications in relation to the legality of using DVI to identify the living. This was an area which caused obvious concern, and in some respects, psychosocial distress, as outlined in the previous chapter. DVI experts and some junior clinicians believed that without consent a patient's rights would be infringed, resulting in charges of assault or in civil claims for negligence and infringement of privacy.

The first half of this chapter presents the findings regarding the barriers to implementing an alternative to visual identification. Chapter Six presented the literature in relation to the barriers to learning from incidents and accidents. It noted that public inquiry and governmental and organisational reports in the wake of mass fatalities and casualty incidents offered an opportunity to identify organisational failures, ascertain facts and learn from these events. However, as noted by academics and subject-matter experts, despite failures being identified, unless legislation is changed and the recommendations and guidelines are agreed (and importantly applied by the offending body), few changes occur (Hill, 2010; Coles, 2014; Norris and Shephard, 2017; Pollock, 2017; Wright and Gibbens, 2018). This, it is inferred, could be because the implementation of these recommendations is not (as yet) enforceable and there is little impetus for an organisation to change.

The second half of the chapter will consider whether criminal and medical law within the UK does act as a barrier to the implementation of DVI to identify incapacitated and unknown patients in the wake of a mass casualty and fatality incident. Where legal cases are referred to, Appendix XIV provides a brief synopsis of each for background and interest. The statements and views of the relevant subject-matter experts are provided to demonstrate how their perceptions of the laws influence their behaviours and actions. This chapter will also present the findings on how organisational policies, protocols and guidance (and where applicable their interpretation of the law) may hinder the adoption of DVI with the living. Lastly, it will examine how the responder's organisational cultures and personal perceptions may be obstructing the use of DVI in these circumstances.

9.2 Failure to Learn

This research has found that a significant barrier to the accurate identification of incapacitated and unknown patients stemmed from the failure to learn from previous incidents and disasters. As Coles attests in her 2014 literature review into learning lessons from MIs, lessons identified do not correlate with lessons learned and this is a "'thorny' issue that is not restricted to the UK" (Coles, 2014, 4). During the critical analysis stage, eight sub-themes on why organisations failed to learn became apparent, some more prevalent than others. Observations of hot debriefs and examinations of evaluation reports and incident reports coupled with interviews, triangulated the data to determine if these barriers to learning were present within this niche area of response. Whilst some themes such as hindsight bias, blame and time presented a plethora of data, others were more tenuous areas and the fieldwork and questions initially posed did not offer as much evidence. For example, it is very difficult without being an 'insider' in an organisation to determine all the political and organisational characteristics and nuances which present potential barriers to learning. While it is possible to make assumptions based on the actions of staff, without an in-depth and protracted ethnographic study of each of the organisations, these nuances can be difficult to extract. Nevertheless, it is not necessary for all these barriers to be present to

restrict the implementation of lessons. The presence of any one of them can be enough to inhibit positive changes within an organisation.

9.2.1 Unreported Incidents

In the aftermath of the Manchester Bombings in 2017, clinicians were interviewed by the media to provide their perspective on the response. A significant issue was the discomfort felt when treating unidentified minors and individuals without their consent. Yet, there is no mention of the issue in The Kerslake Report (2018) into the Manchester response. Interviews with hospital EPO colleagues in 2017 and 2018 confirmed that they had not received any debrief reports other than specific clinical feedback and they remain concerned about how they should be improving their own response in this area (Interview EPO SG, 2017; EPO MB 2018). Whether reports were raised and have not been shared across the EPO community remains unclear. Regardless, this demonstrates why there is a lack of awareness regarding identification issues and a general argument as to why lessons are not being learned more widely in the incident aftermath.

In addition to the identification issues seen in the wake of the Manchester Bombing, there were numerous occasions in 2017 and 2018 reported in the media regarding individuals who have been unconscious and unknown. However, in terms of how these individuals were identified in the hours following the event, no information or warnings have been shared amongst responder organisations, despite the repeated occurrences (See Appendix I for all reported cases.)

FAMILY FOUND Cops identify mystery jogger who collapsed in the street with only a single key in his pocket

The man had been wearing a white T-shirt with a purple motif, black tracksuit trousers and white ASICS trainers when he collapsed in Croydon

By Brittany Vonow

22nd December 2017, 10:30 pm | Updated: 22nd December 2017, 10:44 pm

COMMENT NOW

POLICE have successfully identified a jogger who was found unconscious in Croydon.

The man was taken to intensive care after being found on Kendra Hall Road just before midday on Thursday, with only a single key in his possession.

Figure 16. Screen shot of media headline of unidentified man being identified by his personal effects (Vonow, 2017).

Although each case has been reported in the news, these have not been flagged on any NHS reporting database. Furthermore, observing Exercise Lock, no one thought it was worth highlighting to Silver Command that an individual had no identity. The motivation was the medical treatment of the patients. The NHS have a form for recording serious or 'never events'. A 'never event' is an incident that should never occur, such as the surgical removal of the wrong limb and so on (NHS Improvements, 2018b). Yet no individuals interviewed considered the issue of identification of the living incapacitated worthy of being recorded. This may mean that there is an underlying issue with regards to whether this is considered a problem or, as some clinicians have mentioned, they *"do not see it as an issue at all"* (Interview Clinician JB, 2016). Or simply, they do not feel there is a need to report it. This suggests that they are unaware of the latent issues inherent with misidentification and non-identification, which is in itself a barrier to making

improvements in the identification process. It should also be noted that these cases of unidentified victims are not isolated to the UK and there are numerous examples internationally. Based on the evidence from the media reports, and as supported by INTERPOL's acknowledgement that there has been no agreed consensus, this issue requires addressing internationally.

9.2.2 Information Difficulties and Inability to Identify Latent Conditions

As noted above, there are a number of reasons why and how an identification error remains unreported. Similarly, there are a number of ways identification problems can occur beyond the simple visual identification error. As seen in the data relating to the Incubation Period discussed in Chapter Seven, there are a number of conditions that can hamper the identification process, or similarly the ability to learn from an identification failure, even if DVI were to be used. First, the lack of a coherent plan relating to the identification process (as noted in the hospital plans scrutinised (see Appendix XIII); second, the lack of awareness of what partner agencies' responsibilities and roles are (as observed in both EUR (2016) Exercise Lock (2017); and third, the cultural differences between the police and clinical staff and how the animosity between them could therefore hamper shared learning (again as witnessed in the fieldwork and highlighted in the interviews with DVI experts and clinicians). In addition to the above, capturing the relevant information to be shared between organisations was observed to be in issue in both EUR, 2016 and Exercise Lock (2017)(see s.7.3.3). Individuals did not complete the documentation correctly and therefore information was not compiled accurately, nor was it able to be shared appropriately. These factors would all contribute to creating a barrier to learning from an incident, especially the last where there is potential animosity between organisations which could inhibit co-operation and information sharing.

9.2.3 Political and Organisational Decision Process

Individual healthcare trusts in the UK are responsible for their own development of MI plans. Despite an annual audit of plans by NHS England, the audit does not scrutinise the plans and expects individual trusts to confirm their preparedness to

be able to respond. Therefore, until an incident occurs there can be no audit of the organisation's success or failure. Unless the organisation has decided to apply for the Business Continuity Standard BS25999, there is no understanding of the actual quality of the plans. Furthermore, there is little organisational or political impetus to ensure the organisations are fully compliant and well versed in their responses across the organisation. A three-yearly MI live exercise will only test a small proportion of a hospital trust's personnel. It will give an indication of how the generic response arrangements would operate, but it will not provide an insight into the latent issues present or how well prepared an organisation actually is in advance of an incident. Arguably, a plan is simply a collection of paperwork that offers no clear indications as to how well an organisation is equipped to handle a real incident.

The mistakes following the Paris attacks in 2015 provided the stimuli for France DVI to drive change and implement double loop learning to address the lessons identified. As the UK has fortunately not had such a publicly humiliating error in the identification process, there has been, perhaps, little political or organisational impetus within the area of patient identification. After the 2017 terror attacks and disasters such as Grenfell, the numbers of incident exercises increased dramatically across the UK. As noted in the interviews with EPO experts, panic set in amongst senior management who had, it was claimed, become too complacent since the 2005 London Bombings (Interview EPO MB, 2017; Interview EPO SG, 2017; Interview LE, 2018). Furthermore, without senior management support, the overall culture of the organisation will remain unchanged. This is especially true if the senior management do not take the opportunity to enhance their own learning. This was particularly the case following one of the incidents in 2017, as attested by a Hospital EPO:

> *I was in a very difficult situation in the debrief with managing the ongoing politics with my director and not feeling able to say that the very senior director didn't have a clue what she was doing* (Interview EPO MB, 2017).

This naturally means that, despite some teams wishing to embed new processes, without senior management engagement, little change will be forthcoming, as the resources and finances to support those changes will be lacking.

9.2.4 Hindsight Bias

Dhaliwhal (2016) argues that it is human nature to judge the quality of a decision-making process by the result as opposed to the logic that was used. The outcome presented in this thesis is that identification errors are not just the product of avoiding scientific methods. There are other subversive or latent issues such as poor preparedness and interagency communication errors. However, looking at the cases where the failures have occurred in reality poses the question whether those decisions (to not use scientific methods) were both reasonable and rational at the time of the incident. This was an aspect reflected on in the Public Inquiry following the Dunblane Massacre in 1996:

> In retrospect, had we known what we now know in hindsight, that there was going to be great difficulty in communications -- had we known then, we would definitely have done that and taken any responsibility for the insensitivity; because in the end of the day we would have been able to inform the parents much more quickly (Tribunals of Inquiry Dunblane, 1996, Second day, 137).

Whilst it is admirable to reflect on such sentiment in a public inquiry, the reality is that without active amendment to incorporate this learning very little will change. Despite this assertion that the police would improve their communication issues in terms of CB and communication between hospitals, there remains to this day an inconsistency with this area of the response. As confirmed in a conversational interview with a hospital EPO following the Westminster Bridge Attacks, normal protocols as outlined in national and local plans did not occur:

> *The police documentation teams didn't come in. We had to try and do what we could on our own. There was no one from the police to do that job* (Interview Hospital EPO 6, 2017).

Pragmatically, DVI techniques and science were not available in some of the earlier cases of identification errors and applying current expectations to past cases is a clear example of hindsight bias. However, since there is an acknowledgement of the inherent issues with visual identification with the deceased and growing awareness of the pitfalls with visual identification of living patients, there is little argument justifying the lack of its use in more recent incidents. Despite comments such as *"…supposed experts [who] express their views without the necessary information…"* made when discussing the media attention following incidents (Interview Paramedic JB, 2016) and, *"The media like to hear from the armchair experts particularly if it's different to what was done"* (Interview Clinician DW, 2016), the fact is what is being done at present in terms of the identification of living incapacitated patients, certainly within the UK, is wrong. This thesis argues that there is now little excuse for ignorance where identification errors are concerned. Comments such as *"This is not a problem"* (Interview Clinician JB, 2016) when discussing how clinicians would have done it at the time demonstrate an element of '20/20' hindsight or *"We'd just do it anyway"* (Interview Clinician NT, 2017). This fails to consider the nuances and complexities of both the legal system (where you cannot just "do it anyway" there are necessary protocols relating to the Mental Capacity Act 2005 that need to be taken into account) and the difficulties encountered in the immediate aftermath of a disaster (where resources, time and numerous pressures may overwhelm a service).

9.2.5 Failure of Foresight

> *But the more worrying group is those that do not think they need the training as they think they know what to do. It is a complete waste of my time and effort. But also means I live in fear that an incident will occur when those people are on duty. Of course, when there is an incident, you then get the comments that there has not been enough training* (Interview EPO MW, 2017).

Comments such as those above highlight ignorance and complacency and signal a failure of foresight (Toft and Reynolds, 2005). Comments such as *"isolated*

attacks" (Conversational Interview HEMs Paramedic, EUR, 2016) and *"never going to happen to us, these attacks only happen in London or major cities"* (Conversational Interview Clinician, Exercise Lock, 2017) are the rationalisation as to why clinicians and managers feel there is no need to attend training and exercises. For others it is not necessarily a failure of foresight, but perhaps the opposite, as proposed by an interviewee:

> *Some do not come as they think this is all too scary and want to stick their head in the sand hoping it is never them when it happens* (Hospital EPO MW, 2017).

Whilst there are examples of those who do not wish to attend training due to a failure of foresight or a complacent attitude to the risk of such incidents, there are opposing examples, as personally experienced by the Author in her previous roles as an EPO in both Local Government and Addenbrookes Hospital, of those who relish emergency response training. This was reflected by another EPO:

> *The other side of this is that I have a group who come to all the training and all the exercises, they can't get enough. Luckily the main role on the day of Grenfell was filled by one of those people and it scared some of the others into action* (Hospital EPO 2, 2018).

9.2.6 Organisational Memory Loss (or Outdated Memories)

Organisational memory loss poses another threat to the ability to respond effectively. The turnover of staff within an organisation, coupled with the small numbers of the more experienced staff that do turn up to training, means that recollection of past events and any training subsequently given is lost over time. During Exercise Lock the recollection of events during the 2005 London terrorist attacks triggered one individual's memories about why casualty information and the Friends and Family Reception Centres were so vital to the hospital's response arrangements. His ability to learn and recall from his active involvement in the original incident enabled his learning to be shared amongst his fellow clinicians. Furthermore, this enabled a better appreciation of why the issues presented in this

scenario were so important and why they should be considered alongside the medical treatment of the patient's physical wounds. Yet, 'corporate amnesia' (Tinline, 2016) is something that has affected both the UK DVI and NHS response staff. As Coles (2014, 3) points out, these services should all be making provisions to "capture and retain 'organisational memory' and the memory of knowledge within systems that are interoperable". However, this cooperate amnesia is not only due to individuals moving away from the organisation or even forgetting prior events, it is also a failure of the organisations to have a mechanism for reflection on past experiences and adaptation of new ideas and examples of best practice. In some cases, mistakes are a result of a complacency based on old memories or, even worse, outdated plans. As an EPO reflected:

> *I am always coming across teams who still have the old action cards or an ancient copy of the plan in a dusty folder on the top shelf and that is despite regular communication going out about new plans* (Interview, London EPO 5, 2018).

Their reliance on memory or out of date training leaves them vulnerable to not being cognisant of the current rules and procedures. This is particularly an issue if these individuals are expected to work with outside agencies.

9.2.7 Time

The lack of time was a key finding in terms of organisations being unable to make the most of learning from past events and incidents. Furthermore, the pressure on some clinicians and hospital management meant they had no time to attend training courses or exercises. Implementing lessons requires a significant dedication on the part of the organisation to not only capture the lessons appropriately, but also to disseminate those findings and to dedicate the hours needed to ensure they are absorbed in the establishment, whether it is through active or passive means. This was particularly the case following EUR; over 200 hours of video footage was taken by the London Ambulance Service and, according to the interviews, *"nothing has been done with it as there has not been the time or the people to study it"* (Interview Clinician NT, 2017). In a clinical

establishment where the pace of work is often unrelenting, this time taken away from the busy day job is *"a luxury we can't afford"* (Conversational Interview Exercise Lock Clinician, 2017) and was considered a burden on their stressful work life balance, with statements such as:

> *I do not have the time to go to my own managerial meetings, never mind attend a major training session for a random terrorist attack that's not likely to happen here* (comment overheard in EUR between clinicians discussing attendance at annual training, 2016).

In an interview with a clinician it was simply a case of pragmatism and realism from their point of view: *"The default is the patient in front of them and not some hypothetical disaster in the future"* (Interview Clinician DM, 2016). As seen above, active learning involves a hands-on approach and determination to engage in the process. An annual table-top or 'live' exercise every three years is the UK national minimum standard to ensure an organisation tests its response. Thus, there can be a significant period of time between opportunities to learn, especially if the live exercise or incident only manages to capture a small element of the organisation every three years.

These attitudes, captured in advance of the terrorist attacks in 2017, reflected a common approach amongst clinical teams where normal business was seen as far more important than an hour spent in a MI control room rehearsing the MI plan. According to a hospital EPO, this unwillingness or inability due to time constraints to attend training and exercise sessions "*is really common and drives me mad. Some people are that bad that I know when they book a place, they will not turn up"* (Conversational Interview EPO 6, 2018).

9.3 Does UK Law Act as a Barrier to Implementing DVI?

Currently, no precedent exists for establishing the identity of the living using scientific means such as those used in DVI. The next section briefly considers and summarises the relevant criminal and medical laws and protocols which should be taken into account when considering any application of care and treatment to patients in the UK, especially where that person remains incapacitated. These are assessed in terms of their relevance to acting as either a barrier or, conversely, a positive obligation to act in favour of identifying a critically injured unknown patient.

