



# **WHAT CHANGES FOR PATIENTS IN MEDIUM SECURE CARE?**

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## **ABSTRACT**

This thesis examines changes in medium secure care over the past two decades in the context of developments in legislation and the forensic care pathway. Chapter two provides a baseline of medium secure care between 1997/98 based on an existing cohort of 958 patients across England and Wales and enables comparisons with later chapters. A secondary analysis was conducted to show the relationship between patient characteristics with medium secure service provision and reconviction up to six years following discharge. A logistic regression revealed that criminogenic factors strongly predicted reconviction without improvement with the addition of clinical and social factors, although the criminogenic profile of patients was not associated with decisions regarding the discharge pathway or allocation of restriction orders for patients. All remaining empirical chapters include longitudinal, retrospective studies that investigated a cohort of 285 forensic patients discharged from a Welsh medium secure hospital between 1999 and 2017. Chapter three presents a study that revealed changes in medium secure care over time that included: more high-risk patients with experiences of social deprivation admitted to medium security, an increase in restrictive practice and greater recovery outcomes for patients. Chapter four includes a study that explored the factors that navigated the clinical decision-making of where patients were discharged from medium security and included: self-care and activities of daily living, engagement with family and social networks, the leave status of patients and a diagnosis of a psychotic related disorder. Chapter five presents a study that showed no significant change in the readmission rate (up to six years) following discharge from medium secure care between 1999 and 2017. Logistic regression showed that the number of previous psychiatric admissions was a hazard of readmission. A discussion of each empirical chapter and an integration of the findings concludes the thesis.

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# **CHAPTER 1**

## **Introduction**

Forensic mental health services have undergone substantial change in the last half century, a variety of services have developed that make up a complex forensic care pathway. The current chapter provides an overview of the evolution of forensic mental health services; including the centralisation of service provision under a national framework, and the different phases of the forensic care pathway. Although the terminology ‘mentally disordered offenders’ was traditionally used to designate forensic psychiatric service users, they are called ‘forensic patients’ throughout this thesis, based on the stated preferences of patients of the medium secure hospital where this research took place.

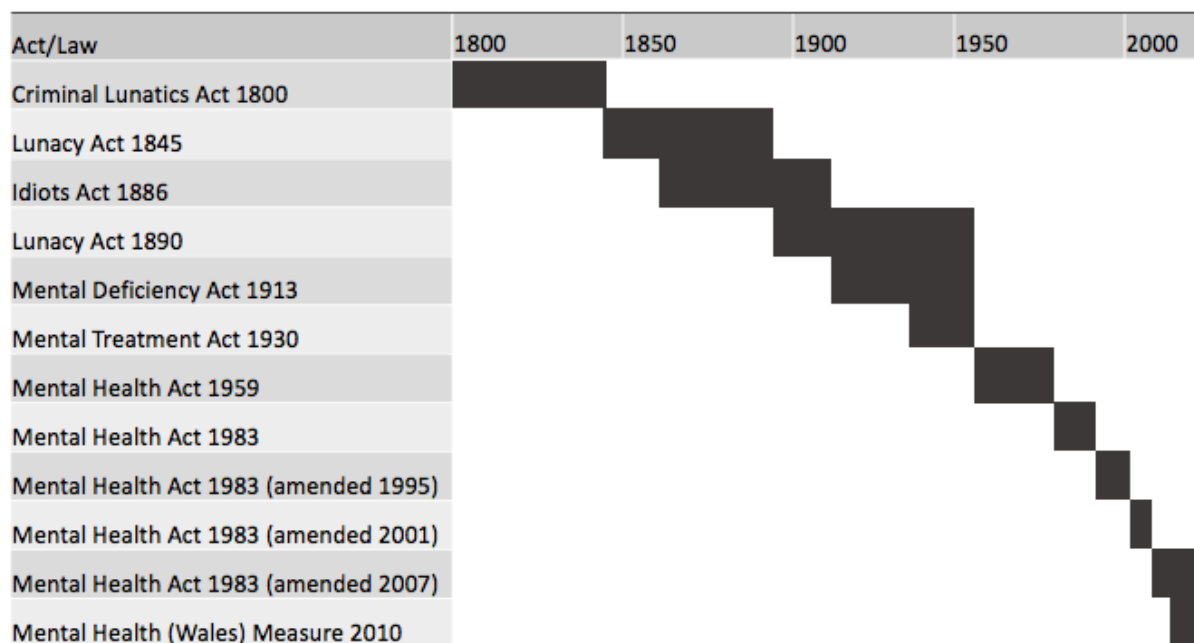
Medium secure hospitals, also known as regional secure services, were the main gateway service into the forensic care pathway, and until recently provided the greatest proportion of beds within the forensic care pathway (Rutherford & Duggan, 2007; NHS England, 2015a). Therefore, medium secure hospitals are the focus in all chapters of the current thesis in order to develop an understanding of what changed for forensic patients in the forensic care pathway. These services were designed to help rehabilitate forensic patients and maintain public protection by reducing the risk of harm they pose to themselves and others. An outline of the admission, care and treatment, risk assessment, risk management, and discharge processes of forensic patients are discussed, along with the long-term outcomes of reconviction and readmission. The primary objective of the thesis is to evaluate the impact of medium secure hospitals across time and in a changing policy and service landscape.



# The evolution of forensic mental health services

## 1.1 A brief history of legislation

An outline of the history of legislation that has governed the management of forensic patients provides an understanding of how the infrastructure of forensic mental health services progressed to current standards. Legislation has continually evolved under the influence of governmental changes, shifts in societal norms, and media pressures (Flynn, 2012). This is demonstrated in figure 1.1 with the ongoing updates, revisions, and replacements of acts and policies over the last two centuries affecting the management of forensic patients.



**Figure 1.1** Legislation governing the provision of mental health care over the last two centuries.

Before the 1800s there was no legislation that enabled the detention of forensic patients. The Criminal Lunatics Act (1800) was therefore introduced to order custody of so called ‘criminal lunatics’. This led to the Bethlem Asylum providing criminal wards for both males and females in 1816 (Allderidge, 1974). Initially, 60 beds were allocated, but these soon filled and Bethlem became overcrowded. Bethlem asylum received extensive criticism

for its poor ‘prison-like’ conditions and for mixing the forensic and non-forensic patients together, which was considered to have a negative impact on treatment outcomes (Bucknill, 1851). The success of Ireland’s first Criminal Asylum, and the challenges of Bethlem led to the 1860 Criminal Lunatics Bill (also known as the Broadmoor Act) being passed. This approved building of a purpose-built Special Hospital in 1863 (Broadmoor hospital). Broadmoor was established to provide safe custody and treatment of forensic patients, and by the end of the 1860s around 66.0% of forensic patients in the UK were placed there (Department of Health and Social Care, 1999). Broadmoor remains open today and continues to provide treatment for forensic patients at the high end of the security spectrum.