9.3.1 The Mental Capacity Act 2005

The MCA 2005 establishes the fundamental principles that are necessary when treating patients in the UK and specifically those who lack capacity. In respect to any treatment provided, the Act states that consent is required. According to the Reference Guide to Consent for Examination or Treatment:

> For consent to be valid, it must be given voluntarily by an appropriately informed person who has the capacity to consent to the intervention in question … (Department of Health, 2009b, 9).

The MCA 2005 defines a person who lacks capacity as someone who is unable to make decisions for themselves because of an impairment or disturbance in the functioning of their mind or brain (NHS England, 2018b). The disturbance means they are unable to make specific decisions at the time they need to be made. This disorder is not time dependent or limited and it could therefore be a temporary impairment caused by drugs or alcohol or more long term due to a traumatic incident or due to medication. The MCA sets out five statutory principles and a number of legal obligations which underpin the requirements regarding decision making and capacity:

s.1(1) A person must be assumed to have capacity unless it is established that they lack capacity.
s.1(2) A person must not be treated as unable to make a decision unless all practical steps to help them to do so have been taken without success.
s.1(3) A person is not to be treated as unable to make a decision because they make an unwise decision.
s.1(4) An act done, or decision made, under this Act for or on behalf of a person who lacks capacity must be done, or made, in his best interests.
s.1(5) Before the act is done, or decision is made, regard must be had to whether the purpose for which it is needed can be effectively achieved in a way that is less restrictive of the person's rights and freedom of action.

Figure 17. Extract from the Mental Capacity Act 2005 establishing the statutory principles.

What these principles propose in respect of an incapacitated individual is that, primarily, the treatment and care must be in their best interests, as stipulated in s.1(4) above.

9.3.1.1 Acting in the Patient's Best Interests

Throughout the interviews with clinicians, the patient's best interests were continually referred to with regard to their capacity (or lack thereof), especially if DVI were to be used to identify an incapacitated patient. A patient who is able to consent to treatment would be considered to be communicating their own best interests, whether the decision was deemed wise or not (see s.1(3) above). This is regarded as having capacity. The MCA 2005 does not specifically outline what is defined as a person's best interest, it merely establishes a checklist to act in those best interests (Keene et al., 2015). The reason for this is explained in the Mental Capacity Act: Code of Practice:

> The term 'best interests' is not actually defined in the Act. This is because so many different types of decisions and actions are covered by the Act,

> and so many different people and circumstances are affected by it (Department for Constitutional Affairs, 2007, 68)

According to English law, to determine best interests, the Supreme Court case of *Aintree University NHS Hospital Trust* v *James*[4] emphasised that "the purpose of the best interest test is to consider matters from the patient's point of view" (para 45). Specifically, in terms of those who lack capacity, the case of *F* v *West Berkshire Health Authority*[5] established the foundation of necessity and best interests for the treatment of an incapacitated adult. Lord Brandon stated:

> The operation or other treatment will be in their best interests if, but only if, it is carried out to save their lives or to ensure improvement or prevent deterioration in their physical or mental health (Ibid, 5).

This became the basis for the statutory duty as set out in the MCA in terms of treatment of incapacitated adults. The Act asks decision-makers to consider any factors the person who lacks capacity would consider if they were able to, including decisions or obligations which affect *other relatives* or the duties of a responsible citizen. Specifically, it refers to the argument, "If it is likely that the person who lacks capacity would have considered these factors themselves, they can be seen as part of the person's best interests" (Department for Constitutional Affairs, 2007, S 5.47-8, 85). Determining what an incapacitated person might have wished in the absence of those who have known the individual is an extremely difficult thing to achieve. It has also been the case historically that experienced clinicians were considered best placed to decide a patient's best interest. This was the basis for the Bolam Test decided in *Bolam* v *Friern Hospital Management Committee*[6]. Yet, the case of *Montgomery* v *Lanarkshire*[7] altered this perspective in terms of a patient's best interest and as a result any decision regarding treatment needs to consider what a reasonable person or citizen (see above) might expect in such circumstances. A reasonable person is not necessarily a

[4] [2013] UKSC 67
[5] [1989] 2 All ER 545
[6] [1957] 1 WLR 582
[7] [2015] UKSC 11

typical or an average person, they are a representation of the community's judgment as to how a typical person should or would behave in the given situation (Hylton, 2016, 102-121).

Senior clinicians in Exercise Lock and EUR had little or no hesitation about using DVI techniques on unconscious individuals in principle. There was an overwhelming view that a patient's need to have their relatives and friends located quickly was wholly justifiable, a necessity and in the patient's best interest. This was stressed by NT:

> *Absolutely. I would make an assumption that a reasonable* [stressed] *patient, the average patient would want to be identified. And would want their family to know who they were and where they were. I think that is a reasonable assumption that you could make… I would defend that... as reasonable* [stressed] *practice, to identify someone* (ED Consultant Interview, 2017).

The MCA 2005 and corresponding Code of Practice (Department for Constitutional Affairs, 2007) gives the responder the option to wait for the person to recover, if this is deemed to be in their best interest. The interviews with clinicians highlight that, despite the more experienced individuals being certain that the identification of an individual is in their best interest and a necessity, less experienced doctors felt uncomfortable and unclear as to the required actions. This reveals an ambiguity in respect to patient identification and patient's rights and needs when incapacitated and demonstrates a lack of awareness which could act as a barrier to the use of DVI in these circumstances. This was demonstrated when the junior doctors discussed the treatment of the unknown patient during Exercise Lock. As no action to determine the patient's identity was being taken, the Author asked, "*What could be done to determine their identity?"* The junior clinicians' responses varied from "*wait for them to recover*", to "*involve the police*" or to "*wait for their families to turn up*" (Observations Exercise Lock, 2017).

Clinicians generally supported the view that incapacitated and unknown patients should be identified using any means necessary including using DVI in an effort to determine their names.

> *If it were one of my family members in that situation, I'd expect emergency professionals to do everything they could to find me* (Conversational Interview Casualty, Exercise Lock, 2017).

In fact, some responders felt that it was their moral duty to determine the patient's name. In interviews it was evident that some senior clinicians felt it justifiable that "*everything possible to determine patient's identity*" was done (Interview Clinician DM, 2016). A clinician with over 20 years front-line experience was questioned about his perspective on the potential legal ramifications of using DVI techniques to determine a patient's identity. He asserted that he would "*stand up in court and defend my colleagues' actions"* (Interview NT Clinician, 2016). Another senior clinician's perspective was that society would support their (the clinicians and responders) actions: "…*in reality, nobody will be sued for using the available techniques"* (Interview JB Clinician, 2016).

It was noted that the junior or less experienced clinicians were more cautious when it came to using a process that went beyond initial emergency treatment (which the MCA allows) or that did not have explicit protocols aligned with it. It was apparent that these individuals were unaware of whether identifying an individual would fall within the category of emergency treatment under the Act. In an email discussion in early 2016 with a senior NHS clinical advisor it was made clear that he personally did not consider the lack of protocols or ambiguity as an issue:

> *The idea of not trying to identify an incapacitated individual because they have not given prior consent is not one that is seriously entertained* (Email Correspondence JB, 2016).

Whilst discussing the potential use of DVI to investigate Patient 1's identity, during Exercise Lock, the conversation between clinical staff clearly demonstrated that a dichotomy existed between what was ultimately in the patient's best interest and

how they would need to respect the patient's right to privacy. The nurse in the treatment room reflected on his experience of 7/7 and the desperation shown by families to try and get access to their loved ones and how this became a stressor in itself for his colleagues and himself. The nurse raised the point that it was a legitimate desire to use any means necessary to find a victim's relatives. This resulted in a definite consensus that there would be a real demand for family to be by the bedside of a critically ill individual, yet, they were unsure as to how that could be achieved, and it was not something they had come across in their professional capacity. Whilst the hospital MI plan clearly expected visual techniques to be used to determine identity, there was no awareness amongst the clinical staff that, first, this existed as an option in their plan and, second, that visual identity could be problematic or have negative consequences for the patient or their family.

There is a need to establish whether a clinician who chooses not to assist in determining a patient's identity is considered reasonable by their professional peers in the given circumstances. This is reflected in the General Medical Council's policy documentation on Consent (2008) and Confidentiality (2017), which explains that in exceptional circumstances it may be justified to make confidential patient information known without consent, if it is in the public interest or the patient's interest. If gaining the consent of the patient is not practical (which in this case it would not be), the responder is expected to seek advice from an appropriate source, such as their professional organisation, prior to the release of the information. If a responder is seen to have acted reasonably, then they will not have breached their duty of care.

Discussing the legal position of best interest with a UK retired judge, he stated,

> *There is a blanket policy of best interest and that finding a family would be reasonable in these circumstances… what would a reasonable person expect? … If the patient hopefully recovers then that person would want their family by their bedside* (Interview Judge, 2016).

His view mirrored those of the more experienced medical professionals and the opinion of many participants in the EUR and over the course of the study.

9.3.2 Do DVI Techniques Constitute Trespass to the Person and/or Assault?

The judge's position regarding harm to the patient highlighted that the law was not always clear and certainly did not always sit clearly alongside the moral wish to do the right thing. He explained:

> *In this scenario anyone would say it's reasonable that we do it. It's not physically harming… well technically it is. But it's not permanent harm (Interview Judge, 2016).*

Similarly, when the question of potential assault as a result of using DVI to identity a patient was raised, the response by a senior clinician was:

> *Technically, it may well be defined as assault, but, to a non-legal person, it's only an issue if the patient chooses* [stressed] *that it is an issue* (Interview NT, Clinician, 2017).

Conversely, DVI teams believed there was a potential civil act of trespass to the person and a criminal act of assault and battery if DVI techniques were used on a living person. The Offences Against the Person Act 1861 (OAPA) and the Criminal Justice Act 1988 both govern the offences of battery, common assault, actual bodily harm and grievous bodily harm. Following the case of *Fagan* v *Metropolitan Police Commissioner*[8], assault was described as an act, "…committed when a person intentionally or recklessly causes another to apprehend the immediate infliction of unlawful force". Assault need not cause injury, it could simply be implied, such as threatening a person with a fist or suggestively drawing a finger across a person's neck (Halsbury's Laws of England; 2016; Crown Prosecution Service (CPS), 2018a). Actual bodily harm is classed as an assault that results in injury. In the event that the injury is serious enough to cause more than a trifling

[8] [1969] 1 QB 439

injury or where there may be more lasting damage, the charge may be that of grievous bodily harm. Battery, however, is the act of intentionally applying a force to another. Although there have been cases that have argued that the force was inflicted with hostile intention, in *Re F*[9]*,* Lord Goff stated,

> The suggested qualification [contact sufficient to amount to trespass] is difficult to reconcile with the principle that any touching of another's body is, in the absence of lawful excuse, capable of amounting to a battery and a trespass.

Therefore, it becomes clear that touching another person's body in the absence of consent is acceptable in circumstances where there is a lawful excuse, including in their best interests and a medical necessity, as outlined above.

As yet, there is no case law which establishes precedent regarding the use of DNA, fingerprints or dental records to determine an incapacitated individual's identity. However, referring back to the techniques used in DVI (s.3.4), it is debatable whether any of the procedures would constitute serious harm or cause lasting damage. Taking fingerprints from an unconscious individual would not inflict any harm that is more than trifling and it is debatable whether a buccal swab would cause a serious injury or that there would be lasting damage. However, the act of carrying out a thorough odontology assessment to examine the detailed dental arrangement of the patient could be considered physically manipulative and result in bruising which may be considered more than trifling. Therefore, this procedure should be considered carefully. It is conceivable that a charge of assault could be brought if DVI were used without their consent, for an action which is not in the pursuit of their identity for medical reasons and not in their best interests, such as the case in the USA where a nurse refused to allow the police to collect blood samples without consent (Mensick, 2017; Ortiz and Siemaszko, 2017). Yet the police in these circumstances, incorrectly, believed that it was justified in the pursuit of a criminal investigation. Similarly, in the UK, any use of DVI techniques on an unconscious individual without their consent would be

[9] [1990] 2 AC1

classed as a crime under the OAPA or be considered trespass to the person, if it were not in the best interest of the patient and considered a medical necessity. If DVI were used to identify the patient for any reason other than medical necessity, healthcare professionals and the police teams could be accused of negligence and assault. It would therefore be of the utmost importance to ensure that the process was fully documented and clear reasons for such investigations explained.

9.3.3 Does the Human Rights Act 2005 Prevent the Use of DVI with the Incapacitated?

For the living patient, under the requirement to protect life and prevent persons from degrading and inhumane treatment in Article 2 of the Human Rights Act (HRA) 1998 and in line with the European Convention of Human Rights (ECHR), the police have a duty to investigate a person missing or reported as missing (College of Policing, 2018a). This duty includes the requirement to record the incident and ensure positive action is taken to risk assess and consider the safeguarding considerations for the missing individual. Therefore, there is a legal remit for the police to investigate the circumstances of an individual who is reported missing, or those who are found with no identity, to ascertain whether they are a/*the* missing individual.

9.3.3.1 Do the Techniques Constitute Invasion of Privacy?

A further concern relating to the use of DVI techniques and therefore a perceived barrier was the potential invasion of privacy. Apprehension centred on the use and storage of DNA and fingerprints. The law in the UK which relates specifically to privacy of information comes under Article 8 of the Human Rights Act 1998. In such a case the courts would scrutinise the particular circumstances to determine whether any infringement of a patient's privacy was justified. If a public authority such as an NHS organisation or the police were alleged to have infringed an individual's right to privacy, a claim could be brought under the HRA 1998 directly (HRA, S.7). These claims could subsequently be taken to the European Court of Human Rights (ECtHR), but the applicant must have exhausted all domestic remedies (i.e. tried to claim under UK laws) and have suffered a significant

disadvantage as a result of the infringement. Cases such as *Mosely* v *United Kingdom*[10] and *Peck* v *United Kingdom*[11] provide examples of such claims. In addition, how the data were stored and shared would be considered. In civil courts, an action for tort of misuse of private information could be claimed and held only if the information was used for purposes other than medical necessity for the patient's mental and physical wellbeing, as seen in the cases of *Campbell* v *MGN Ltd*[12] and *Vidal-Hall* v *Google*[13]. It is worth noting that the sharing of photographs without an individual's consent is also classed as an invasion of privacy and can therefore be argued to be as harmful as the use of the evidence extracted through the application of DVI. However, as highlighted above, the patient's best interests and whether the use of such data was considered a medical necessity would be considered in light of such claims. This is supported by the explicit statement in the EU General Data Protection Regulation (GDPR) 2018 which says, "An unconscious person's data can be obtained to determine their identity" (European Patients Forum, 2018, 9). This implies that an individual's identity is considered a medical necessity and in the best interest of the patient. However, any use beyond identification would again be considered an infringement of this legislation.

The apprehension of using scientific techniques which were considered by junior clinicians to be an invasion of privacy made them uncomfortable, as noted in interviews and in both exercises. In practice, the actions taken to determine an incapacitated patient's identity varied between clinical staff. There is obvious confusion regarding the application of the MCA 2005 and the actions to be taken when an individual lacks capacity and has no proxy to make decisions on their behalf. This raised the issue of how it is known whether the family present is the correct match and what could be used to accurately determine the patient's identity. *"DNA could be used, but I'm not sure we'd be able to use it as it would be an invasion of their privacy"* was the response by one junior clinician, as recorded in the Exercise Lock fieldnotes. It was at this point that a senior doctor who had overheard the discussion simply dismissed the statement and replied, *"No, it*

[10] [2011] 53 EHRR 30
[11] [2003] 36 EHRR 719
[12] [2004] UKHL 22
[13] [2015] EWCA Civ

would be in their best interest and we'd just get on with it". The manner in which it was said closed the discussion and left no room for further debate or questioning. Neither the junior clinicians nor the Author were given the opportunity to explore the point further.

While the junior clinicians displayed levels of unease with potentially invading the privacy or committing an offence against the person if they were to assist in determining the identity of the patient, this study found that the more senior or experienced a clinician, the more pragmatic and flexible the approach to using any means necessary.

9.3.4 Human Tissue Act 2004

Another aspect concerning the use of DVI relates to the use and storage of any personal forensic data. The Human Tissue Authority explicitly requires that where adults lack capacity, practitioners should consider the MCA 2005 and Code of Practice and "all decisions must be made in the person's best interests" (Human Tissue Authority, 2017, 25). If the retrieval, analysis and disposal of human tissue is carried out under the same conditions as when conducted with the deceased, there should be no issue. This is because the Human Tissue Act and all associated requirements apply equally to the living and the deceased and the protocols for the sharing, storage and use of such data would remain unchanged.

The Human Tissue Act 2004 (HTA) (persons who lack Capacity to Consent and Transplants) Regulations 2006 part 2 establishes that DNA may be analysed without consent under S5(2)(a) for "any purpose which the person carrying out the analysis reasonably believes to be in P's best interests". Therefore, the HTA 2004 does not act as a barrier to using DVI to identify an incapacitated unknown patient.

9.3.5 In the Public Interest?

Ultimately, any criminal case that is brought before the courts would need to be judged on whether it is in the public's interest to proceed with a prosecution. The decision as to whether those using DVI to establish a patient's identity were acting unlawfully, in an unjust manner or abusing their power would need to be determined. In the UK, the Code for Crown Prosecutions would expect those bringing the case forward to have cleared the two stages of the Full Code Test (CPS, 2018b). First, whether there is enough evidence against the defendant (taking into account all the points raised above regarding best interest and necessity). Second, and regardless of the evidence, the prosecution would need to decide whether it is in the public interest. This would include taking into account the level of seriousness, the level of culpability of the offender(s), the circumstances and level of harm to the victim, the impact to the community and whether prosecution is a proportionate response (CPS, 2018b, 9-11). As confirmed by a retired Judge, a case of emergency responders acting out of necessity, and in the patient's best interest, to reunite them with their family would be:

> *…something the majority of us want, so this sort of case would be unlikely to reach the courts. It just wouldn't pass the Public Interest Test* (Interview Judge, 2016).

9.4 Do Organisational Policies and Protocols Prevent the Adoption of DVI to Identify the Living?

9.4.1 DVI Organisations

As previously mentioned, the use of DNA, fingerprints or dental records for deaths that occur on a daily basis is not considered usual and the doctrine surrounding DVI centres on victims being deceased. This essentially results in the identification of the living being seen as a minor issue in comparison to the significant risk

associated with incorrect identification of the deceased. It may be the case that there could be a significant number of deceased in comparison to the relatively few numbers of unconscious and unidentified living victims, however, there is an argument which says that the identification of the living should take priority. This sentiment was supported by EA when discussing why she felt it necessary for her DVI teams to identify the living:

> *They have a high risk of dying, so you do need to get access to the family as soon as possible. It's their ultimate right, to actually have access as soon as possible to their next of kin…* (Interview EA, 2017).

One of the concerns that EA raised in her interview was the length of time to accurately and scientifically match families with their missing relatives. Whilst time is not a barrier to accurate identification, the desire for responders to meet the needs of those families desperately seeking their missing, can result in errors being made. As reflected by Johnson and Rieman, "When less information is gathered prior to vetting an identification, the greater the chance that something may not add up at the end, or a quality measure is missed" (2019, 11).
Yet at present, the INTERPOL DVI process expects relatives to complete a lengthy twelve-page document which details all possible matching characteristics. The complexity of the form and the sheer amount of detailed information required is considered by some DVI experts to be far too elaborate in the immediate aftermath of a disaster (Email Correspondence Netherlands DVI, 2017; Interview HW, 2017; Interview EA, 2017). The Dutch DVI teams have created what they refer to as a 'Quick-Form' to help speed up the preliminary match before asking families to complete the more extensive INTERPOL form. This, the Belgian DVI Leader explained, was to speed up the identification process, however the Belgium authorities did not use it themselves in the aftermath of the Brussels terrorist attacks (Email Correspondence Netherlands DVI, CB, 2017).

The lack of policy and guidance in relation to identifying the incapacitated unknown patient makes the use of DVI (used for identifying the deceased) an uncomfortable alternative to the current arrangements. When the question was raised with UK DVI experts in interviews regarding the use of DVI in circumstances

with living patients, there was an acknowledgement of apprehension regarding the potential legal implications. One DVI expert admitted:

> *My view is that it would be what the man on the street or the average man would expect"*, but he added, *"… but there are civil liberties issues… the challenge is not how we do it. It's the legal challenge which will allow us to do it* (Interview HW, 2016).

This highlights that it is not the physical application of DVI that is a barrier but the perception of the legality of its use with the living. For the UK DVI teams, this response justified the avoidance of any action in terms of investigating potential solutions to the issue.

Despite the excellent examples of where DVI protocols have been used and embedded in mass casualty arrangements (for the living) in both France and Belgium, there is still a fundamental lack of progress and therefore a barrier towards the implementation of DVI nationally in the UK and internationally. Notwithstanding the lessons and findings presented at the UK DVI National Conference on 22 February 2017, UK DVI has still not created a protocol to implement the use of DVI with the living as standard practice. On an international scale, INTERPOL has also not made any progress to incorporate the lessons learned from Nice or Belgium:

> *Please be informed that there is still no INTERPOL recommendation on how to proceed with unconscious victims as the Working Group on DVI did not agree on a joint standard* (Email Correspondence INTERPOL HQ DVI, July 2018).

As explained in Chapter Three, there is an online DVI computer application (Plass data) which, in addition to its standard DVI forms has a specific form for Person Unable to Self-Identify, but as yet neither the UK nor INTERPOL have developed a corresponding recommended protocol for its use with DVI teams. Nor have they implemented suggestions from the Dutch DVI teams with respect to a simplified DVI Missing 'Quick-Form'. Furthermore, despite the meeting with NHS England in

the summer of 2017 to discuss the issue of the identification of incapacitated patients and safeguarding of children, no UK national guidance has been provided to Acute Trusts or EPOs to update plans. Nor has any guidance requesting that individual hospital trusts remove any reference to the use of visual identification been given (see Chapter Three). In addition, no response has been received from NHS England Emergency Preparedness Response and Recovery (EPRR) following a request for an update on current arrangements or progress on this topic.

9.4.2 Medical Responders

In terms of the responsibility for identifying an incapacitated patient, it was clear that at least some clinicians were aware that this is a police remit, as confirmed by one clinician:

> *This is a police* [stressed] *responsibility. This is not primarily a health responsibility… During a major incident and indeed day to day things, identifying and tracing people is very much a police responsibility. We would work with them, we would support them to do that… I would have no issues with that* [using DVI to identify individuals] *… I can't comment on Trust policy, but I would have no issue* (Interview Clinician NT, 2017).

Another senior clinician agreed:

> *…exactly as we do now with the unidentified patients. We tell the police. They look at the clothing, personal effects and description and look for missing persons list and conduct a police investigation. We get unknown people collapsing on station platforms, on buses at regular intervals. Law enforcement's job is difficult in the wider sense, but they have dedicated police officers whose job it is to determine the identity, and have it fed into the process. Do what you do in a day to day basis but during a disaster you*

> *just take some short cuts…. It would have to be adjusted as the police are busy but it's normal business* (Interview Clinician DAMD, 2016).

Similarly, the viewpoint of a paramedic was:

> *Being brutally honest, it wouldn't be our area of concern. If they were that seriously injured and unidentified, we wouldn't waste time going through their pockets to identity them, it would be something that would be done in hospital. It will nearly always be done through the casualty clearing bureau to find out who people are. It certainly wouldn't be one of my priorities in pre-hospital care* (Interview Paramedic JB, 2016).

Relatedly, as noted in previous chapters, medical teams did not inform the police when an unknown patient was being treated despite hospital policies (see Figure 14) stating the requirement for cooperation between the two services. It could be argued that while both policy and protocol exist for medical teams there is a clear gap in the training and exercising which enforces this engagement across organisations and therefore is a barrier to the identification of an incapacitated person. As outlined in the previous chapters, it is not necessarily that the policies are wrong, there are also examples where the police and clinical teams similarly failed to follow the legal requirements in terms of cooperation and partnership working as outlined in the CCA 2004 (s.3.2).

An analysis of hospital policies found that hospitals generally signposted to the MCA Code of Practice (Department for Constitutional Affairs, 2007) or their own Codes of Conduct regarding consent (see Appendix XIII). These policies state that if there was doubt as to whether an individual cannot consent and clinicians and/or families (where present) cannot reach agreement on their treatment and care, the matter should be referred to a Court Appointed Deputy and the Court of Protection (CoP) will decide. Where the MI plan referred to the identification of victims (as noted in Figure 15) the instruction was to use visual techniques.

9.4.3 The Courts

The MCA 2005 sets out the expectation that others are consulted to take into account their views as to what the incapacitated person's best interests might be. These individuals may be a person chosen by the individual lacking capacity, e.g. an appointed Attorney acting as a Lasting Power of Attorney; someone who has been engaged with their care and welfare (such as a parent or care home); or any Court Appointed Deputy chosen by the Court of Protection (CoP) to make decisions on their behalf (DoH, 2009b).

The cases of *SSHD* v *Sergei Skripal* and *SSHD* v *Yulia Skripal*[14], demonstrate how the CoP can guide responders in terms of an incapacitated patient's best interests in the absence of consent or proxies. The Skripals were incapacitated and incapable of consenting to further blood samples being taken. Although this procedure was not considered a medical necessity, it was considered to be in their best interest and was what the CoP decided a reasonable person in their position would expect. The judge in this case made the decision based on what a reasonable citizen might wish. However, he still consulted the clinicians in terms of the treatment and prognosis and what the outcome of any decision taken might have on the patient.

To establish how the CoP might be able to assist specifically in relation to an incapacitated and unknown individual, the local Court Appointed Deputies were contacted by telephone to gather their views on a hypothetical case. The question was referred to senior members of their team in the South West. However, from the responses it was apparent that there was little understanding of how they might help or what their role might be in these specific circumstances. Furthermore, the protracted nature of gathering a response led the Author to question whether this delay might prove to be a significant barrier in the event of identifying a critically injured patient in the wake of a mass casualty and fatality event.

[14] [2018] EWCOP 6

9.5 Summary

The findings presented in this chapter may come as no great revelation to many emergency responders. The barriers to learning demonstrated above help to explain why even the most obvious of errors repeatedly occur, such as miscommunication between organisations. As highlighted by Toft and Reynolds (2005), alongside other academics and subject-matter experts (Coles, 2014; Norris and Shephard, 2017; Wright and Gibbens, 2018), if an inquiry panel or organisation fails to scrutinise the systemic failures and does not attempt to identify the latent defects within a system, the same errors will keep recurring.

Ambiguous plans, policies and misinterpretations of the law can lead to mistakes being made in determining an incapacitated person's identity. The belief that the police would be committing an act of battery under the OAPA or invading a patient's privacy under the HRA could be argued to be due to a lack of clarity in the law and misinterpretation of the law by the individuals themselves. Observing DVI teams during EUR demonstrated a perceived barrier that the process they use to identify the deceased cannot legally be used for the living. In addition, during correspondence with DVI experts, it became clear that there is a reluctance to consider that DVI teams are lawfully able to resolve this issue in the disaster aftermath (Interview HW DVI, 2016; Interview EA DVI, 2017; Email correspondence INTERPOL HQ, 2017). Yet, despite the lacuna in the laws relating to consent and assault and the specifics of determining an unconscious patient's identity, the law would not hinder a process which is considered a medical necessity and is done in the best interest of the patient. This was a fundamental component to this thesis and the research objective (RO3) relating to the medico-legal barriers to the implementation of DVI. It could be argued that the use of DVI to determine an individual's identity might be considered a positive right in terms of aiming to achieve a higher standard of health under Article 2 of the HRA, the right to life. As Laurie et al. (2016) argue, by doing so there would be a greater likelihood of achieving respect (in terms of this right) than of the potential negative right of invading privacy. The process would be in the patient's best interest and a necessity for their mental wellbeing and, importantly, determining a

patient's identity is essential for gaining access to the patient's own medical records. Furthermore, the judgement in the case of *Montgomery* v *Lanarkshire*[15] highlights the need for decisions to be made in light of what a reasonable person would expect and what a civil society would require in the given circumstances.

This chapter has presented the empirical data highlighting the perceived and real barriers to the implementation of DVI. Yet none of these barriers suggests a significant blockage and therefore the already established DVI protocol could be used as a suitable method to identify a critically injured unknown patient. The next chapter presents the findings regarding organisational learning, specifically if and how lessons have been identified in regard to patient identification.

[15] [2015] UKSC 11

CHAPTER TEN

Findings
Research Objective 4 - Organisational Learning

10.1 Introduction

An important finding that emerged as an outcome of analysing the Incubation Period concerned the ability to, first, identify errors and second, learn from those errors. Chapter Six looked at the literature surrounding organisational learning, particularly learning from incidents and accidents. This chapter presents the data relating to whether lessons have been identified in regard to patient identification and looks at how the lessons and any changes have been instigated. It establishes whether UK responders are learning from other responder organisations (where failures have been identified) and what changes, guidelines or processes are being actioned as a result. There is already a growing number of articles looking at how organisations learn and how they attempt to learn, including a plethora of articles looking at why organisations fail to learn (Reason, 1997; Toft and Reynolds, 2005; Coles, 2014; Pollock, 2017). This section adds to the growing literature and draws on the positive implementation of changes seen in France and Belgium. It also offers recommendations to the emergency response domain, and in particular DVI teams internationally, relating to the novel use of DVI in a hospital setting. This is an area of response, which although discussed in meetings and conferences, such as the UK DVI Conference February 2017 and the Cabinet Office Mass Casualty Training event in June 2017, was until recently untried and untested in the UK. Despite the infrequency of mass casualty events, and more specifically instances of misidentification, there is a need recognise that a problem exists within this area and that steps need to be taken across the organisational response to improve current practice. In addition, there needs to be constant reflection, or double loop learning (see s.6.2.2), as to how the law can be applied

in practice, specifically in the areas of consent and privacy and with it an improvement in the practice and use of DVI in hospital settings, where the issue of consent creates a barrier to its use. The findings presented here need to be shared nationally and internationally and incorporated into active and double loop learning and not simply restricted to presentations, emails and what is classed as a passive, single loop learning mechanism, as has historically been the case.

10.2 Passive and Active Learning

10.2.1 Passive Learning

Although there have been exceptional cases of police using DNA sampling in hospital settings to identify criminals (personal correspondence with police officers, 2016-2018), according to the police interviewed (UK Police Interviews 2016, 2017) the use of DVI as a holistic identification procedure in a hospital environment with living patients was, until 2017, an untested area of disaster response. The events in Paris (2015), Brussels (2017) and Nice (2017) highlighted a gap in the planning for and response to mass casualty and fatality procedures that needed (and arguably still needs) filling. From a UK perspective, these lessons, identified by European counterparts, were shared via emails and telephone conversations and presented to UK DVI team members at the National DVI Annual Conference held in London, UK in February 2017. This conference enabled international DVI team members to share their experiences, both positive and negative, from a range of events over the course of the year. Incidents such as the Shoreham Air Disaster and the Tunisian Terrorist Attacks were presented by subject-matter experts and their experiences of being deployed to implement DVI procedures, to identify the deceased, shared. It was at this event that the lessons learned from terrorist attacks in Belgium, Paris and Nice helped to build on the relatively rare phenomenon of DVI being used in a hospital setting. This method of information sharing and opportunity for learning from international agencies offers a passive style of learning and, as reflected in the literature review (s.6.2.1.1), does not afford the best technique to ensure learning is absorbed and assimilated. More importantly, passive learning does little to develop remedial action to rectify the

identified lessons. However, it did result in the opportunity to present the Author's initial findings on misidentification and to witness other presentations to the responder network and build relationships with those with first-hand experience, thereby enabling opportunities for active learning in future events.

The terrorist attacks in the UK in 2017 highlighted a need for this learning to be more actively embedded in both hospitals and police units across the country. This stemmed from a concern raised by clinicians after the Manchester bombings. The media reports and personal correspondence with clinicians in the wake of these attacks demonstrated a discomfort in treating patients without identification. Furthermore, the treatment of minors without consent highlighted a serious failure to safeguard children. As such, the issue was raised by the Author at national level to NHS England to flag this as an area of concern. This was followed by a meeting to discuss the current position with respect to the lack of guidance relating to unidentified individuals and to inform the UK National Emergency Preparedness, Resilience and Response (EPRR) team of the lessons identified internationally and to share learning. To establish the underlying concerns with respect to unidentified casualties, a thorough breakdown of the problem and recommendations for implementation into national policy were presented by the Author (see s.11.6). In response, the meeting organiser simply wrote:

> *Many thanks to Dani for meeting with us yesterday, a useful meeting with lots of food for thought. As discussed, we will reflect on this and issues from the other pieces of work ongoing and then look at next steps* (Email Correspondence with Head of NHS EPRR, 2017).

Despite not being contacted again to take this subject further, the EPRR held a training exercise, titled Exercise Little Problem (NHS England, 2017a), with a group of NHS acute care teams in November 2017. The only reference to identification issues related to children:

> Identification of casualties will be problematic for unaccompanied minors and procedures must adhere to safeguarding and police protocols including management of consent (NHS England, 2017a, 9).

The report nominated acute trusts and ambulance personnel as those responsible for addressing this issue. There was no mention of what the police protocols might be in these circumstances and no reference to or guidance on how consent would be gained for unidentified persons and unaccompanied minors. These points mirrored the issues seen by medical staff in the wake of the Manchester bombing. However, despite the lack of supplementary information and guidance, this does demonstrate that the issue is receiving some acknowledgment and raising awareness, albeit passively, across some UK regions.