The criteria for admission to Broadmoor hospital along with other asylums was implemented in 1890 when the Lunacy Act was passed (1890). The Lunacy Act required that patients needed to be certified ‘insane’ to warrant admission and removed the option of voluntary admissions. The option of voluntary admissions was later re-established in 1930 when the Mental Treatment Act (1930) was passed (Killaspy, 2006; Takabayashi, 2017), this act also triggered replacement of the term ‘asylums’ with ‘mental hospitals’.

The Lunacy Act (1890) and the Mental Treatment Act (1930) were replaced by the Mental Health Act (MHA) in 1959. The 1959 legislation reformed the provision of mental health care by reducing restrictive practice through the expansion of mental health treatment into the community, and de-stigmatising psychiatric hospitals by removing their distinction from other hospital types. The 1959 Act was instrumental in normalising mental health care in society and moved public attitudes away from ostracising forensic patients from their friends and families. The Mental Health Act (1959) provided the first legislation to clarify the permissible reasons for detaining people in hospital and clarified the distinction between formal and informal treatment (Killaspy, 2006). The 1959 Act also succeeded the Mental Deficiency Act (1913) by modernising distinctions between mental illness and intellectual disability.

More recently, the Mental Health Act (1983, as amended in 2007) and the Mental Health (Wales) Measure (2010) were critical milestones that further promoted the rights of UK forensic patients and brought them in line with the European Convention on Human Rights. These reforms also improved accessibility of forensic mental health services. The revised Mental Health Act modified the four categories of mental illness (mental illness,

mental impairment, severe mental impairment and psychopathic disorder) into one single definition defined as “any disorder or disability of the mind” (section 1; MHA, 2007), along with defining sexual deviance as a treatable condition. These changes improved the accessibility of mental health services, particularly to those with a diagnosis of personality disorder or paedophilia who were otherwise excluded from forensic mental healthcare (McMurran, Khalifa & Gibbon, 2009; Sen & Irons, 2010). Another important amendment to mental health legislation was to broaden the responsibility of care of detained patients from solely Medical Practitioners to other Mental Health Professionals (e.g. Psychologists, Occupational Therapists, Social Workers and Nurses). This helped psychosocial frameworks to become more embedded into forensic mental healthcare in addition to the traditional medical model.

The Mental Health (Wales) Measure was introduced in December 2010 to act in conjunction with the Mental Health Act (2007) in Wales, and was implemented into practice by 2012. The measure imposes the right for formal and informal inpatients to choose whether they would like to be provided with an Independent Mental Health Advocate (IMHA). The IMHA is responsible for ensuring that patients make informed decisions in their care, treatment and pathway, and therefore promotes the patient to become active in their recovery. The measure also secured regular review of care and treatment plans for forensic patient.

The evolution of mental health legislation, along with shifts in societal and political culture has helped to de-stigmatise mental health in the UK. It has been argued that this change is evident in transitions of terminology used to describe forensic patients over time in legislation and across society, shifting from ‘lunatic’, ‘criminally insane’, ‘mentally disordered offenders’ and now transitioning to ‘forensic patient/service user’ (McLaughlin, 2009). These changes, driven by the European Convention on Human Rights, have culminated most recently in the least restrictive practice policy and increased the audibility of the forensic patients’ voice at the forefront of forensic mental health care. However, there is limited empirical evidence to provide an idea of how recent legislation (MHA, 2007; Mental Health (Wales) Measure, 2010) has made any positive impact on forensic service provision and patient outcomes.

## **1.2 The evolution of Special Hospitals to High Secure Hospitals**

The perceived success of Broadmoor hospital and increasing demand led to a drive for further development of Special Hospitals across the UK. Rampton hospital was opened in 1912 to help with the overcrowding pressures at Broadmoor. This development was followed by Moss Side becoming a Special hospital in 1933 and Park Lane was the final UK Special Hospital which opened in two phases between 1974 and 1984 (Department of Health and Social Care, 1999). Moss Side and Park Lane merged in 1990 to become Ashworth hospital. Originally, the Home Secretary was directly responsible for the oversight of Special hospitals and allocated a Board of Control to manage them. Oversight of Rampton and Moss Side was transferred to the Ministry of Health under the National Health Service Act (1946), although they remained managed through the Board of Control under the Home Secretary. All Special Hospitals were owned and managed by the Ministry of Health when the Board of Control dissolved in 1959. The Ministry of Health initially managed Special Hospitals in isolation, independent of NHS regional frameworks, but attempted to integrate these hospitals with the NHS years later. Special hospitals were more commonly labelled high secure hospitals following the development of regional secure services from the 1980s, and therefore they are called high secure hospitals throughout all chapters of this thesis.

High secure hospitals were subject to controversy due to what was judged to be their outmoded approaches managing and treating mental health difficulties. They were thought to over emphasise containment, isolation and poor therapeutic practices with many forensic patients not requiring the high level of physical and procedural security that defined them (Home Office & DHSS, 1975; Dell & Robertson, 1988; see section 1.6 for definition of the different security features). High secure hospitals faced staffing problems and often dismissed concerns raised by patients. This led to conflict about the continued commissioning of high secure hospitals amongst professionals, government officials and the public and triggered the Blom Cooper Review (1992). Blom Cooper recommended a reduction in the size of and reliance on high secure hospitals and better links with regional mental health services, especially medium secure hospitals. The review was effective in highlighting systemic problems in the high secure estate but has been criticised for failing to provide effective solutions (Gunn, 1999). In the same year, the Reed Report (Department of Health & Home Office, 1992) was published to further address the unresolved issues of high secure hospitals. Reed recommended that high secure hospitals should become more dispersed across the UK with each unit having a capacity of just 200 patients. He also highlighted the priority of managing patient needs through long-term medium secure care as an alternative.

The conclusions of The Blom Cooper Review along with the Reed Report provided a potent impetus for the expansion and development of medium secure hospitals in the UK.