Remarkably, in the same month as Exercise Little Problem, NHS England released the Concept of Operations for Managing Mass Casualties (NHS England, 2017b). Despite aiming to provide a more detailed level of guidance to first responders, there was no mention in the document of the identification of incapacitated patients or to the matters pertaining to treatment without consent. Whether Exercise Little Problem was a prelude to a more detailed piece of work relating to identification issues is unclear, as nothing has been published. Nevertheless, under the title of 'Provision of Services', the NHS Concept of Operations document states:

> During an incident that results in mass casualties the normal arrangements that the organisation has to ensure that those that are difficult to communicate with or have specialist needs may increase due to the range of casualties. Plans developed should take this into account and allow for support services, e.g. for disabilities and language issues to be overcome. Organisations should adhere to their own arrangements for reducing inequalities in the access to treatment and healthcare in the immediate response and long-term care needs (NHS England, 2017b, 12).

This paragraph demonstrates that little has been done to address the legal or ethical issues relating to incapacitated and unidentified individuals. It appears that this particular category of patient is not considered. For example, the line referring to patients that "are difficult to communicate with" could be simply referring to language barriers or speech impediments. It does not provide helpful guidance for hospital staff and responders to enable them to resolve what is arguably a more

challenging aspect of the response, in terms of disaster management and preparedness for all casualties and their families.

These passive forms of learning or sharing learning are not, it is argued, enabling organisations to understand and test the inherent issues with casualty identification; these are classic examples of single loop learning. The organisations are not questioning the underlying values, beliefs and initial assumptions (Agrys, 1999), they are merely repeating a formulaic process of incident management exercising. However, these possibly constitute a significant step towards introducing a plan based on a finding within the exercise itself (such as patient reconciliation) which can be implemented and could therefore lead to important opportunities for active learning. Furthermore, a potential benefit of passive learning mechanisms could be that they enable a double loop learning whereby the thoughts and processes are developed in advance of applying the scenario in an active learning format. From personal experience in the emergency planning domain, this is often an approach taken by EPOs who wish to ensure that, first, the plan is read and second, the plan is then discussed in a less pressurised table-top exercise before, third, being applied in a live exercise, which is generally a more public and potentially humiliating experience to get wrong. A review conducted into pre-hospital responses determined that the ability for hospitals to train regularly alongside other emergency services was an essential requirement for preparation in advance of a real incident (Cooke et al., 2017).

10.2.2 Active Learning

As emphasised in Section 6.1.1.2, active learning is a far more effective method of ensuring lessons are retained in organisations. Both EUR and Exercise Lock provided excellent opportunities to practise and test first responder arrangements. Being actively involved in determining identities and discussing how an individual's identity might be established was made all the more real by using actors to represent the casualties and to situate the context of the issue within a realistic scenario. This hands-on approach, in a realistic environment, offered an excellent opportunity for responders to practise and test the processes and protocols established in their MI plans. However, in terms of the incapacitated individual, it

highlighted that there was no plan in place and made the lack of a protocol stand out as a clear learning concern. The benefit of a ‘live’ incident over that of a table-top exercise is that it offers an opportunity to operate in a simulated environment which adds levels of complexity and chaos not seen in a desk-top environment. This was demonstrated in EUR, where participants had to wear full PPE and carry out their functions in very low temperatures and restricted spaces. This contrasted with sitting around a table in a warm and comfortable environment and making decisions on how an individual should be treated and cared for.

Likewise, in Exercise Lock, if an individual needed to pass information to and from Silver Command (s.3.2.1), it would require the physical effort of moving to the telephone, finding the correct number and then attempting to speak to the right person. The use of mobile telephones in hospitals by staff is not considered normal protocol, especially as reception within old buildings tends to be sporadic at best. This was vastly different to asking an individual across a table and authenticated a more protracted process which cannot be rushed. This in turn has knock-on effects for patient management and clinical care and welfare, which from past experience can often be overlooked in table-top and passive learning environments where the focus is on the strategy of incident management.

10.3 Levels of Learning

10.3.1 Isomorphic Learning

As established in Chapter Six, there are four proposed ways in which an organisation may learn from disasters or accidents; event isomorphism, cross organisational isomorphism, common mode isomorphism and self-isomorphism (Toft and Reynolds, 2005; Kim, 2016). To ensure isomorphic learning has taken place, organisations need to demonstrate that learning has occurred beyond that of its own organisation.

The exercises and real incidents in 2016 and 2017 provided opportunities for all types of isomorphic learning. Exercise Lock was an excellent example of cross-organisational isomorphism and demonstrated how active learning can be implemented and achieved. Feedback from the exercise was shared by the Hospital EPO with the London Resilience Forum, a part of the national strategic mechanism for sharing information about the National Risk Register and emergency planning and management. Each region has a Resilience Forum attended by all Category 1 responders, as discussed in Chapter Three. This provided an opportunity for them to reflect on their own arrangements. This in turn led to the Hospital EPO being asked to present at the National NHS England Conference to share the lessons learned, not only from Exercise Lock but also the hospital's responses to Grenfell and the other incidents that took place in the previous months in London. Whilst this demonstrated passive learning, as previously argued, these lessons need to be incorporated in active learning events more locally.

10.3.1.1 Event Isomorphism

Errors in identification can occur in numerous ways, yet the successes and failures identified in each provide opportunities for learning despite the differences in the events themselves. A road traffic accident, such as the one that occurred in the Cerak and Van Ryn (CE-B) example can result in the same errors as those seen in a larger scale mass casualty and fatality event, such as the failures identified following the Paris attacks in 2015 (CE-E).

The events in 2017, despite the heavy price to pay, have resulted in some constructive changes in a few hospitals. As reflected by one Hospital EPO, in the aftermath of the 2017 terrorist attacks:

> *One of my brave Directors has asked that we start doing some no notice live activation exercises on one of my sites, as she wants us to improve the first hour, as she said, once we get into the swing of things it is good, but that first stage is crazy. So, they might send me crazy, but* [it] *will be a really*

good way to keep embedding the changes to the initial process we have made (Email Correspondence Hospital EPO MW, 2018).

It can therefore be seen that, in some cases, these iconic events force organisations to make time to actively test and exercise their plans as a way of preventing failures in the future. This demonstrates that for some there is an element of foresight, double loop learning and a preparedness that occurs and that some lessons are in fact identified and acted on.

10.3.1.2 Common Mode Isomorphism

EUR demonstrated a larger scale example of common mode isomorphic learning. International European emergency response agencies were invited to test not only their own MI plans, but also the international disaster working arrangements in a non-terrorist related incident. This latter aspect plays an important role in that the suspected involvement of a terrorist creates a different level of response, with differing legal remits of the police and counter-terrorism branches.

Establishing an incident which was a man-made disaster without terrorist implications enabled ‘normal’ response protocols to be tried and tested. Terrorist incidents, although man-made, vary significantly in terms of the response. The premise of terrorist incident management concentrates initially on the terrorism aspect of prevention of further attacks and criminal investigations. Furthermore, specialist police and military units are generally involved with firearms, which adds further dimensions of risks and hazards not normally associated with fires and technical disasters and so on. The findings from this exercise demonstrated that the same issues, communication and information sharing difficulties, are reflected on a wider scale and therefore offer an opportunity for learning and input from a larger community of responders. This was highlighted as a major advantage in the ‘EUR Evaluation Conference’ in October 2016 and the corresponding documentation.

The head of Belgium’s DVI team, CD, admitted that the response by his DVI teams in the wake of the Brussels terrorist attacks was greatly enhanced due to

the learning that took place in EUR the week before the attack in Brussels (personal discussion at the UK DVI National Conference on the 22 February 2017). Although the circumstances were different to those presented in the exercise, the ability to refresh their response protocols during EUR, including testing equipment and working in sub-optimal disaster arrangements (which are not very often tested), allowed the Belgium DVI team to feel more comfortable and confident in their approach. Furthermore, the sharing of lessons that took place during EUR helped to ensure that the unconscious and unidentified patients in the Brussels attacks were correctly identified using DVI. CB was then able to share his lessons learned with the international DVI community at the annual DVI conference and at INTERPOL meetings in the months following. This demonstrates the power of isomorphic learning and its essential use in training and exercising staff for these types of incidents.

10.3.1.3 Self Isomorphism

Exercise Lock was specifically designed to test the organisation's own MI plan. The hospital EPO and Medical Director spent a considerable amount of time developing the exercise for their own staff. In an interview with the hospital EPO following Exercise Lock, it was discovered that training is offered throughout the year to all staff, both clinical and managerial. However, this exercise was an opportunity to test the MI plan and the protocols established concerning mass casualty events specifically focused around marauding terrorism. As noted in Chapter Two, the exercise would also test a newly refurbished and unopened area of the hospital, thereby allowing normal business to continue.

The terrorist attack on Westminster Bridge in the preceding month (March 2017) had provided the additional impetus to do a live hospital-based exercise as opposed to a smaller scale table-top. This allowed a more active and double loop learning approach to test an area of MI response which was unfamiliar to staff. Outside organisations were invited to participate as a means to ensure hospital staff knew how to engage with those critical responders and how their roles fitted within the plan. Although the participating organisations (Metropolitan Police (including UK DVI) and London Ambulance Service) could use the opportunity to

reflect on their individual plans, the purpose was to test the hospital's own plans concerning those partner organisations. For example, where the plan refers to police documentation teams, it would be expected, first, that staff should know that an individual from the ED had been given the specific role of police liaison with an associated action card (see Figure 15). This individual should be aware of the police team's function within the hospital MI response. Second, staff should know how the police documentation team can be notified and called to attend, hence this is not specified within the action card. Third, there should be clear protocols on how the documentation team and staff should operate in a MI. The action card provided to hospital staff may give a general overview of their role, yet it does not provide the necessary detail regarding the role of the attending police and their associated tasks. This may explain why there was ambiguity and confusion as to why the police may be located within an ED. Furthermore, it is possible that this information is provided in training, however, as demonstrated in the exercise, there was no awareness of this aspect at all. By testing the plan, these issues can be identified, rectified and avoided in future.

The outcome of Exercise Lock demonstrated that no staff member was allocated this police liaison role, or at least the role was not fulfilled in any obvious manner. Therefore, the rest of the responding staff did not know why the police should be there and the automatic assumption was that they were waiting for the criminal element of the exercise to be played out – in this case the potential arrest of the marauding terrorist. This could imply that staff were unfamiliar with their MI plan. This active learning approach would therefore need to highlight lessons for future change. Despite the negative outcome on the day, this finding enabled an element of active learning through failure. This could have the benefit of providing a learning outcome for those staff involved and could mean that these staff were less likely to repeat the error in the future. The incidents in the UK in 2017 confirmed this finding in that the police officers who did attend the hospitals:

> *…did not do a lot because, not only did hospital staff not know their reason for being in A&E, but their own police training on the fell short* (Conversational Interview UK DVI, 2017). [A&E or Accident and Emergency Departments were all 'rebranded' in 2003 to be called Emergency

> Departments to reduce the numbers of minor injuries and non-emergency ailments (Revill, 2003). However, the term A&E is still commonly used by responders.]

This reflects the findings regarding the lack of attendance at training and exercises and demonstrates a need for this to be considered by organisations (Sinclair et al., 2012).

It was also noted that the undercurrent of terrorism and the need for security meant that "*they [the police] were armed and there for a very different reason*" (Hospital EPO 6, 2018). Patient identification and tracking during these events were notably absent, and this would imply that there is more that needs to be done to improve this specific element of casualty tracking and identification.

Reflecting on EA's experiences in the Paris attacks initiated a wider process of change and a desire by EA to raise awareness amongst those not only at ministerial level but also at grassroots, emergency responder level both nationally and internationally. EA shared her experience with international colleagues at meetings. That shared learning resulted in the Prosecutor Office in Belgium and the Belgium DVI Team adopting a stance which used DVI in the identification of four unconscious individuals following the Brussels terrorist attacks in 2016. IVW stated in her presentation to the DVI community:

> *One family were sitting next to a family member who they weren't sure was in fact family and I was not prepared to have the same mistakes made in Paris repeated here* (IVW presenting at the DVI Conference, 2017).

Again, these experiences were shared with the UK DVI Conference in February 2017, which also had DVI representatives from other countries. IVW and CB explained that, despite the chaos of the events, which were similar to Paris in terms of multiple locations, their teams successfully implemented the DVI process in hospitals. They had been adamant that there would be no errors in the identification process and ultimately that their staff would not be affected or blamed in the aftermath.

The marauding terrorist attack which took place in July 2016 in Nice, France, gave the opportunity for the French DVI team to correct the misperceptions created during the 2015 Paris attacks. It became, as EA described it, *"an obsession".* Referring to the forms and process:

> *We simplified it* [the DVI process] *because our obsession was for first responders not* [stressed] *to put names on the victims. Be it a dead victim or unconscious victim… there is absolutely no space for identity wherever and on the other side of the sheet we also say very clearly that they shouldn't put any identity* (Interview EA, 2017).

First responders in the hot zone had no opportunity to add an assumed identity based on personal effects to the form. Therefore, DVI teams used scientifically accurate methods to determine identities and did not rely on assumptions made in what would have been a complex and challenging environment. However, EA hastened to add that there needed to be an element of reasonableness despite the desire for change, stating, *"but we shouldn't go too far the other way round..."* (Interview EA, 2017). This was an interesting point to make, especially given the negative media scrutiny on getting identification wrong and despite the clear psychosocial harm she and her team suffered as a result of being blamed. There was no fanatical demand for all aspects of visual identification to be discounted. She explained her reasoning for taking a pragmatic approach as a way of prioritising the victims with the greatest probabilities of being resolved:

> *…if you have an identity card, and if you have a next of kin saying this is my brother and his name is X, it allows you to Fast Track. Because then when the body arrives at the Medico Legal Institute you see the paper on the body bag, you see that it is noticed that this person had an identity card and the name on the card was blah blah blah, so you can process him first and you can enter into contact with the member of the family first… so the family won't wait for too long* (Interview EA, 2017).

This, she explained, was not an automatic assumption that the name equated to the body, it merely enabled a prioritisation which would allow the teams to rule out

those with a greater likelihood of being a match early on. These occasions demonstrated a clear example of common mode isomorphic learning and a reflection on the failures and successes of the organisations.

Nevertheless, despite the changes suggested by France and Belgium, there have been numerous cases of unidentified unconscious victims being admitted to hospitals in 2018 (see Appendix I). In each of these cases visual identification in the form of photographs to the media have been used to attempt to find family members. Scientific confirmation of identities continues to be ignored or discounted.

10.4 Summary

Simply identifying errors and recommending changes does little to provide the impetus to enforce change within an establishment. The event itself may spark a type of event isomorphism that is repeated after the publication of a high-profile government report and the media frenzy that follows a mass casualty and fatality event. These often enable some of the lessons identified to be acted on, as seen in France and Belgium. However, as noted in this thesis, the lessons are not shared widely, and the risks are considered too remote for local organisations to embed, despite the initial flurry of concern.

Whether the changes to DVI in France and Belgium continue to be used remains to be seen. However, as yet, there has been no such impetus in the UK to drive change, other than a few presentations and emails between a handful of responders. Both the police and those responsible for the care and treatment of the living incapacitated need to take a much more proactive stance. By being reminded of and understanding the numerous factors identified in the Incubation Period, as outlined in Chapters Four and Seven, these responders can help share the responsibility for implementing change in this niche response area and enable an isomorphic, multi-agency learning programme that incorporates both passive

and active learning. This would then enable organisational learning, or specifically the:

> …cumulative, reflective, saturating process through which all personnel within organisations learn to understand and continually reinterpret the world in which they work by means of the organisational experiences to which they are exposed (Toft and Reynolds, 2005, 29).

The following chapter draws upon the themes presented in the last four chapters and critically analyses the evidence. The findings accumulated as a result of qualitative ethnographic work combining interviews, observations and doctrinal analysis have all contributed to a thorough understanding of the feasibility of using DVI with living patients. An understanding of how the errors occur and the consequences of such failures are discussed. Importantly, this thesis has sought to understand the barriers to implementing DVI as an expanded protocol and why its use with living unidentified patients has not been implemented in the UK response effort.

CHAPTER ELEVEN

Discussion

11.1 Introduction

The research question of this thesis was to establish whether the challenges presented by the identification of incapacitated patients in mass casualty and fatality events can be resolved by using the scientifically accurate and internationally recognised protocols of DVI (RQ). Four key objectives were outlined which guided the research. First, to understand how the identification errors occurred (RO1); second, the implications of these errors with specific emphasis on the psychosocial harms to responders (RO2); third, what the barriers to implementing DVI from the responders' perspective are, including any legal issues (RO3); and, finally, to scrutinise how the lessons relating to patient identification errors and the use of DVI have been instigated by UK responders (RO4). Chapter Three explained the practicalities of using DVI techniques with the living as well as the deceased. The research question and objectives guided the qualitative research process in the field, interviews and document review. This Chapter draws on the evidence associated with each of the objectives outlined above to discuss the solutions, challenges and barriers to identifying critically injured unknown patients and whether these can be resolved using DVI.

The applications within the DVI process, including DNA, fingerprinting and odontology, are the proposed technical solutions to ensure critically injured unknown patients are accurately identified. There are three reasons as to why DVI should be used. First, the individual DVI techniques are already utilised and established in the UK, albeit solely for the identification of the deceased in mass fatality disasters. Second, the DVI process ensures accuracy of identification through the Analysis, Comparison, Evaluation and Validation (ACE-V) of the

individual primary identifiers. Third, the accurate identification of patients will minimise harm to patients, their families and responders.

However, the technical application of DVI on its own will not guarantee that critically injured patients are accurately identified. As this thesis has demonstrated, there are a number of important factors which establish that it is how the DVI process is embedded in the overall mass casualty and fatality response phase that will determine the successful identification of an unknown patient. To improve the accurate identification and management of critically injured and unidentified patients, four key requirements are suggested. Each of the requirements outlined below are incumbent on the other to ensure that a comprehensive improvement to the identification of critically injured persons is achieved.

This chapter looks at each requirement in turn to discuss and critique the challenges to implementing DVI into the mass casualty and fatality response arrangements. The first section discusses how the issue of misidentification and identification errors can be shared and acknowledged. It includes a need to capture and report data and learning regarding unknown individuals admitted to hospitals. The second challenge concerns the implementation of or amendment to plans, policies and protocols regarding the unknown patient and how such an individual can be accurately identified. The third section conducts an analysis of the application of the plans above, including the importance of training, exercising and testing the plans across the multi-agency arena. The penultimate section discusses the importance of senior management engagement and the implications and consequences of addressing the issue of critically injured unidentified patients.

11.2 Awareness and Reporting

Chapter Seven looked at how individuals can be mistakenly identified and the findings demonstrated that there are numerous causative factors which can

contribute to the Incubation Period in a mass casualty and fatality incident. It is evident that visual identification methods and personal effects continue to be used in current practice. Furthermore, the misconception that visual identification is an acceptable method to confirm identity has for years underpinned the causation of errors. These visual identification failures are compounded by numerous other factors, as evidenced in Chapter Seven. These include the variable disjunction of information between responders and those desperately searching for relatives, which adds to the complexity of the scene. In addition, the emphasis on *physical* treatment to those injured, it is argued, results in the *emotional* wellbeing of the individual being demoted or ignored. Those who may be in a position to help alongside the clinical treatment are being unheeded due to organisational exclusivity and conflicting goals and hierarchical issues.

11.2.1 Awareness of Visual Identification and Personal Effects

As demonstrated in Chapters Six and Ten, the awareness of the errors which can lead to mistaken identification and the consequences of misidentification of critically injured patients is lacking. Before a plan and accompanying policy can be developed comprehensively, it is important that a basic understanding of the issue of misidentification, its causes and consequences are shared, discussed and solutions considered. Once organisations have an idea of the problem, they will be better equipped to identify and report the issue, leading to improved response arrangements and ultimately a better outcome for the patient, their family and the responders.

The first problem regarding the issue of awareness relates to the actions taken at the incident or hot zone. This is where frontline paramedics and those responsible for entering the incident scene encounter casualties who need to be rapidly extracted from the hazardous area. This initial phase where there is a “gradually increasing, (and yet unrecognised), risk” of errors occurring (Dekker and Pruchniki, 2013, 534) is referred to as the ‘Incubation Period’ (Turner, 1976; Toft and Reynolds, 2005). It is in this area where the hazards of the incident itself, the pressure the crews are under and the need to act quickly result in assumptions

regarding the individual and any personal effects on or near the person (see Appendix VI). If the incident is complex and demanding (as in the case of mass casualty and fatality incidents) the probabilities of making identification errors increase exponentially.

To ensure the chances of identification errors are minimised, it is essential that a policy explicitly outlines that casualties found unaccompanied by a relative or friend, and who is unconscious, is labelled as “Unknown” on all documentation. This protocol was implemented by EA’s French DVI teams as a result of the errors encountered in Paris in 2015. As stated above, there may be an assumption that any personal effects, such as a wallet or handbag, are believed to belong to the individual (such as in the cases of Van Ryn and Cerak in 2006 (CE-B) and Campbell and Rand following the Boston Marathon attack in 2013 (CE-D)). It is essential that they are not used as confirmation of the patient’s identity, discussed in more detail in s.11.3.

This thesis has demonstrated that identification errors can also still occur in the hospital setting at a later stage despite a patient being admitted as ‘Unknown’. The CE of Moulin (CE-E) and the Humboldt Broncos (CE-F) have demonstrated that hospital staff have assigned photographs of missing patients to the incapacitated patient in their care. As explained in Chapter Three, a patient who is incapacitated is very unlikely to look the same as they did prior to the incident. Differences will occur, not just because of the trauma sustained in the incident itself, but because the medical treatment of the patient, including fluids, bandages and drugs which help to relax the body and features, will alter their appearance (CE-A, CE-B). Therefore, a strict policy outlining that visual identification of any kind, including photographs or the insistence by relatives searching for missing family members, is to be avoided will help to prevent errors of this nature occurring.

As demonstrated in Exercise Lock and stated in interviews with clinicians, there is also a lack of awareness of the significance of identification errors. The concern is for the immediate situation and not the medium or longer-term issues. The motivation is the urgent need to save life and provide medical treatment, factors that responders perceive are more significant. Furthermore, in some

circumstances, clinicians made attempts to minimise the emergent threat or, as Turner referred to it, tried to 'sanitise their world of hazards' (1976). The prioritisation of physical treatment effectively downgraded the need to assign identities and the lack thereof was not considered a risk of harm to their patient. In addition, the misconception and ambiguity about the accuracy and use of visual techniques contributes to how the threat is minimised. Awareness of the consequences of harm to the patient as a result of being unidentified needs to be shared across ED and critical care settings. Furthermore, there needs to be an acceptance of the organisation's responsibility, in terms of notifying the agencies who can help reconcile the patient with their identity, and ultimately their family. In addition, as discussed later in s.11.3, clear protocols need to be developed outlining the importance of reporting cases of unknown patients. This should be coupled with a plan of action which is embedded into daily working arrangements, resulting in these events not being downplayed and instead becoming 'business as normal'.

11.2.2 Awareness of the Legality of Accurate Identification using DVI

The legal uncertainty was the principal concern raised by DVI teams and junior clinicians as to why DVI is not adopted beyond the disaster mortuary. The police have believed that aspects of criminal and medical law prevent the use of DVI with living persons who cannot consent. However, the MCA 2005 explicitly states that in the case of an incapacitated patient, if a procedure is considered a medical necessity and, in the patient's best interest, then consent is not required (s.9.3.1). Despite the initial ambivalence regarding the lack of identity of patients, as discussed above, once the consequences of mistaken identification were explained, there was general agreement that any and all action should be taken to help accurately assign an identity (s.9.4.2).

There is clearly a need to explain that the application of DVI techniques, by those trained to use them, to determine identity will not constitute an assault under the OAPA 1861. As outlined in s.3.5.3.2, taking a DNA sample would involve a swab of the internal cheek of a patient. The assault would need to be considered as more than 'trifling' to be deemed assault, as outlined in an interview with a judge,

or considered unreasonable. It should be noted, however, that the underlying principle for requiring a technique such as a DNA test to be conducted by the police needs to be clearly communicated and as such be in the patient's best interest in the circumstances. Misguided complacency regarding presumed consent needs to be carefully considered. This was especially true in 2016 and 2017, which saw a number of challenges arising from police requests for samples in medical settings. However, in these circumstances, as agreed by clinicians, determining the identity of a patient for the purposes of reuniting them with their identity and ultimately their family, would not be seen as an unreasonable course of action. Similarly, fingerprints would be unlikely to be considered as an assault on the body, especially compared to the use of intrusive medical procedures such as blood samples and catheters in the course of medical treatment. The only aspect of DVI that would need careful consideration before its application would be the use of odontology. As described in s.3.5.3.3, the manipulation of the jaw to ascertain clear dental records, suitable for a qualified odontologist to use, would require some force and would be considered more than trifling. It is therefore suggested that the use of odontology is only used if absolutely necessary.

It was also clear from the findings that there was a misapprehension, by both the police and the clinicians, regarding the application of DVI and the patient's privacy. Concerns centred on the use of DNA and fingerprints, including how the data would be used, shared and stored. The laws underpinning this requirement include the Right to Privacy Article 8 under the HRA 1998 and the GDPR (2018). Responders will need to be aware that the GDPR guidance (European Patients Forum, 2018, 9) explicitly affirms that data can be used in this way and should offer credibility to the underlying principles of a patient's best interest and the necessity to determine their identity. The retrieval of any data would be with the sole intention of determining identity and reuniting the individual with their relatives. There is an obligation to ensure that the parameters of the search using personal data are restricted, and that the information is only shared with those who require it to determine identity. To establish whether there is a match with a family, point to point comparison with data provided by the family, with their consent, would be necessary. The only caveat to this situation would be where the primary victim does not wish to be reunited with their relatives for whatever reason. This

argument would only be known if the person were conscious and able to raise the concern themselves, which negates the necessity for the process in the first place.

In addition to the above, the HTA 2004 outlines the ways in which human tissue and organs can be stored. If the retrieval, analysis and disposal of remains are under the supervision and authority of the specialist DVI teams then the associated human tissue protocols would be the same for both the living and the deceased. In support of the arguments above, the HTA explicitly states that where adults lack capacity, practitioners should consider the MCA 2005 and the Code of Practice (Department for Constitutional Affairs, 2007) and "all decisions must be made in the person's best interests as laid out in Chapter Five of the MCA Code of Practice" (HTA, 2017, 25).

Misplaced ideas of the application of law coupled with the argument that no legal precedent has previously been established specifically for determining a patient's identity have proven to be a barrier (Chapter Nine). However, criminal and medical law does in fact side with the patient's best interests and what clinicians would determine as a necessity. Furthermore, the findings in *Montgomery v Lanarkshire* [2015][16] clearly support the justification from a reasonable person's point of view, as determined by a judge. Therefore, this information would need to be shared amongst responders to support the use of DVI in identifying incapacitated unknown patients.

11.2.3 Reporting Cases of Unknown Patients

Throughout the course of this research (circa six years) not one individual interviewed has disputed the need to have their identity determined and, equally importantly, their family informed. However, there is a need to have clear statistical evidence of the true numbers of unidentified incapacitated patients and the associated errors in the identification process. As previously mentioned, it was evident that clinicians and other responders were unaware that individuals were being incorrectly identified, which highlights that these failings are not being reported and the learning not shared both nationally and internationally. Despite

[16] [2015] UKSC 11

the knowledge among DVI organisations and among members of INTERPOL that visual identification methods are inherently inaccurate with the deceased, this information is not widely shared beyond the realm of the identification of the deceased following mass fatality incidents. Without accurate reporting of unknown patient cases, responders will continue to make assumptions regarding personal effects or will continue to value the use of visual identification or the use of photographs to match unconscious individuals with relatives. Furthermore, the underlying, or seemingly unimportant, intangible errors in the Incubation Period may be missed, left unresolved and therefore re-occur as seen repeatedly in the contextual examples.

Based on the empirical evidence and analysis of the findings, it is clear that hospitals will be best placed to capture instances of ‘unknown patient’ cases. To gather an accurate reflection of cases, it is suggested that any ‘unknown’ patient admitted for treatment is reported to a central database. Understanding the prevalence of cases will aid in the understanding of the phenomenon, contribute to the development of suitable protocols that can be interlinked with current hospital policies and ultimately assist in a successful outcome to quickly identity critically injured and unknown patients. In the event of a mass casualty and fatality incident, these cases should also be passed to the CB so that they may assist in the reconciliation process in line with the standard process of DVI used for the deceased. However, the reporting of such cases should not be restricted to major incidents and mass casualty events. As discussed in the findings and seen in the CE, smaller incidents can result in mistaken identification. A protocol that is widely used and accepted on a frequent basis will perform better in circumstances where the pressure and complexity of a mass casualty and fatality incident may make decision making more difficult, as discussed in Chapter Seven and Nine.

A final recommendation regarding the reporting of individuals who are unknown or unidentified is that the same recommendation is implemented by mortuaries when a deceased individual without an identity is admitted (s.7.3.1; s.7.3.2). This information should be gathered centrally, and the details should be shared amongst those responsible for the management and care of the deceased on a daily basis. This will assist in building a better understanding of the phenomenon

regarding the identification of deceased beyond the mass fatality incident. Furthermore, it will potentially prevent identification errors where smaller incidents involving both the critically injured and the deceased may occur, such as in the Cerak and Van Ryn case (CE-B) or where there are two deceased of similar appearance such as the Northern Ireland case (CE-C).

Developing an awareness of the problems associated with identification errors (RO1), as well as building an understanding of what can and cannot be achieved with regard to the laws which are relevant in these situations (RO3), is of utmost importance to ensuring the successful application of DVI to the living unknown patient (RQ). Furthermore, educating responders (RO4) about the consequences to not only the victim and their family, but importantly their own and their colleagues mental health and wellbeing (RO3), will result in less resistance to the changes proposed below (Kotter and Schelesinger, 2008).

11.3 Plans, Policies and Protocols

Throughout the course of this study it has been noted that there remain inconsistencies in terms of planning and protocols surrounding the issue of identification. The research demonstrates that the plans and policies which should provide guidance on the issue do not adequately include reference to unidentifiable patients, despite international cases highlighting the risk, thereby minimising the problem. This is in part due to the ambiguity regarding the potential harms and the misconception of the law. Chapter Nine examined the barriers that prevented or inhibited the use of the DVI process being used to identify living unknown patients. It highlighted a misguided belief among responders that the use of DVI on the living would constitute an invasion of the patient's privacy and commit assault or battery if the patients were unable to consent. Furthermore, the lack of organisational policy and clear legal guidance, certainly in the case of UK DVI, makes the use of DVI on living patients an uncomfortable alternative. However, analysis of UK criminal law and aspects of medical law relating to the

application of the Mental Capacity Act 2005, coupled with discussions with legal representatives and confirmed via senior clinical experts, has shown that the use of scientific means to determine a patient's identity (to support the reconciliation process) is in fact a justifiable use, as summarised above. Finally, the relatively infrequent nature of mass casualty and fatality incidents and, in particular within these situations, the small numbers of unidentifiable patients, have meant that responders minimise the risk and downplay the potential for future events, effectively ignoring the need for prudence. Without implementing sound plans, the successful identification of living unknown persons would be beset with the errors and latent issues as reflected on throughout this thesis. First, there are cases where no plans exist because responders are unaware of the problem (s.7.4.2). This was observed in Exercise Lock when staff were unsure of the actions to be taken when a patient was admitted with no accompanying identity. Not having a plan will leave staff feeling unsure of their role, and may give a sense that the situation is out of their control and badly managed. This can result in psychosocial stress and harm, as noted in Chapter Eight. Secondly, a plan may exist but not be carried out correctly or at all, resulting in violations (s.7.4). Examples include the failure to adhere to a METHANE reporting mechanism or as demonstrated during Exercise Lock when ED staff failed to work with police documentation teams, as directed by the hospital major incident plan (Figure 15). This can result in relationships being damaged with consequences such as conflicting goals due to inadequate or incorrect information being shared (s.7.4.3). Lastly, it was noted that in some cases the plans in place were incorrect and resulted in errors occurring, such as the hospital plan signposting staff to use visual identification to determine a patient's identity (Figure 14).

The following section discusses the implementation of plans and policies which may help to address the lack of protocol regarding the successful identification of incapacitated unknown patients.

11.3.1 Bronze Level Responders at the Scene

As discussed in s.11.2 above and noted in the empirical evidence in s.7.4.4 and s.10.3.1.3, there is a fundamental lack of awareness of the issue surrounding

personal effects and their assumption as confirmation of identity. Similarly, the failure to correctly hand over patient details can result in mistakes occurring later on, as noted in s.7.2.3. Following analysis of the data, it is recommended that frontline responders amend their casualty handling procedure protocols to ensure that all unaccompanied and incapacitated patients are labelled 'Unknown' with an estimated age and sex of the patient until such point as they are handed over to hospital ED staff, who will assign the rest of the details on a temporary identification criteria (TIC) in line with the NHS Improvements guidance (2018a). Using Patient Stacey as an example, the paramedics would use the label "**Unknown- 1 January 1977- FEMALE**". Stipulating this as a requirement will remove the ambiguity regarding these patients and will provide certainty in the responder's role, thereby eliminating identification mistakes made at the scene. An alternative solution would be to follow the policy developed by EA and her DVI colleagues whereby the section regarding name and identity is removed entirely from the frontline responder documentation. Although this would ensure that frontline responders had no opportunity to add an assumed identity, it would require all frontline responder organisations to revise their documentation and may add an additional burden on responders away from the scene. However, there may be merit in the fact that frontline responders are then able to focus on the rapid triage and treatment (where necessary) without the need to capture patient history under rushed and complex circumstances. This administrative task may be better suited for non-clinical staff once the immediate treatment and care are completed by the medical professionals. This is likely to have short-term financial implications across the frontline responder domain with a programme of re-education for frontline responders.