The need for high secure provision remained a highly-debated topic for many years, and led to further reviews, including the Fallon Inquiry (Department of Health and Social Care, 1999) and the Tilt Report (Tilt, Martin, Maguire & Preston, 2000). The Fallon Inquiry investigated the provision at Ashworth hospital and highlighted procedural, physical and relational security issues, along with poor staff management and work ethos, staff corruption and staffing difficulties. These findings led to the proposal for Ashworth hospital to be closed, and recommendations for the management of high secure hospitals to be transferred to regional Health Authorities. Yet, referrals from medium security accounted for 24.7% of admissions to all three high secure hospitals between 1988 to 1994, which, some have argued, demonstrates the need for continuation of this level of secure provision (Coid & Kahtan, 2000; Tetley, Evershed & Krishnan, 2009). The Tilt Report recommended reforming high secure hospitals with a focus on more rigid physical and procedural security measures. Despite the Tilt Report (2000) prompting strong negative responses (Exworthy & Gunn, 2003), the government accepted the recommendations and reformed high secure care.

High Secure Psychiatric Services Directions (2013) and NHS England's clinical security framework were established to ensure governance of high security with the aim of balancing least restrictive practice with effective risk management and robust security (Department of Health & Social Care, 2018). This framework is monitored through the Care Quality Commission. All three high secure hospitals remain open today, but account for a significantly smaller proportion of forensic mental health care. High secure hospitals underwent partial decommissioning from 1700 high secure beds available in 1993 to an estimate of 856 beds by 2017 (Watson & Grounds, 1993; Care Quality Commission, 2017). The decommissioning helped transfer the bulk of forensic care to regional and local facilities, although this added to the growing demand on medium security and difficulty moving high-risk patients along the forensic care pathway (Murray, 1996). As the emphasis changed towards medium and then low security, the independent sector grew, and accounted for a quarter of medium secure beds by 1999 that were often out of area placements (Coid, Kahtan, Gault, Cook & Jarman, 2001).

### **1.3 The emergence of medium secure hospitals (known as regional secure services)**

There were two proposals to develop regional secure services to deal with the overcrowding issues associated with high secure hospitals, and to help forensic patients transfer closer to home (MHA, 1959; Ministry of Health, 1961). These proposals were overlooked until the publication of both the Glancy Report (Department of Health and Social Services, 1974) and Butler Report (Home Office & DHSS, 1975). The Butler Report was triggered following the famous case of Graham Young (1947-1990), which highlighted the limited reliability of reoffending risk assessment within geographically and socially remote high secure environments. To resolve the geographical disconnect between patient assessment and eventual community placement the Glancy Report recommended that medium secure hospitals should be built for every regional NHS provider. This recommendation was endorsed and further highlighted within the Butler Report. Medium secure hospitals were expected to bridge the gap between high security and general psychiatric hospitals or the community, and created a forensic care pathway for patients to move along. Parallel to this, they provided a secure placement for patients too challenging to be managed within general psychiatric services. Approximately 2000 medium secure beds were recommended to serve both purposes (Home Office & DHSS, 1975). Then secretary of state, Barbara Castle (1910-2002), accepted the need for medium secure hospitals and provided the revenue to build them to a capacity of 1000 beds.

There was delay in the development of medium secure hospitals due to commissioning and design issues, public opposition and lack of enthusiasm from NHS providers (Gunn, 1977; Snowden, 1985; Coid *et al*, 2001). Only a few medium secure hospitals were opened in the 1980s, the first opening in Middlesbrough in November 1980. Following another national review that suggested further expansion of medium secure hospitals (Department of Health and Home Office, 1992), 37 were built across the UK by 1999 (Grounds *et al*, 2004). This review suggested that medium secure hospitals would enable a realistic appraisal of risk without compromising public protection by managing reintegration with graded community exposure. It also recognised that forensic patients should be cared for in a hospital setting rather than prison, as close to home as possible and in the least restrictive safe environment. Expansion of medium secure beds to 1500 across England and Wales followed. Medium secure hospitals were also shaped to meet the purpose of diverting individuals away from prison, along with helping high secure patients step closer

to the community and admitting patients too challenging to be managed in local psychiatric settings.

Medium secure hospitals continued to evolve to become the main provider of secure care across the UK. An estimate of 3712 medium secure beds were available by 2018 comparative to 1663 beds in 1999 (Grounds, Melzer, Fryers & Brugha, 2004; Richards, 2006; Duke, Furtado, Guo & Völlm, 2018). The heightened demand of medium secure hospitals and lack of inertia of NHS providers to match this need enabled the private sector to exploit this service, and therefore the private sector accounted for 35.0% of medium secure care across England (Coid *et al*, 2001; Rutherford & Duggan, 2007), but even more (45.0%) in Wales (National Public Health Service for Wales, 2005; Centre for Mental Health, 2011). Discrepancy between the different independent and regional NHS providers has led to sporadic development of services and ad hoc frameworks to govern medium secure hospitals, as opposed to a national framework that arguably would have ensured consistency and more systematic provision (Coid *et al*, 2001). The ad hoc development of services limited our ability to evaluate the value of medium secure hospitals accurately on a national scale. A national framework for medium secure provision was eventually introduced across England and Wales (Department of Health, 2007), and medium secure hospitals have since received regular recommendations of standard practice to help promote consistent and effective treatment (Royal College of Psychiatry, 2016).

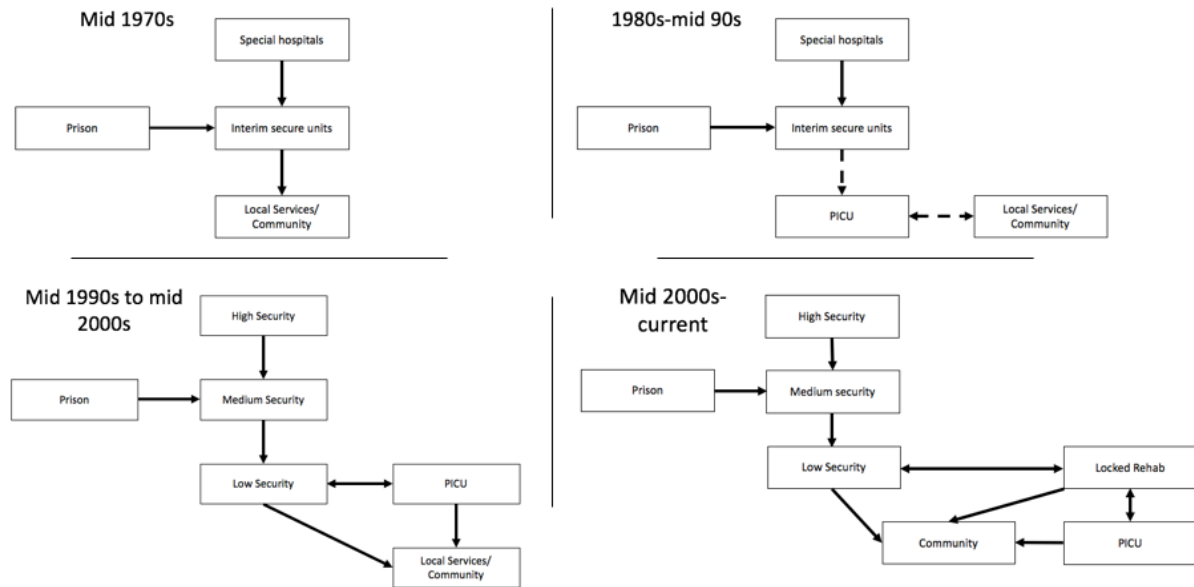
The heightened demand for medium secure hospitals has continued throughout the last two decades. This period has also seen further decommissioning of high secure beds, a growing prison population and slow expansion of step down and community forensic services (Murray, 1996; Centre for mental health, 2011). Bed-blocking became a major concern with 36.5% of forensic patients detained in medium security in 1994 proving difficult to progress and requiring long-term care (Reed, 1997). This inhibited access for new patients who required this level of care and management through the forensic care pathway. Long-term medium secure services were built to address this problem; the first opening in 2002 (Power, Howard & Akinkunmi, 2006). However, medium secure hospitals continued to be limited in capacity relative to ever-growing demand, which has made them insufficient in public health terms to deal with the numbers of forensic patients and prisoners deemed to require medium secure mental health care. Only 0.2% of the offender population receive treatment from these high-cost low-volume services that cost the tax-payer £518 million

annually (Williams, James & Forrester, 2011; Taylor, 2011; Centre for Mental Health, 2011). The population receiving this specialist service clearly falls short of need with 90.0% of the prison population estimated to have diagnosable mental health conditions (Singleton, Meltzer & Gatward, 1998). This has led to proposals for commissioning to be invested elsewhere, including multi-agency involvement to better tackle the mental health challenge in the criminal justice system (e.g. police, courts, and probation; Centre for Mental Health, 2014).

#### **1.4 Low Security, Locked Rehabilitation and PICU's**

The infrastructure of the forensic care pathway gradually became more complex over time with the introduction of Psychiatric Intensive Care Units (PICUs), low secure hospitals and locked rehabilitation units (see figure 1.2) which began to emerge after the closure of the large Victorian and Edwardian psychiatric hospitals and the move to community based mental health services. These new institutions arguably contributed to criminalising some patients with severe and complex mental health and behavioural difficulties and established closer links between the forensic and general psychiatric care pathway (Beer, 2008). The design and construction of these units was seldom, if ever, firmly rooted in any discernible overarching plan for an integrated pathway with clear stratification of physical, procedural and relational security between the different levels (see section 1.6 for definitions of the different security measures). Table 1.1 provides descriptions of these three service types. The piecemeal development of these services and separate commissioning groups led to challenges in their effectiveness (Dix, 2005).





**Figure 1.2** Expansion of the forensic care pathway and its integration with the general psychiatric pathway across the decades.

PICUs were the first service established in the UK to deal with the growing demand for regional services. Although medium secure hospitals were designed to help forensic patients step down from high security, to divert forensic patients from prison and to provide secure care for those unmanageable in general psychiatric services, the latter became a neglected group with the increasing pressure by the former two (Higgo & Shetty, 1991; Mohan, Murray, Taylor & Steed, 1997). PICUs were designed as an interim to overcome this challenge, and a large number of PICUs were established across the UK. This followed recommendations to create locked environments for local psychiatric patients (Department of Health & Home Office, 1992). Similar to medium secure hospitals, regional NHS providers commissioned PICUs in a disjointed and fragmented fashion. The overall purpose of these services was unclear and clinical governance was difficult to establish (Dix, 2005). The shortfalls of PICUs were highlighted in the mid 1990s where they were reported to include over-punitive practices in poor environmental conditions (Zigmond, 1995). Yet, there was still no national framework to hold the service provision of PICUs to account against a set of standards or expectations. A new service began to emerge and branch off from PICUs across the late 1990s, which became known as low secure hospitals (Dix, 2005).

Initially, the distinctions between PICUs and low secure hospitals were ambiguous, although they gradually evolved into unique entities over time (see table 1.1); most notably

when national standards were set that clarified the purposes of both services and helped ensure consistent provision across England and Wales (Department of Health, 2002). PICUs became known to provide short-term acute care for patients in crisis from general psychiatric services, whereas low secure hospitals provide long-term secure care for those difficult to manage in general psychiatric services (Piereira & Dawson and Sarsam 2006; Beer, 2008). Low secure hospitals also provide a platform for patients to step down from medium security to the community, and to take some offenders directly from Courts or prisons. These functions promote the integration between the forensic and general mental health care pathway (Beer, 2008).

The pathway between forensic and general mental health care became further entwined through locked rehabilitation units. This type of service started to emerge in the early 2000s to bridge the gap between low secure hospitals and PICUs (Dix, 2013). They provide care for those too difficult to manage in PICUs who may not require forensic secure care, but also act as a step-down service from secure care. Locked rehabilitation units have been considered more lenient with some physical secure measures (e.g. airlock control and perimeter), but their relational, procedural and physical security more or less reflect low secure provision (Dix, 2013; Chukwuma, 2015) and they have not been designed with any specific reference to the particular levels of risks and needs of patients they were intended to cater for.

The range of step down services has eased the demand pressures on medium security by helping forensic patients move along the emerging forensic care pathway (JCMPh, 2013). Although, different sources of commissioning between these services led to incohesive and delayed pathways. Low secure hospitals were commissioned as part of the forensic care pathway by NHS England and by individual health boards in Wales, although more recently, health boards in Wales have adopted joint commissioning arrangements through the National Collaborative Commissioning Unit. The joint commissioning arrangements in Wales have enabled improved cost agreement processes with the independent sector (National Collaborative Commissioning Unit, 2020). PICUs and locked rehabilitation units have been supported through local clinical commissioning groups and again by individual health boards in Wales. Reform has been suggested to step away from this parallel approach between the forensic and general care pathway to become a collaborative commissioning model (Chukwuma, 2015). This would be intended to assure that patients progress along their care

pathway to match their risk and recovery without delay, and therefore improving the availability and efficiency of the forensic care pathway. However, evaluations of the efficacy of each of these three service types at easing the forensic care pathway is lacking to deduce whether further reform is actually needed.