Another recommendation made by EA was that any personal effects accompanying the individual were to be used to help Fast-Track the identification process. If this recommendation were to be implemented, then any personal effects accompanying the individual should be labelled, as an example, "Tentative Personal effects of 'UNKNOWN -1 January 1978 - Female'. This is discussed in more detail below.

11.3.2 Hospital Protocols

Based on the findings (s.7.3.1), hospitals need to amend their Major Incident plans to reflect the evidence within this study relating to visual identification. Furthermore, there is a need for a new protocol which provides clear guidance on the actions to be taken when unknown or unidentified patients are admitted. This should incorporate the actions of the Patient Safety Alert released in December 2018 (NHS Improvements 2018a). According to the Alert, unknown or unidentified patients should be admitted with a randomly generated TIC code consisting of a name generated by the phonetic alphabet, such as Tango-Bravo, followed by a randomly generated seven-digit number. As outlined in s.11.3.1, the code requires an estimated age and the sex of the patient. These latter two should remain the same as the estimated age and sex provided by the initial responder crews. Failure to align the two TIC may result in duplication and errors regarding casualty numbers between the scene and the hospital. Furthermore, it could result in the generation of additional searches for relatives if the information is communicated on separate occasions, such as via documentation teams in casualty clearing and by hospital administration teams. Once the TIC has been generated, all corresponding documentation should be noted as such until the patient's identity has been accurately confirmed. Once this has been achieved the records should be linked and annotated until the patient is discharged.

In addition to correctly labelling an unknown patient, the information needs to be escalated and shared with multi-agency partners. The ED Bronze Nurse in Charge should ensure that the information that an unknown or unidentified patient has been admitted is passed to Silver command with their corresponding TIC code (s.3.4 and s.9.2.1). This should then immediately be passed to the Casualty Bureau (CB) to generate a corresponding 'Unknown Person Form' or equivalent. Any accompanying personal effects (see above for suggested labelling) should also be communicated to the CB (this is discussed below in s.11.2.3). The hospital will need to make a request for a police hospital documentation team to be deployed to the hospital (if one is not already on site) to assist in determining the identity of the unknown patient as per current Hospital Major Incident protocols (see s.3.6.2). As stated above in s.11.2.1, medical teams must not use

photographs or ask families to confirm identities in person or via photographs (s.8.3.2).

11.3.3 Police

The empirical evidence gathered suggests that the police, in particular the DVI Teams, have exhibited an organisational rigidity (s.4.2.1) to the term ‘victim’ and its presumed ambiguous (s.7.4.2) association with the deceased. Up until recently they have solely focused their attention on the deceased and not considered the living unidentified victim in part of their plans, as discussed in s.7.4.2. There is a need to ensure that their plans and protocols are amended to ensure that a) the identification of the living is clearly reiterated as a police responsibility in mass casualty and fatality response plans and that b) following the advice from both France and Belgium DVI Team Leads, the priority in the immediate aftermath is the identification of the living over and above the identification of the deceased (s.7.1; s.8.3.6; s.9.3.1.1; s.9.4.1; s.9.4.2.1; s.9.4.3). To fulfil their obligation in accordance with the HRA 2004, it is proposed that UK Police DVI teams implement a sub-cell within the DVI cadre of officers who will specialise in the identification of critically injured unidentified victims who present to hospitals. For the purposes of this study they shall be referred to as Fast-ID Teams. The Fast-ID team, responsible to the Senior Investigations Manager, would be deployed once notified by the CB that an ‘unknown’ and unidentified patient has been admitted to the hospital. Having a specialist sub cell within DVI teams, as opposed to training all DVI staff, would require smaller numbers trained to work in hospitals environments, a point which EA confirmed caused anxiety amongst her teams (s.7.4.2). Furthermore, this would minimise the potential impact to resourcing, budgets and time needed to implement, exercise and test the new arrangements. Taking full responsibility for the identification process will result in clearer definition in their role in the hospital environment and will result in fewer mistakes being made due to conflicting goals (s.7.4.3). As it is likely that frontline medical responders and clinicians have limited experience in forensic evidence collection and processing, it is suggested that any DVI procedures should be used with police officers who understand the need for rigorous and accurate methods to ensure the evidence chain is adhered to (s.3.7). Doing so will ensure the

established Identification Commission are satisfied that the ACE-V has been achieved in respect of each individual (s.3.5.3). If these plans and procedures are thoroughly trained, exercised and tested there will be less ambiguity (s.7.4.2) and issues regarding control (s.7.4.3) and ownership of the problem when the police are asked to work in the hospital environment.

In addition to the above and in accordance with current arrangements following a mass casualty and fatality incident, police documentation teams will need to be deployed to Family and Friends Reception Centres established in hospitals or near the scene. The documentation teams would gather and pass information regarding missing persons from those searching to the CB. In line with recommendations made by European DVI experts over the course of this research, there is a need to implement a simplified and succinct version, or 'Quick-form' of the Yellow INTERPOL DVI Ante Mortem (AM) form (s.9. 4.1). This, as confirmed in the interview with EA (s.10.3.1.3), will assist in a much-needed rapid response to allow tentative familial matches by the CB. However, documentation team managers need to be aware of the scope for error if individuals have not been trained in the use of such forms (s.9.2.2). The reason for this proposal is based on what the Author suggested was the impact of 'Disaster Information Aftermath' on relatives and friends searching for their missing relatives (s.5.4.1). It is suggested that there is little point in expecting all families searching for their missing to complete extensive documents detailing extremely personal information about the missing person unless it clear that there is a potential or tentative match with a victim or patient. Once the field has been narrowed to those with greater potential of likelihood, then the Yellow AM form and the associated collection of samples can be completed with the support of a Family Liaison Officer (s.3.6.1). A documentation team will also be deployed to the hospital ED to capture the corresponding details of patients to enable families to be reunited quickly (s3.6.2). If an unknown or unidentified patient is admitted, the documentation team will need to work with the responsible medical team to compile as much information as possible regarding their visual appearance and gather any personal effects associated with the individual and pass the information along with their TIC to the CB. This information, it has been suggested by EA (s.10.3.1.3), will help fast-track the matching process prior to a more detailed and accurate identification being

made. If the CB database highlights a potential match, a Fast ID team should be deployed to the corresponding hospital to begin the process of accurately confirming the identity of the unknown patient.

In line with normal protocols for the collection of AM data for the deceased, a FLO should be assigned to the corresponding potential relatives of the unknown patient to initiate collection of DNA, fingerprint samples and details of dental records. In the hospital, the Fast-ID team would need to work with hospital staff to take fingerprints at the earliest opportunity, which would need to be cross matched using the either UK CB database (HOLMES) or the INTERPOL approved Plass data system which UK DVI uses (s.3.5.2). In the event of fingerprints not being viable (i.e. burns victims, trauma to the hands, limbs missing etc) other options should be considered, such as DNA and dental records. A DNA sample should, in the first instance, be a point to point comparison with the casualty's personal belongings for a direct match (s.3.5.3.2). If a corresponding sample was not available, maternal DNA confirmation should be used, as recommended by INTEPROL standards (INTERPOL, 2018).

Once the patient has been identified using a combination of primary identifiers, their details can be removed from the CB Missing Persons List (s.3.5.3). It is essential that no assumptions are made of a match until it is confirmed using the correct scientific processes (s.7.3; s.8.3.6; s.10.3.13; s.11.3.3) and the ACE-V has been established.

In the event that family do not come forward, or a match is not made, consideration must be given to a national and if necessary international appeal for assistance and a media campaign (See Figure 18). Furthermore, any data relating to the individual are to be retained in accordance with the GDPR 2018 and the HTA 2005 (s.9.3.3.1; s.9.3.4).

The successful application of DVI to identify a living critically injured and unknown patient (RQ) will, as outlined above, need a cohesive plan to ensure staff are prepared and understand their responsibility and the role they are expected to perform in these circumstances. The proposed protocol above would require DVI

teams to operate alongside hospital responders using the suggested plan alongside already established processes as discussed. The processes outlined above take into account the legal remit to investigate the missing and fulfil the requirement to act in a patient's best interest despite the fact the patient is unable to consent (Chapter Nine). A summarised version of the DVI protocols and their potential benefits and challenges is presented in Appendix XV. It is essential that a coherent multi-agency plan for the identification of unknown patients is developed alongside the technical implementation of DVI techniques to identify unknown or unidentified patients (s.9.2.2). Failure to create a clear strategy that is trained and tested can have serious consequences for the victim, their relatives and the staff expected to treat and care for these patients (Chapter Eight).

11.4 Training, Exercising, Testing, Repeat

Chapter Ten presented the data relating to whether lessons have been identified in regard to patient identification and looked at how the lessons and any changes have been instigated, adding to the growing literature in the field of organisational learning. It established whether UK responders have been learning from other responder organisations (where failures have been identified) and what changes, guidelines or processes are being actioned as a result. How the implementation of DVI in hospital settings was achieved in France and Belgium was explained, including how they identified, reflected and acted upon the lessons. Although these lessons were discussed in meetings and conferences, they were not implemented in the UK. The infrequency of mass casualty events, and more specifically instances of misidentification, will require a more considered approach as to how these rare events can be resolved appropriately.

Once a plan has been formulated there will need to be a period of time where the plan is promogulated, read and understood by those expected to use it. This will form part of the awareness process outlined in s.11.1 above. Furthermore, as already mentioned it is essential to communicate the benefits of implementing a

strategy to deal with the unknown and incapacitated patient but also to discuss the consequences if it is not used. Although awareness raising and training staff to use the plan often come in the form of a passive learning environment, there are multiple ways of adding active learning where the fundamental skills are imparted, not just the knowledge of the problem (Pollock, 2017). These may include smaller group work sessions where scenarios are discussed and solutions specific to the individual teams are examined. Developing training sessions will also allow staff to gain a better appreciation of their role (and their required skills) in these specific events to minimise confusion or fear about what is expected (s.5.5.4). This is especially important as mass casualty and fatality incidents are infrequent and actions that are undertaken irregularly are more likely to result in unprepared staff who do not feel confident to deal with these complex and fast paced events (Chapter Five and Chapter Eight). As discussed, pre-disaster training is an essential component of preparedness (Brooke et al, 2016; Brookes et al 2018b) and, as reflected on throughout this thesis, the exercises and the incidents themselves are not the point to dust off the plan and finally read it.

Once staff are educated on the specifics of the plan it is important that they have the opportunity to exercise and practice its application. This might be in the format of a tabletop exercise or possibly a walkthrough or live exercise. These are extremely valuable opportunities to engage in active learning and allow staff to understand the more latent issues where mistakes may occur, such as multi-agency communication issues, problems with hierarchy and responsibility and so on. The observation of EUR and Exercise Lock and the associated feedback from the hot and cold debriefs highlighted these important aspects of the exercise event itself (Chapter 10). Furthermore, these training events provide an opportunity for double loop learning where previous issue associated with failures in the response can be incorporated and acted upon prior to a real event. As both EUR and Exercise Lock demonstrated, inviting multi-agency partners to partake in exercising the plan is extremely beneficial. Furthermore, developing good working relationships in advance will ensure that staff are not floundering in the event of a real incident wondering who may be able to assist them (s.8.3.3).

A potential barrier to staff attending the training and exercising regime could be the reluctance to attend due to time pressures (s.9.2.7). It may also be because they do not believe the risk to be significant or rationalise their lack of needing training due to a misplaced confidence in their abilities (s.9.2.5). There are two approaches to take in these circumstances, the first is senior management engagement and directives from above (discussed below) and the second is to spread the awareness regarding the consequences of failure. As this thesis has demonstrated, the majority of people who initially did not see identification issues as a problem generally all agreed that a change to the identification process was necessary after learning about the broad consequences associated with mistaken identification (s.7.4.4; Chapter Eight). Another potential obstacle to training, testing and exercising the plan is the cost involved. The organisation and its senior management will need to dedicate a significant amount of money to ensure that any plan that staff are expected to apply is appropriately trained and tested. This includes ensuring they have the skills, knowledge and equipment necessary to perform their roles adequately. This is discussed in more detail below.

The penultimate consideration with regard to understanding the plan is whether the organisation chooses to test the plan. In the majority of cases encountered in the Author's career, organisations have been satisfied with simply exercising the plan. Both EUR and Exercise Lock were examples of this. However, it is suggested that some tests are conducted to ensure DVI can be fully implemented with the living. The first would be to test the communication arrangements between responders, especially how the CB is contacted via Silver Command. This should confirm that the lines of communication clear and unambiguous and that staff understand who to call and how to get hold of them. Exercise Lock demonstrated the importance of testing this arrangement. This defined pass or fail test would critically impact the ability to notify partnership agencies and assist in identifying the unknown individual. The second would be to ensure that any equipment necessary to determine the identity of a patient is tested in the hospital sites themselves. This might include the police CASWEB computers and their link to the CB HOLMES unit, or the fingerprint PLASSDATA equipment. Without these IT devices working, the cross matching of patients with their relatives will be severely hampered. Similarly, The CB telephony system is another area that, as

demonstrated in the aftermath of the Manchester Arena Bombing, requires comprehensive and repeated testing.

The final aspect to training, exercising and testing plans is the importance of reflecting on the lessons learned from these training events themselves and implementing changes as a result. As discussed in Chapter Ten, organisations need to share the outcomes of these events across the isomorphic spectrum. Working with other hospitals and responder organisations to train the plan is considered an important form of cross-organisational and common mode isomorphic learning (Kim, 2016). Another reason to ensure the plans are repeatedly reviewed, rewritten and re-exercised is because the infrequency of mass casualty and fatality incidents can lead to what Tinline (2016) describes as 'corporate amnesia'. This can occur as memories of such events are lost over time and the learning is not refreshed as individuals change employment or position. 'Corporate amnesia', as both an outcome of time elapsed since the last incident and as a result of employee turnover, is something which impacts the ability to understand why plans and policies exist in their current format, but also why there is a need to continually update them. However, as reflected in the findings, some individuals do not keep up to date with current procedures and as such hold on to their old policies and plans and are therefore not cognisant of changes (s.9.2.6). Organisations need to use all forms of isomorphic learning to be keep up to date with changes, and to modernise and implement better standards, especially in terms of casualty management. These updates need to explain why the previous standard was unacceptable to avoid individuals 'reinventing the wheel' because the previous mechanism (such as visual identification) appear easier.

11.5 Organisational Leadership and Buy-In from Senior Management

This chapter has suggested that the biggest limitation to embedding DVI is not in fact a legal barrier, but more that responder organisations are failing to identify

latent conditions present in the incident response. Perhaps more importantly, that organisations do little to learn from incidents or incorporate the findings from incident reviews, both positive and negative, is a significant barrier to amendments. It may be, as Macrae and Steward (2019) suggest, the complexity of introducing a change, or that they simply cannot accept that it will happen to them. It may simply be a hubristic superiority over other's failures that prevents a form of double loop, retrospective learning. To become informed, organisations need to actively learn from the disasters within their own organisations and from those beyond their known environments. By overcoming the barriers to organisational learning, institutions can accumulate vast amounts of knowledge which can be utilised in the creation of contingency and business continuity plans. Expansion of this knowledge will enable an organisation to protect itself from a wide range of latent errors and by working alongside other organisations foresight of potential issues can be developed.

According to Lotich (2017), "Organizational leaders have the responsibility to manage change efforts to minimize the negative impact on employees." With this in mind, the following section outlines the various responsibilities and actions it is suggested that organisations and their senior management take to ensure the accurate identification, incorporating DVI, of critically injured unknown patients.

11.5.1 Supporting the Plan and Driving the Implementation from the Top Down

Unless there is senior management support and a political will to see improvements in the field of emergency response, very little change can occur at grassroots levels. MI exercises, as highlighted previously, carry a significant cost in terms of time, resources and money. This is also true in terms of general policy and plan amendments. As previously stressed, the focus will be on what are considered to be the most significant issues or what have been referred to previously as decoy events. The organisational hierarchies within both the police and the healthcare settings dictate the decision-making in the aftermath of an incident. It is abundantly clear that the financial appetite to support changes and improvements in emergency planning occurs in the immediate aftermath of a disaster (Coles, 2014; Pollock, 2017) and unless there has been an incident, the

pool of money dedicated to staffing and supporting emergency response and organisational resilience slowly dries up. If there is little political appetite to address issues associated with the CCA arrangements and DVI, funding and resourcing for improvements in the emergency response arena will decline (Pollock, 2017). It is essential therefore that in advance of a mass casualty or fatality incident senior management and the organisation need to ensure that complacency in their response arrangements does not have the opportunity to set in (s.9.2.3). The impetus for improving the organisation's response to incidents need to be driven from senior management, with a regular schedule of training and exercising events and the funding and resources to achieve these. Furthermore, without senior management support, the overall culture of the organisation will remain unchanged. This is especially true if senior managers do not take the opportunity to enhance their own learning (s.9.2.3).