**Table 1.1** Definitions and descriptions of different step-down inpatient services.

Service type	Purpose	Description
Psychiatric Intensive Care Unit (PICU)	Short-term acute emergency service designed for individuals in distress where immediate risk of harm to self or others cannot be managed within open in-patient environments.	Founded in America in the 1970s (Rachlin,1973) and brought to the UK.  Part of the general psychiatric pathway and commissioned by local clinical commissioning groups.
Low Secure Hospital	a) Long-term service for patients who require PICU conditions for much longer periods. b) Part of the forensic care pathway for patients to step down from medium secure conditions.	Branched off from PICUs in the 1990s.  Part of the forensic care pathway and commissioned by NHS England and local health boards across Wales.
Locked Rehabilitation Unit	a) Recovery focused service and strong community component designed for individuals that no longer require forensic secure conditions. b) Service for patients who require longer-term care	Emerged due to gap in service provision between PICUs and low security.  Part of the general psychiatric pathway and commissioned by local

	than PICUs, but who do not require forensic secure conditions.	clinical commissioning groups.
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### 1.5 Prison reform and link with the forensic care pathway

The criminal justice system has faced persistent pressure to tackle the challenge of managing the mental health needs of prisoners. An estimated 90.0% of the prison population have mental health difficulties at any one time (Singleton, Meltzer & Gatward, 1998), and therefore diversion and liaison schemes have been created to ensure prisoners with mental health difficulties are provided with adequate care and treatment. These schemes refer to the diversion of prisoners from any stage of the criminal justice system to forensic mental health services, or sign-posting individuals to mental health and other services (James, 1999; Birmingham, 2001). They were trialled as a pilot strategy in 1989 that led to better identification of mental health difficulties and a four-fold increase in admissions to forensic mental health services from the courts (James & Hamilton, 1991). The Home Office guidelines (1990; 1995) and Reed Report (Department of Health, 1992) praised and recommended the expansion of these schemes across England and Wales to manage the mental health of prisoners.

Diversion and liaison schemes were commissioned jointly and in parallel by the Home Office and Department of Health and were established in a ‘bottom-up’ process based on local pressures and needs. No universal framework was developed to provide guidance on the development or provision of these schemes (Sainsbury Centre for Mental Health, 2009). This led to discrepancy in the purpose, functioning and outcomes of diversion and liaison schemes across the UK. An estimate of 150 diversion schemes were established by the late 1990s, yet less than 20.0% of courts serving 47 prisons had diversion and liaison schemes available (Birmingham, 2001; James *et al*, 2010). Many NHS trusts were unaware whether diversion and liaison schemes were available in their region (HM Inspectorate of prisons, 2007). Despite the disjointed development of diversion and liaison schemes, these schemes have been shown to be associated with positive outcomes. Those diverted and subsequently discharged from forensic mental health services showed a reduction in risk of reoffending relative to prisoners released from prison (Home Office, 1999; James *et al*, 2010; Fazel,

Fiminska, Cocks & Coid, 2016; Igoumenou *et al*, 2019). This highlights the impact on public protection, as well as an economical cost-effectiveness through crime prevention with an estimated saving of £600,000 for every diverted prisoner across their lifetime (Laing & Buissan, as cited in House of Commons, 2009).

The transfer of prisoner healthcare from the Home Office to the NHS between 2004 and 2006 eased this process of diverting prisoners to forensic mental health services (Department of Health & HM Prison Service, 2001). Although shortfalls remained in the management of prisoner mental health care that led to Lord Bradley's Review (Bradley Report, 2009) and the Sainsbury Centre for Mental Health Review (2009). Extensive transfer delays to hospital were identified, along with only 20.0% of those referred for diversion being assessed; leaving many prisoners with inadequate mental health support. The Sainsbury Centre for Mental Health Review made 21 recommendations to improve diversion and liaison services, one being expansion across every primary care trust. Lord Bradley recommended introducing diversion schemes earlier in the criminal justice process; including police stations and magistrates' courts and a minimum transfer delay of fourteen days from prison to hospital, along with eighty other recommendations.

Lord Bradley's Review was endorsed by the government and £25 million was invested to achieve these recommendations (Durcan, Saunders, Gadsby & Hazard, 2014). A five year follow up review (Durcan *et al*, 2014) evaluated whether diversion and liaison schemes have met the recommendations outlined in the Bradley Report (2009). The review identified many improvements at various stages of the criminal justice system, although services were yet to meet the 14-day target to transfer prisoners to hospital. Approximately 53.0% of the English prison population had diversion and liaison schemes available to them, of which 63,000 prisoners had used between 2014 and 2016 (NHS England, 2016a; 2016b). The NHS made ambitious aims to expand this to 75.0% with a follow up review set to take place in 2020 (NHS England, 2016b). Therefore, diversion is clearly still a work in progress and substantial need must remain in prisons.

The prevalence of mental health difficulties in prisoners remained steady over the last two decades (Singleton *et al*, 1998; Stewart, 2008). At the same time, the prison population expanded by 22.2% from 66300 in 2003 to 85152 by 2016 (Ministry of Justice, 2016b), and therefore forensic mental health services received a growing number of referrals from prison

(Rutherford & Duggan, 2007). Approximately 97.0% of prisoners diverted to forensic mental health services on restriction orders have been admitted through medium and high secure care (Rutherford & Duggan, 2007). The small bed capacity of medium secure hospitals and de-commissioning of high secure beds limited the capacity of these services to meet the growing demand of prisoner diversion, yet minimal research has been conducted to investigate this and help provide solutions.

## **1.6 Forensic Care Pathway**

In summary, the forensic care pathway has become more complex and diverse over time with changes in the landscape in which services operate (see Figure 1.2). This has led to the current system that accommodates patients subject to differing levels of mental health difficulties, mental capacity and criminal justice legislation, including (1) forensic patients detained under hospital orders with or without restrictions (Part III MHA, 1983 as amended 2007) who have committed an offence and who present with mental health difficulties, (2) patients detained under civil sections (Part II MHA, 1983 as amended 2007) whose risk levels exceed safe management in general psychiatric services (Health Commission Wales, 2005), (3) remand (section 48/49) or sentenced prisoners (section 47/49) diverted from prison, and (4) intellectually disabled individuals subject to deprivation of liberty safeguards under the Mental Capacity Act (2010). The latter are not discussed in the current thesis; as there are distinct secure services for this population to address their specific needs and risks, although it is recognised that there is scope for separate research directed at this population of patients (see Alexander *et al*, 2011; Royal College of Psychiatrists, 2014). The forensic care pathway thus need to address the care needs of people with a full range of mental health problems, who present with diverse offending and behavioural risks along with wide variation in needs, responsivity issues and multi-agency involvement.