11.5.2 Dedicating the Time and Resources

From experience, updating plans and implementing changes through training and exercises takes a substantial portion of time. So too does analysing incident reports and feedback. This was another finding of this research; that is, the lack of time to address all the failings and implement the positive changes that came out of reports and events and the lack of resources to dedicate to these time-consuming issues (s.9.2.7). For both the police and the clinicians, the day to day role was already stressful and many of those observed and interviewed reflected that they simply did not have the capacity to take on more work. Unless, as highlighted above, an iconic disaster occurs to provide the impetus for senior management to supply additional resources and finances, little change will occur (s.10.3.1.1). Clinicians and hospital staff will continue to concentrate on medical necessity in terms of physical injuries, and issues which affect psychosocial emotional well-being will be relegated to the MI three yearly exercise. However, as confirmed by EPOs at the 2018 Emergency Planning Society Conference, the chances that the hospital MI exercise will focus on the casualty information process or the Friends and Family Reception Centre aspect of disaster response are remote. It is an unfortunate fact that there simply is not enough time to cover all eventualities of a MI response and the emphasis will be on initial patient triaging

and emergency care and not necessarily the emotional wellbeing of patients. Similarly, for DVI teams, their effort and time is spent on the deceased. Although this thesis has demonstrated that responders acknowledge that something needs to be done to identify hospital patients, senior management will need to provide the additional resources and time needed to dedicate to the training and response in this area of work.

11.5.3 Enforcing the Reporting Mechanism and Being Part of the Awareness Campaign

Senior management will need to make a consistent effort to ensure the problems regarding identification failures and that the wider issues prevalent in the Incubation Period are communicated across the organisation. An important aspect to this is acknowledging and accepting responsibility for the organisation's specific role within the wider emergency response plan. For this to occur, police will need to acknowledge their legal requirement and responsibility beyond that of the deceased victims, specifically in terms of reconciling an unknown critically injured patient's identity and assisting in the reunification with their relatives via the CB. For hospitals, the organisation will have to acknowledge their responsibility to report cases of unknown patients to the police and the CB and their assistance in any forensic procedure which may need medical input, such as obtaining blood samples or carrying out x-rays. In addition, stakeholders will need to be informed of the problem and the changes being made to address the matter.

Driving engagement in the process across the organisation will build a better understanding of the risks to the patients and staff associated with identification errors. This includes during the process of implementing and exercising the plan, but also in terms of understanding the potential harms that may occur to patients, relatives and responders in responding to mass casualties and fatality events. Furthermore, if management enforce a reporting mechanism which captures the occurrences of identification cases, both on a day to day basis and during major incidents, the phenomenon will be better understood, and useful learning will take place. The message will be reinforced by a demonstration of their engagement if they also make the effort to attend training events and exercises. This was

observed following the positive engagement of senior management in partaking in both Exercise Lock and EUR.

11.5.4 Understanding the Organisations Legal Remit to Identify Patients

This section briefly explores the legal implications to the relevant responder organisations of both the failure to identity an individual and the possible results of making a mistake concerning an individual's identity. This is an important component of the awareness of identification issues and am important component in providing senior management in particular with the impetus to drive change from the top down.

Ultimately, in a case of mistaken identification, the judiciary would be seeking the views of experienced medical professionals to aid their decision-making and each case would be examined on its own merit, with a multitude of factors influencing the verdict. Furthermore, for public prosecutions to go ahead under English criminal law, the case would need to be deemed in the public interest, as discussed in Chapter Nine (s.9.3.5), which would be unlikely. However, there may be merit in those who are affected pursuing a civil law claim to achieve justice. Organisations would need to ensure that their staff and the organisation have fulfilled their duty of care to the patient. Furthermore, the organisations will need to satisfy any obligations expected of them in terms of their responsibility to their staff. This includes equipping staff with the knowledge and skills, and the training to fulfil both to carry out their role in all potential circumstances. This highlights the importance of the organisation training their staff appropriately in terms of their obligations to act and doing so they would not only avoid potential misidentification error but also prosecution. If responders have not received adequate training in regard to their responsibilities and not giving the right equipment, the fault will lie with the organisation.

From the wider perspective of mass casualty and fatality incident preparedness, Category 1 Responders are obliged to fulfil their obligations to prepare, train and respond to all emergencies under the CCA 2004. However, as has been noted throughout this thesis, there are clear shortfalls in meeting these legal

requirements. Examples noted throughout this thesis include, the failure of organisations to assess the risk of emergencies occurring specifically in relation to identification failures, despite the warnings being shared at multi-agency meetings. Despite communication, by the Author, with UK DVI teams and NHS EPRR, relevant plans for dealing with incapacitated and unidentified patients have not been made. Furthermore, there were clear examples during both EUR and Exercise Lock of the failure to share information and cooperate with other responders. All of these are legal requirements outlined in the CCA 2004, yet the failure to comply with them fully suggests they may reflect a form of 'fantasy document' (Birkland, 2009) as organisations pay lip service to the requirements of the law. However, as the Act itself is considered permissive in nature (Cabinet Office, 2011), there is little scope for seeing any significant punitive effect, especially as it would appear that accountability based on passed failings as noted in public inquiries has remained scant (Pollock, 2017; Wright and Gibbens, 2018). Yet, as discussed in Chapter three, significant implication for organisations could be reputational damage as a result of any future errors.

Following the Grenfell Tower Disaster, a review of the UK response framework and legislation was carried out. Whilst it concluded that the law in this field was sound – "there is no evidence that the law in this area needs to change" (House of Commons, 2017, 6) – it did argue that there was a need to reflect on how government and responders were interpreting the CCA and its regulatory and statutory guidance. However, what the report failed to address is the need for a better auditing process for emergency response and recovery, to ensure that first, rigorous standards are established and not just suggested and second, government and responder agencies are audited annually to ensure they are meeting those standards and not just allowed to cherry pick the simplest parts of the Act and regulatory and statutory guidance.

11.5.5 Supporting Metal Health and Wellbeing of Staff

This thesis has highlighted the risk of harm to responders as a result of identification errors. It has also highlighted the numerous consequences poor leadership, inadequate planning and insufficient training have for the mental health

of staff (Chapter Five and Chapter Eight). As outlined above, in order to counter these issues, organisations need to ensure they are providing clear direction in what is expected of their staff through sound planning. Senior managers need to implement a no-blame culture to ensure that staff do not feel they are betrayed or unsupported when mistakes or errors occur. This is especially important if responders feel that management have not invested in the resources and training events needed to practice the plans. Furthermore, offering pre-disaster training will not only better prepare staff in their response, it will also allow employees to recognise the signs of distress and understand how the organisation might be vulnerable in a real event. This was a clear learning outcome of Exercise Lock and highlights the importance of investing in a pre-disaster training programme.

11.6 Summary

This study concurs with Pollock's (2017) assessment of Local Interoperability, which noted that engagement at a strategic organisational level lacks focus outside the sphere of event isomorphism. What this means is that organisational commitment in the preparation and response to major incidents, and specifically with respect to the identification of unknown patients, loses momentum when there have not been recent examples to spur and encourage improvements. There needs to be a continuous impetus driven from senior management if any change in the identification process is to be achieved. Establishing a culture of change impelled by senior management to understand the risk and assess its impact on patients, their families and the responding staff is the first part of successfully implementing DVI into the mass casualty response effort. The next stage is to address the inconsistencies reflected in planning for and responding to the identification of patients. This plan needs to take into account not just the issues associated with visual identification errors and mistakes with personal effects, but also the more latent issues which inhibit any practical solution being applied (RO1), including any perceived barriers relating to laws pertaining to consent and privacy (RO3). These include interoperability between organisations, poor information and communication sharing, misplaced ideas of risk and inaccurate application of wider emergency response arrangements. Once the policy has been

formulated and shared amongst multi-agency partners who play a role in the plan, it should be trained, exercised and if necessary tested. This should be conducted in a manner that does not simply reiterate the awareness of the issue and its solution but implements and trains the skills and application of said knowledge. This will build emotional resilience in those expected to execute the plan, as they will be mentally and physically equipped and able to respond, therefore minimising psychosocial harm (RO2). Furthermore, any lessons learned (both positive and negative) and improvements identified through the exercising and testing process (incorporating isomorphic learning through events and multi-agency engagement) need to be applied to the plan (double loop learning) (RO4).

Ultimately, the application of DVI on its own to resolve identification issues is insufficient to correct identification errors. This thesis and its empirical evidence captured through observations, interviews and documentation analysis has found that successful implementation of DVI requires better awareness of the issue, including the latent failures present in the Incubation Period and an awareness of the consequences of harm to the responders themselves. Perceived barriers to unknown patient identification, including the legal viability of DVI, will need to be overcome. This can be achieved through awareness, planning and training and ultimately steered by effective strategic leadership with a desire to improve the culture of emergency response across the organisation. If organisations fail in their duty to plan for and respond to mass casualty incidents involving unidentified and unknown incapacitated patients, the responders themselves will become victims of psychosocial stress and harm.

CHAPTER TWELVE

Conclusion

12.1 Introduction

This final chapter concludes the thesis and presents the main arguments and justifications for the adoption of DVI to determine the identity of the unidentified incapacitated individual in mass casualty and fatality incidents (RQ). This comprises of the significance of this research, including the changes taking place as a direct result of the work done with multi-agency partners and its contribution to academia, particularly the fields of psychosocial harm, organisational learning and causes of error in front-line emergency response. Areas for further consideration and research are presented and the potential for future exploration within these themes is discussed, particularly given the changes that are occurring in the field of patient identification and reconciliation. Finally, this chapter reflects on the research journey as a whole and offers some thoughts to fellow PhD candidates, academics and emergency responders entering the academic research domain, especially in light of balancing solo working and parenthood.

12.2 Summary of Thesis

This thesis sought to understand the challenges presented by the identification of incapacitated patients in mass casualty and fatality events and whether they can be resolved using the scientifically accurate and internationally recognised protocols of DVI (RQ). The following research objectives were proposed to help answer the research question:

- RO1 Examine how and why identification errors occur.
- RO2 Determine the psychosocial implications of identification errors.
- RO3 Examine the barriers from the responder's perspective in accurately determining the identity of an incapacitated unknown patient, specifically the medico-legal challenges relating to DVI.
- RO4 Scrutinise how the lessons relating to patient identification errors and the use of DVI have been instigated by UK responders.

This research incorporated the observation of two major incident exercises, Exercise Lock (2017) and Exercise Unified Response (2016). Furthermore, semi-structured interviews with 29 subject-matter experts were conducted, as well as conversational interviews with responders during both exercises. To supplement and triangulate these findings responder documentation was critically appraised to gain an understanding of the policies and protocols that underpin the role of the responder in mass casualty and fatality incidents. These methods were accompanied by constant referral to and reflection on contextual examples where identification errors have occurred.

As this research confirms, identification errors continue to occur. There is clear justification for the reconsideration of the protocols surrounding incapacitated individuals with no identity. The accurate identification of the deceased and the living is an essential component of the response and recovery phase of mass casualty and mass fatality incidents. Furthermore, families and friends desperately searching for their missing relatives require authorities to have clear procedures for accurately determining identities.

It has been established through this thesis, and corroborated by France and Belgium's authorities, that the DVI protocols using DNA, fingerprints and dental X-rays (as a last resort) can provide accurate scientific solutions to this problem. Although there are suggestions that the legality of such methods is unclear, the principles established through interviews and analysis of the legal precedents in the UK make it certain that the identification of these vulnerable patients is both a

necessity and in the patient's best interests. Furthermore, there is a legal imperative that the identities of the missing are investigated appropriately. It is also argued that there is a moral and ethical need to reunite these patients with their families quickly and that the information that is provided should be accurate, timely and not based on visual identification assumptions, such as those highlighted throughout this thesis.

The failure to correctly identify victims results in unnecessary distress and potentially leads to safeguarding issues and the denial of the patient's rights to appropriate treatment and care, which could be lifesaving. There is also the additional factor that a complicated identification process places a significant burden on responder services, potentially resulting in psychosocial harms. The media scrutiny along with any potential investigation into these errors can further compound the emotional damage.

There is a need for responder organisations to capture and report cases of unknown or unidentified individuals. This will build a greater awareness of the problem and its causes and consequences, allowing solutions to be developed. Secondly, plans, protocols and policies regarding the care, treatment and, ultimately, successful identification (incorporating DVI techniques) need to be established, trained and tested appropriately. This needs to occur not only in the immediate responder organisation itself but across the multi-agency response domain. Lastly, senior management need to drive the changes suggested above. It is imperative that resources and support are provided to reduce the potential implications associated with identification errors and, subsequently, the psychosocial harms to the victims, their families and the responders themselves.

Under normal circumstances, the news of a relative caught up in a disaster would cause anguish; the failure to correctly identify them when the appropriate application of science offers an accurate solution is inconceivable and unjustified.

12.3 Study Significance

This research contributes to the existing body of knowledge in several ways. First, it contributes to the literature on MI response and in particular the field of victim reconciliation. The disaster and hot zones are generally difficult areas in which to carry out research such as observations and interviews, as discussed in s.2.3.1. This research adds to this field by demonstrating the approaches and highlighting some of the difficulties encountered by navigating such terrains. Second, although there has been an extensive amount of research conducted into the psychosocial harms suffered by victims and their families, the study of harm to the responder has, until very recently, not had the same level of scrutiny. The findings presented in this study contribute to this body of research and argue that responders are at risk of serious psychosocial harm as a direct result of the impact of families being denied access to their critically ill family members. In addition, the data gathered through interviews with DVI experts who have successfully used DVI to determine identities has demonstrated the psychosocial implications surrounding the identification process and this research has highlighted the potential conflict in expanding the responder's role. Similarly, traumatic experiences of having to inform relatives of mistakes made in the process add to the literature on victim identification and reconciliation in the wake of mass casualty and fatality incidents.

Third, the use of a qualitative methodology has enabled a more in-depth analysis of the underlying factors within the disaster response field and has contributed to the academic theory of the Incubation Period. Previous studies using Turner's theory have converged on high-risk industries, such as aviation and nuclear. The application of this theory to disaster response has broadened its applicability and has allowed the nuances and latent errors to be teased out of the decision-making processes in victim identification to assess why there are issues and where and how they have manifested themselves.

The fourth area of contribution is around the legality of the use of DVI with living patients. Perceptions of the risk of charges of assault and/or battery and the potential invasion of the individual's privacy were argued to be the most important

barrier to implementation of DVI on the living in a disaster aftermath. The reluctance of DVI teams to broaden victim identification to the living is being fuelled by the misconception that the DVI process is legally incompatible with the living and is therefore acting as a barrier to its adaptation for use with incapacitated patients. It was established through this study that although there is an absence of legal cases establishing precedent for the importance of identification of living victims, the principles of best interest, necessity and reasonableness provide solid grounding for its use with the living. The use of DVI techniques beyond the scope of identification purposes would be an invasion of privacy and/or considered an assault. However, the current legislation and guidance justifies and allows those responsible for patient care and treatment to do what is necessary for the individual given the circumstances. There could of course be improvements in terms of patient reconciliation and better explanation of the legal processes, but the principles established in the MCA 2005 and cases such as *Montgomery v Lanarkshire* [2015] clearly recognise the need for a perspective from a 'reasonable' patient's point of view.

Lastly, this research contributes to the disaster response domain and the development of organisational learning within this realm. It makes clear recommendations for front line responders to implement identification policies beyond the alpha numeric protocol to ensure that unknown and unidentified patients are accurately identified and, crucially, reunited with their relatives. This thesis outlines four key steps to introducing new plans and policies relating to the implementation of DVI to accurately determine identities of living incapacitated unknown patients. These include building awareness of the problem, specifically around visual identification and the inaccuracies of presumptions regarding personal effects. It suggests that plans and policies incorporating DVI are subsequently developed to direct and guide staff appropriately. It is essential that any new protocols introduced are trained and exercised on a regular basis and that any findings help improve the response. Finally, this study recommends that the overall identification process is fully supported and changes enforced by senior management.

12.4 Research Considerations

There were a number of logistical and resource limitations to the research. First, the study was self-funded, thereby necessitating careful consideration of what could be realistically achieved within the constraints of budget, travel and timings. Similarly, as noted in Chapter Two, the study of disasters tends to be restricted not only due to the inability to get to the scene quickly, but more importantly the ethical issues of observing those affected and those responding to the incident. However, as explained, previous experience within the field and the opportunity afforded during this research to observe two MI exercises provided a valid mechanism to study this unique phenomenon. Ideally, to avoid certain selective biases, this research would have benefited from a longer time period to attend more mass casualty and fatality exercises. However, as a caveat, experience as an EPO has meant that these exercises were not novel. Many of the findings elicited were not surprising and reflected the evidence presented in the literature reviews.