The forensic care pathway broadly consists of three service types arranged in a tiered system of high, medium, and low security. This provides a step-down procedure for forensic patients to gradually move closer to the community or to move up the tiers if their risk increases. Each tier is differentiated based on the presented risk of the forensic patient that ranges from being a grave (high security), immediate (medium security) or significant (low security) danger to others (National Public Services for Wales, 2006; Rutherford & Duggan, 2007). These three levels also vary according to physical, procedural and relational security

(Kennedy, 2002; Joint Commissioning Panel, 2013). Physical security reflects the environmental infrastructures of the facility accommodating individuals, including the need for air-lock control and the height of the fence perimeter. The staff to patient ratio, observational levels and therapeutic rapport demonstrate the differences in relational security between the three levels. Finally, procedural security includes policies, standards and clinical governance that are reflected in practice, including monitoring and supervision, risk management plans, and reviews.

The main objectives of the forensic care pathway are to (1) treat mental health difficulties, (2) support recovery and rehabilitation, (3) move individuals along the forensic care pathway to successfully return to the community and (4) reduce the risk of re-offending (JCMPh, 2013). The last of the above aims helps ensure the continued commissioning of these high-cost low-volume services due to the government interest in demonstrating robust approaches to public protection. Therefore, the forensic care pathway has continued to expand over the years to consist of 856 high secure beds, 3712 medium secure beds and 3732 low secure beds by 2018 (Richards, 2006; NHS England, 2015a; Duke et al, 2018). The forensic care pathway previously accounted for 18.9% of the NHS mental health budget with an estimated cost of £1.2 billion between 2009 and 2010 (Centre for Mental Health, 2011), which has likely inflated over the past decade.

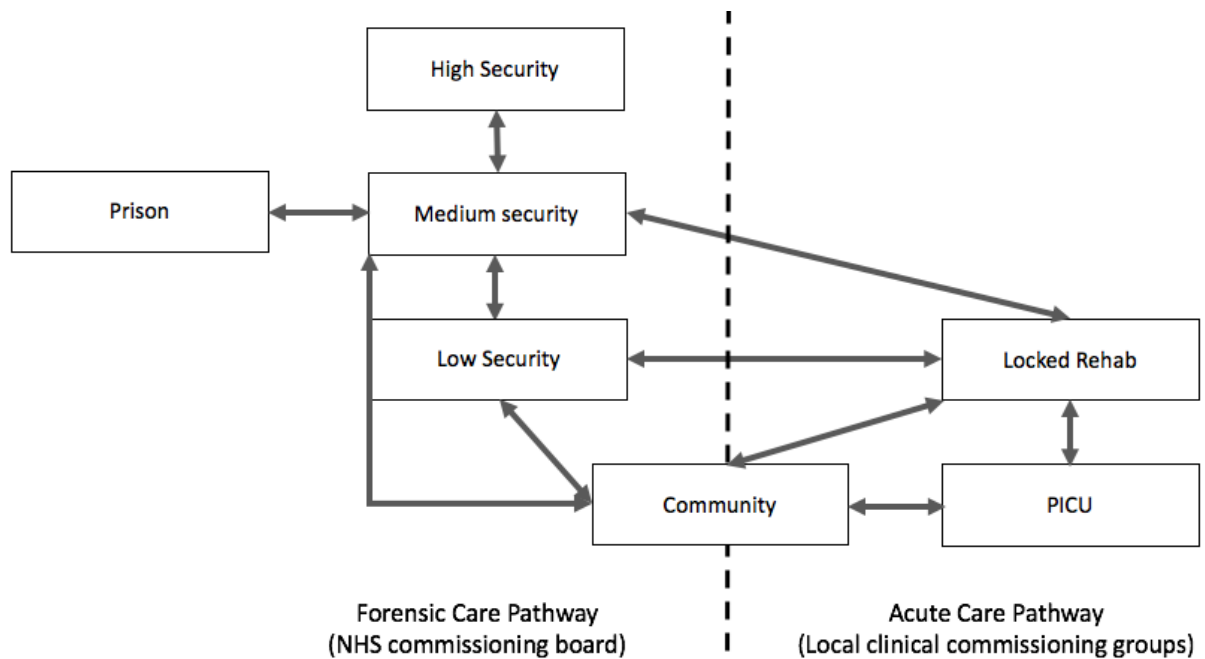
The expansion of the forensic care pathway has been perceived to help resolve any issue related to inappropriate and over-restrictive placements (Dell & Robertson, 1988; Pilay, Oliver, Butler & Kennedy, 2008), along with providing forensic inpatient services that match the growing demand across England and Wales. This faced several obstacles including challenges associated with bed-blocking, the need for longer-term care, and dis-jointed commissioning; each perpetuating inappropriate placements and delayed movement along the forensic care pathway.

A survey across England and Wales in 1994 showed that 42.7% of forensic patients in high security and 22.2% in medium security did not require this level of security and required longer-term step-down care (Reed, 1997). It has been noted that step down services were averse to admitting patients who require longer-term support at their level of security (Melzer *et al*, 2004). The lack of movement of forensic patients who require longer-term care has led to bed-blocking at higher security levels and stagnated the flow of patients across the forensic

care pathway. Bed-blocking became a greater challenge with the de-commissioning of high secure beds. Risky patients who would otherwise be referred to high security were admitted to medium secure hospitals. Services faced the challenge of moving these patients along the forensic care pathway due to poor recovery, under-resourced step-down services, and a reluctance of general psychiatric services to engage with forensic patients (Centre for Mental Health, 2011). Long-stay step down services were introduced in 2002 to meet the needs of those who required longer-term care, and step-down services expanded over the last two decades (Power, Howard & Akinkunmi, 2006). These changes likely improved the flow of forensic patients across the forensic care pathway. Only 5.0% of Welsh forensic patients were placed at inappropriate levels of security by 2005, highlighting an improvement in matching patient risk to security need (National Public Services for Wales, 2006). However, whether forensic secure services have improved over recent years to balance risk levels with security need remains unknown.

The disjointed commissioning across the different levels of security further added to the challenge of ensuring an efficient forensic care pathway. High and medium secure provision were commissioned by NHS England, and Health Commission Wales up to 2009 (replaced by the National Collaborative Commissioning Unit). Whereas low secure, locked rehabilitation and PICUs were commissioned by local NHS health boards. The split commissioning led to staggered and delayed movement along the forensic care pathway due to negotiations and disputes between commissioners (Chukwuma, 2015). In recent years, the commissioning of all three levels of forensic security merged to address this challenge, whilst having a parallel system for locked rehabilitation and PICUs under local clinical commissioning groups (see figure 1.3). Similar difficulties remain with this parallel system, as discussed in section 1.4, and calls for further reform in commissioning persist to further improve the movement of patients along the forensic care pathway (Chukwuma, 2015).





**Figure 1.3** Integrated forensic and general mental health pathways.

## The different phases of the forensic care pathway

### 1.8 Patient Characteristics in medium security

The profile of forensic patients can be defined based on their criminogenic, clinical and social characteristics. Criminogenic characteristics refer to the offending behaviour of patients prior to their current admission into medium security. Clinical characteristics reflect factors related to the psychiatric history of patients and their mental health, and social characteristics represent the childhood upbringing and adult environments. Various literature has investigated these factors to develop a holistic understanding of the forensic psychiatric population (see table 1.2) and to capture whether the typical profile of patients in medium security has changed over time (Gibbon *et al*, 2013). Only literature carried out across the UK is included in this chapter to evaluate patient characteristics, as international forensic care systems are incomparable with British mental health legislation and services (Fazel *et al*, 2016). However, regional differences and different frameworks of medium secure hospitals across the UK, along with methodological differences between studies add to the challenge of mapping the patient population across the literature in the UK.

Across the literature, forensic characteristics have been inconsistent when comparing severity of offending behaviour between studies. The percentage of forensic patients with severe offences ranged between 33.0% to 71.0% (Higgo & Shetty, 1991; McKenna, 1996), where violent index offences ranged between 37.0% to 64.0% and sexual offences ranged between 9.4% to 12.0% (McKenna, 1996; Mohan *et al*, 1997; Ricketts *et al*, 2001; Edwards *et al*, 2002). Similarly, the percentage of patients with previous convictions ranged from 67.0% to 86.2% (McKenna, 1996; Shah *et al*, 2011). The average number of previous convictions also varied between 6.6 and 11.0 where the first conviction ranged between the ages of 18.0 and 19.1 (Edwards *et al*, 2002; Coid *et al*, 2007; Shah *et al*, 2011; Gibbon *et al*, 2013). Contextual differences may explain the variation in results; including different base rates in criminal behaviour between regions or simply different thresholds of risk applied amongst medium secure hospitals (Coid *et al*, 2001; Office for National Statistics, 2020). Methodological differences may further explain the variation in results; especially given the mixture of time periods covered between different studies. Medium secure hospitals were shown to admit riskier patients over time with more complex criminogenic histories between the 1980s and early 2000s (Mohan *et al*, 1997; Ricketts *et al*, 2001; Gibbon *et al*, 2013). Those more recently admitted engaged in offending behaviour from a younger age with larger conviction histories and were more likely to be detained for a violent index offence (Mohan *et al*, 1997; Ricketts *et al*, 2001; Gibbon *et al*, 2013).

Similarly, the clinical profile of patients admitted to medium security became more complex over time with the growing prevalence of self-harm and suicidal behaviour (Gibbon *et al*, 2013), although there was conflict between the literature as to whether the prevalence of different psychiatric disorders changed over time (Mohan *et al*, 1997; Earnshaw *et al*, 2019). Some studies investigated changes in the legal category of patients detained in medium security over time. Those detained under the legal category of mental illness increased over time, and those detained under psychopathic disorder decreased over time (Ricketts *et al*, 2001). Yet, the percentage of patients detained under these legal categories varied between studies that explored similar time periods (Ricketts *et al*, 2001; Edwards *et al*, 2002; Coid *et al*, 2007). This highlights the difficulty gaining an accurate depiction of patient characteristics in medium security across the UK when merging findings from individual medium secure hospitals. The amended Mental Health Act (2007) replaced mental illness and psychopathic disorder with a single definition of ‘mental disorder’, although a diagnosis of a psychotic disorder was perceived to be a continuum of mental illness, and a diagnosis of

personality disorder was a continuum of psychopathic disorder (Jamison & Taylor, 2004); allowing later studies to compare with earlier literature. The percentage of patients with a psychiatric diagnosis varied across the literature from 56.3% to 90.0% and those with a diagnosis of personality disorder ranged between 9.0% to 14.0%. Coid *et al* (2007) provided the closest depiction of what the clinical characteristics of forensic patients may look like in medium security across the UK, as data was collected from seven to fourteen NHS regions (see table 1.2). Although these figures have likely changed over the last two decades, no empirical data has been made available to show this.

Few studies have explored the social history of forensic patients and how this has changed over time, suggesting less attention and prominence given to social factors by researchers and practitioners in forensic mental health services. In the studies found, forensic patients detained in medium secure hospitals became more complex over time with an increase in the number of patients who reported or were documented to have experienced childhood trauma in the form of sexual and physical abuse (McKenna, 1996; Edwards *et al*, 2002; Coid *et al*, 2007; Gibbon *et al*, 2013). Relational instability and poor social support were also shown to be prominent issues amongst forensic patients (Shah *et al*, 2011). The presence of drug and alcohol related problems also became more prevalent in medium security over time (Gibbon *et al*, 2013). These findings highlight the increasing need for medium secure hospitals to address social difficulties, trauma and addiction needs, as well as mental health needs and risk.

Although psychoanalytic and developmental perspectives arose within high secure hospitals through the 1970's and 80's, they struggled to gain purchase (Pilgrim, 1988) and developed slowly and became operationalised through the 1980's and 90's (Cox & Theilgaard, 1997; Welldon & Van Velsen, 1997). Only relatively recently have mental health services started to embed appreciation of the impact of social history in understanding presenting difficulties and criminal behaviour (Renner & Slack, 2006; Johnstone *et al*, 2018). Adverse childhood experiences in particular have received growing interest across different health services internationally (World Health Organisation, 2009), with discoveries of how childhood adversity modifies the brain development of children and other physiological and psychological adaptations (Felitti *et al*, 1998). This has built insight into the negative impact of adverse childhood experiences on later offending, mental health and self-damaging behaviour (Bellis *et al*, 2016). Clinicians have adapted theoretical approaches to include

adverse childhood experiences to explain and treat mental health difficulties; including the Power Threat Meaning Framework (Johnstone *et al*, 2018). It would be useful to understand the prevalence of adverse childhood experiences, as well as the potentiators and protective factors amongst patients in medium secure care to help formulate risk and vulnerability, but also to reveal whether models, such as the Power Threat Meaning Framework that emphasise individual meaning making and adaptation in the face of negative power experiences, have a central place in forensic mental health to contrast the medical approach.