Access to subject-matter experts also created a challenge. Scepticism of the value of the subject meant that, initially at least, gaining the attention of busy front-line responders was difficult. However, the ability to be an observer of a large-scale disaster exercise, coupled with contacts with colleagues in the front-line responder domain, meant that doors, or at least telephones, were eventually answered.

The opportunity offered by UK DVI, in particular by Howard Way (UK DVI Lead), to observe DVI teams and responder organisations in the hot zone during EUR was enormously beneficial. Having designed and executed a survivor reception centre exercise (Exercise Acterione, 2010) alongside the CB and Metropolitan Police Service, the Author was already familiar with the reconciliation process for the living. However, the reconciliation of relatives with the deceased was something the Author had only briefly encountered during a week-long Mortuary Operations training event held by INFORCE (a private organisation who specialise in humanitarian assistance and the detection, recovery and identification of mass fatality and atrocity incidents (INFORCE, 2018)). Therefore, the ability to observe and interview team members of UK DVI, who are internationally renowned for their

expertise in the field of DVI, was immensely important to this research. These interviews and meetings led to further introductions to international DVI experts, including Elvire Arrighi (EA) (France DVI Lead), Christian Debouquec (CB) (Belgium DVI Lead) and Ine Van Wymersche (IVW) (Belgium Prosecutor), amongst others. While it would have been extremely useful to be able to gather every DVI lead's viewpoint, contact with INTERPOL DVI Headquarters in Lyon enabled the perspective from the international field of DVI as a whole to be understood.

12.5 Impact

Clearly change within this area is not something that can occur overnight as there are a host of barriers that will need to be overcome, as is made clear in Chapters Seven and Ten. Yet that does not mean these changes should not or cannot take place.

Over the course of this research a number of conferences were attended, and numerous presentations given to a wide range of audiences. In addition, in 2018 a paper, co-authored with Professor Lucy Easthope, was published in an international journal: *Disaster Medicine and Public Health Preparedness*. As a result, in mid-2018, Police Service Northern Ireland (PSNI) contacted the Author, stating they:

> *…would be very keen to look at how we can use your experience and research to ensure we get the best possible protocols that are both resilient and sustainable…[and] how we can deliver a victim focused approach to the documentation and reconciliation process which (in no particular order): meets the investigative need; enables the mass fatality Identification process; and enables the mass casualty processes* (Email Correspondence Roberts, June 2018).

This email set in motion a progression of meetings and events which culminated in a Reconciliation Conference and Workshop in Northern Ireland Police headquarters attended by over 120 responders from every area of Northern Ireland MI response, including counterterrorism. The most prevalent cases were explained, and a summary of the Author's findings presented. A significant effort was put into the thought process by PSNI EPOs looking at identification and reconciliation, as the image below demonstrates.

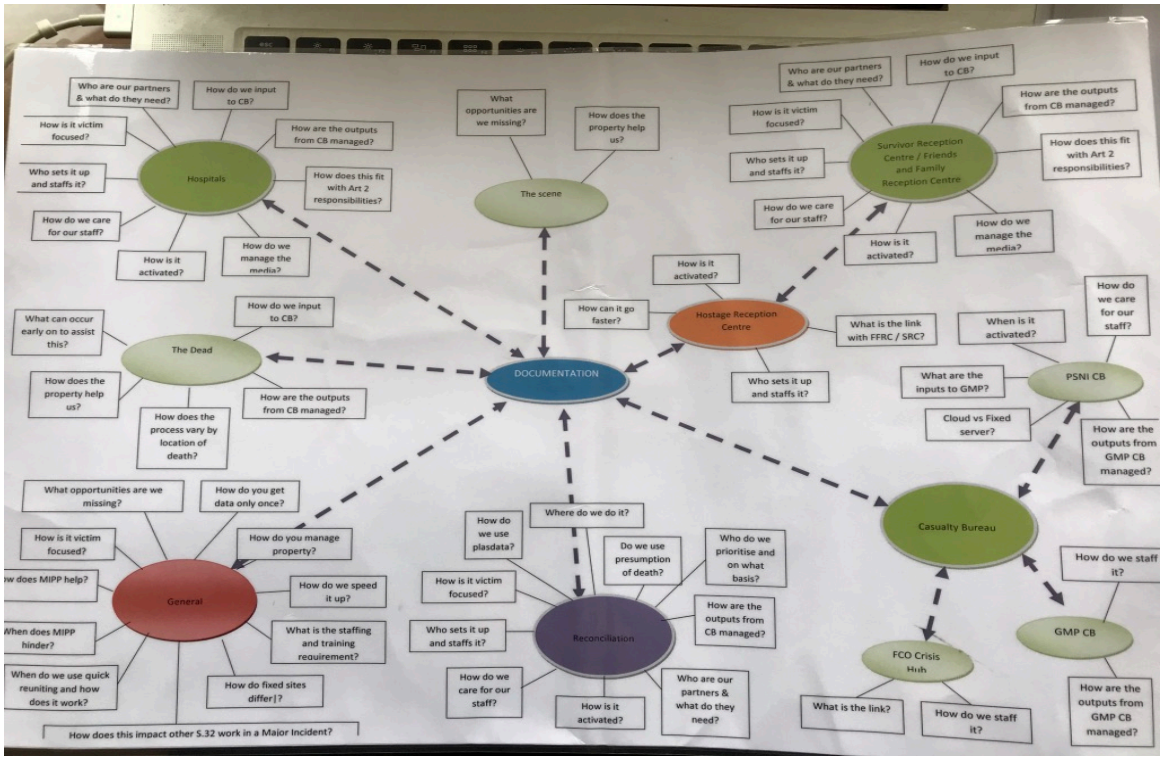


Figure 18. Image of the handout to the PSNI conference and workshop designed by EPOs, demonstrating the interlinking factors to be considered in casualty and deceased management in the aftermath of a mass casualty and fatality incident.

Roberts stated there was an emphasis on it being 'victim focused' and whether police and hospital staff could achieve this aim.

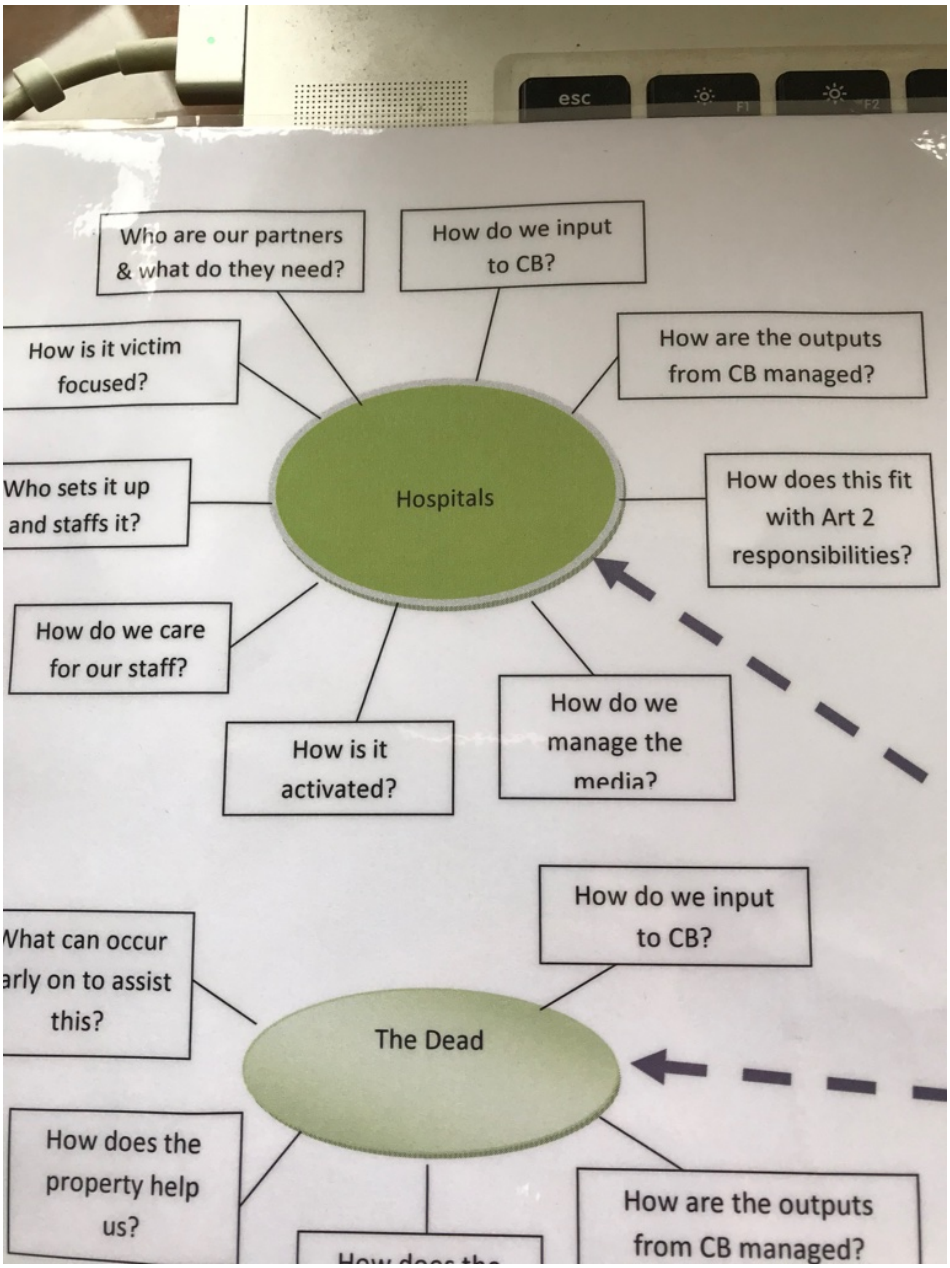


Figure 19. Image of the corner of the PSNI Reconciliation Conference and Workshop handout focusing on the actions and considerations within the hospital environment.

This demonstrated that there are lessons being identified and, critically, improvements made. At the end of the Author's session a question was posed to the audience by the Head of Emergency Planning, Inspector Roberts:

> *Based on what you have seen and heard today, is there anyone in this audience that does not agree with Dani's research that DVI should be used to identify patients in critical care?* (Reconciliation Conference, September 2018).

No one in the audience objected to the process. Whilst there may have been individuals who may not have been comfortable 'raising their head above the parapet', in the written feedback there were no significant obstacles that have not been raised in this thesis and many of the barriers centred around organisational learning issues and inability to highlight the importance preventing identification errors. Furthermore, there was a concern that change to front-line clinical staff roles would be challenging.

PSNI developed local protocols for their police service and partners in the reconciliation process to follow. As a result, following the Derry Rioting events in Northern Ireland in early 2019, the use of DVI was again successfully used in a hospital setting (Personal Correspondence with Roberts, May 2019).

In addition to PSNI's positive engagement with the expansion of the DVI process, NHS England invited the Author to present her paper to the EPRR Clinical Reference Group meeting in December 2018. The Author was told that her paper would be of benefit to the discussion of a Patient Safety Alert regarding the temporary identification criteria for unidentified patients (2018). This resulted in an invitation to collaborate on the development of national guidance to be included in the UK Mass Casualty Plan being developed by the Cabinet Office.

Furthermore, after attendance at a media training event, a television production company has enquired whether they could run a documentary on the subject, as it was felt to be in the public interest and something that would be worthwhile filming. Discussions are ongoing with Screenhouse Productions Ltd.

Avoiding "misidentification multiplicity" (Black and Bikker, 2016, 2) is an essential component of this thesis. The scrutiny of causative factors and the implications of these failures demonstrate that there are fundamental issues in organisational

learning across mass casualty and fatality response. Barriers to implementing a solution are being justified by a misunderstanding of the law and an inability and unwillingness to adopt positive examples of best practice. There is an influential mindset amongst many DVI practitioners and front-line responders that the identification of the deceased is a priority in a mass casualty and fatality event. However, as EA pointed out, the death of an individual cannot be undone. Whilst the numbers of deceased may be greater, the identification of the deceased should not take priority over the living. Ultimately, this research heralds the necessity for the adoption of a scientifically based protocol for the identification of incapacitated living individuals and, crucially, a demand to embed these practices across the disaster response effort.

12.6 Recommendations for Further Research

As has been reflected upon throughout this thesis, there are several ways in which further research on the issues raised could be followed up. Beyond the recommendations made in Chapter Eleven, the following provide several suggestions for future projects:

Owing to ethical concerns, this research did not conduct interviews with survivors or relatives affected by identification errors. There is scope for suitably qualified practitioners and academics to gather primary data relating to the emotional impact of these errors and suggestions for best practice in the reconciliation phase for survivors and their relatives.

There is great potential in the application of biometric data to improve medical treatment and the identification of individuals. Although there has been criticism levelled at the use of facial recognition technologies for use in the detection of criminals (Robertson et al., 2016; White et al., 2015), it is suggested that they do have a place in the reconciliation phase. In the aftermath of a disaster, families and friends will turn to social media to upload images of their missing in the hope

that they will be found. The use of facial recognition software could potentially assist responders in matching victims, alongside the use of DVI techniques if a successful match is made. This is certainly an area of disaster response that warrants further research, especially as responders cannot reconcile a victim with a family that has not come forward.

This research relied on the scrutiny of media reports, autobiographical accounts and anecdotal evidence from those interviewed regarding identification errors. There is potential for this research to be expanded to include quantitative data through Freedom of Information requests to hospitals throughout the UK to gather a better indication of the scale of the numbers of unidentified and incapacitated individuals. However, as highlighted, there is a need for improved reporting mechanisms for cases of unknown patients. If hospitals are not recording these occurrences, then there is a risk that the data provided will be skewed.

As noted above in s.12.5, there has recently been action by the Cabinet Office and the NHS to improve the mechanism for the temporary identification of patients. Scrutiny of the documentation produced so far has raised the issue that the solution is in the form of an alpha-numerical numbering system to ensure the patient and their respective treatment is appropriately tracked through hospitals. The policy documentation does not incorporate the need to determine the actual identity of the individual, as it focuses on the correct medical treatment of the physical injuries and the safety of the patient. Therefore, as this research attests, there is a need to develop protocols for hospitals to ensure that, alongside the medical treatment of the physical injuries, hospitals develop and test a policy that takes into account not only the patient's safety but also considers their mental and emotional wellbeing and the accurate determination of their real identity. There have been criticisms levelled at responders for the use of alpha-numerics in previous disasters (Kavanagh, 2005; Scraton, 2016), therefore there is a need to reflect on such examples and ensure solutions exist.

Finally, this research identified that there was a misconception of the application of the law relating to the treatment of incapacitated and unknown patients. Confusion regarding whether the use of DVI techniques would amount to charges of assault

when consent was lacking was a primary concern. It is obvious that the lack of clarity has led to a reluctance to offer appropriate care to those affected in the wake of disasters. There remain issues around information sharing between agencies in the aftermath of incidents due to confusion about the legality of such disclosure, as noted from interviews with EPOs and personal experience in the field of emergency planning. Therefore, there is a need to research how the knowledge of these laws, which are used in everyday practice in clinical and police settings, are understood and applied and where there is a need for education and awareness.

12.7 Reflections on Undertaking a PhD: How Do You Eat an Elephant?

As stated in Chapter One, the field of emergency response is one that the Author is very familiar with. Therefore, the opportunity to study the nuances and undercurrents within this field, from the point of view of an academic, was extremely insightful. Throughout the course of this research the knowledge that this work might in some way positively influence responder reactions in terms of victim support was immensely encouraging.

Despite the disheartening apathy at the outset from some responders with regards to the need for this research, there were glimmers of positivity from those who, after taking the time to digest the implications, realised the necessity for change from their own experience of real-life disaster response.

Similarly, the Author found the process of compiling this thesis frustrating, in terms of not knowing what was expected or the eventual conclusion, particularly as the Author was remote from the university and fellow academics. It was a constant challenge to remain focused and plan a convergent path to a compelling message, which has now satisfactorily been achieved.

Balancing the need to conduct research alongside parenting and running a business was extremely challenging, but the need for a change in this area of patient reconciliation was a significant and personally motivating incentive. At one point where it seemed insurmountable, a very wise woman (*my mother*) asked, “How do you eat an elephant?” To the Author’s look of confusion, she answered, “In small chunks, of course.” This was essential and timely advice and was crucial to helping with the completion of this tome. Small ‘chunks’, a few hundred words every day, even if they were to be revised later, helped with the progression of this journey.

Lastly, as Chapter Five demonstrated, our sense of identity and essentially what embodies us is the nature, nurture, cognition and time spent in the company of others. The Author’s family and friends are vital to her sense of self. The knowledge that any one of us could be *that* unidentified victim spurs the pursuit of change in this field.

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