As medium secure hospitals meet the purpose of public protection, clinicians and researchers have been engrossed in mastering risk prediction and risk management and overlooked the basic needs of human beings that forensic patients have been deprived of (Andrews & Bonta, 1998). The Good Lives Model was established to help adjust this focus in the criminal justice system and has begun to be applied to forensic mental health services to highlight that like most humans, prisoners and patients have goals and values to help promote a sense of purpose, self-identity and a social role in their communities (Ward & Brown, 2003), and attending to these basic needs may be the best approach to reduce risk behaviours and promote public protection (Ward & Brown, 2004). Therefore, a greater understanding of the social needs and social deprivation of forensic patients admitted to medium secure care would help inform services of areas to address to improve quality of life and ensure successful patient outcomes.

Most literature investigating medium secure care relied on cohorts that were disproportionately male, as females only accounted for 8.0% to 16.0% of the forensic population (Long *et al*, 2011). There has been debate about sex differences when evaluating patient needs, characteristics, and outcomes following medium secure care provision (Koons, Burrow, Moresh & Bynum, 1997; Dowden & Andrews, 1999; Sahota *et al*, 2010; Ribeiro, Tully & Fotiadou, 2015), which questions the applicability of most research to reflect female forensic patients. However, this moves away from the focus of this thesis and therefore is not discussed exhaustively, although further research on the specific and gendered experiences and needs of female forensic patients is needed (refer to Maden *et al*, 2006a; Sahota, Davies, Duggan, Clarke, Huband & Owen, 2010 for further detail about sex differences).

The changes in criminogenic, clinical and social characteristics of forensic patients demonstrates the evolving landscape of medium secure care. However, the majority of

previous literature only focused on patient characteristics between the 1980s and early 2000s, and therefore cannot account for recent changes in medium secure provision, and the overall forensic care pathway that has been outlined across previous sections of this thesis. Only one study explored changes in patient characteristics up to 2012, but only focused on clinical characteristics (Earnshaw *et al*, 2019). Therefore, further research is needed to determine how the overall profile of forensic patients has changed in recent years, which may inform future governance and service infrastructure.

**Table 1.2** Criminogenic, clinical and social characteristics of patients admitted to medium secure hospital.

Paper	Criminogenic factors	Clinical factors	Social factors
Higgo & Shetty, 1991 (176 patients admitted between 1983 and 1987).	71.0% of patients committed serious offences.	N/A	N/A
Edwards, Steed & Murray, 2002 (225 admissions between 1983 and 1996).	Over 50.0% of patients offended by the age of 20.  An average of 11 previous convictions per patient.  61.8% of patients committed a violent index offence. 12.0% of patients committed a sexual index offence.	3.5% of patients were previously admitted to medium secure care. 29.0% of patients were previously admitted to high secure care.  Over 90.0% of patients received a diagnosis of psychotic disorder. 89.0% of patients were classified under Mental Illness. 7.5% of patients were classified under Psychopathic Disorder.	41.0% of patients had a history of alcohol related problems.  56.0% of patients had a history of drug related problems.
Mohan, Murray, Taylor & Steed, 1997	64.0% of patients committed a violent index offence (ranged from 54.0% between 1983 and 1987, to 73.0%	The prevalence of a diagnosis of psychotic disorder changed from 80.0% to 75.0% between 1983 to 1995.	N/A

(282 admissions between 1983 and 1995).	between 1987 and 1991 to 62.0% between 1991 and 1995).  10.0% of patients committed a sexual index offence (ranged from 6.0% between 1983 and 1991 to 16.0% between 1991 and 1995).		
Ricketts, Carnell, Davies, Kaul & Duggan 2001 (504 patients admitted between 1983 and 1999).	37.0% of patients committed a violent index offence (changed from 32.9% between 1983 and 1987 to 38.5% between 1995 and 1999).  9.4% of patients committed a sexual index offence (changed from 9.4% between 1983 and 1987 to 8.7% between 1995 and 1999).	68.9% of patients were previously admitted to psychiatric hospital.  56.3% of patients received a diagnosis of Schizophrenia.  71.5% of patients were classified under Mental Illness (Increased from 61.6% between 1983 and 1987 to 80.8% between 1995 and 1999).  26.3% of patients were classified under Psychopathic Disorder (Decreased from 31.4% between 1983 and 1987 to 19.2% between 1995 and 1999).	N/A

<p>Coid, Hickey, Kahtan, Zhang &amp; Yang, 2007 (1344 patients admitted between 1989 and 1993).</p>	<p>An average of 8 previous convictions per patient.</p>	<p>59.5% of patients received a diagnosis of Schizophrenia. 14.0% of patients received a diagnosis of Personality Disorder.  71.2% of patients were classified under Mental Illness. 5.5% of patients were classified under Psychopathic Disorder.</p>	<p>24.3% of patients had comorbid alcohol misuse problems. 28.3% of patients had comorbid drug misuse problems.</p>
<p>McKenna, 1996 (100 admissions from 1994).</p>	<p>67.0% of patients had at least one previous conviction. 38.0% of patients served custodial terms.  An estimate of 33.0% patients committed a serious offence.</p>	<p>76.0% of patients had an inpatient history with an average of 5.7 previous admissions per patient. 37.0% of patients were previously admitted to medium secure care. 18.0% of patients were previously admitted to high secure care.  86.0% of patients suffered from psychotic disorder. 9.0% of patients suffered from personality disorder.</p>	<p>31.0% of patients had a history of alcohol related problems.  45.0% of patients had a history of drug related problems.</p>



<p>Maden <i>et al</i>, 2006a (959 patients discharged between 1997 and 1998).</p>	<p>47.8% of patients committed a violent index offence.</p> <p>7.3% of patients committed a sexual index offence.</p> <p>61.4% of patients received two or more previous convictions.</p>	<p>93.0% of females and 87.0% of males had previous psychiatric treatment.</p> <p>52.0% of females and 68.0% of males had a diagnosis of psychotic disorder.</p> <p>29.0% of females and 10.0% of males had a diagnosis of personality disorder.</p> <p>78.0% of females and 38.0% males had a history of self-harm.</p>	<p>28.0% of females and 19.0% of males experienced childhood physical abuse.</p> <p>41.0% of females and 11.0% of males experienced childhood sexual abuse.</p> <p>35.0% of females and 53.0% of males had drug related problems.</p> <p>35.0% of females and 42.0% of males had alcohol related problems.</p>
<p>Shah, Waldron, Boast, Coid &amp; Ullrich 2011 (259 patients discharged between 1999 and 2008).</p>	<p>40.1% (length of stay &lt;2 years) and 43.7% (length of stay&gt;2 years) of patients committed a violent index offence.</p> <p>86.0% (length of stay &lt;2 years) and 86.2% (length of stay&gt;2 years) of patients had previously been convicted with the</p>	<p>67.4% (length of stay &lt;2 years) and 79.3% (length of stay&gt;2 years) of patients had previous inpatient admissions with an average of 3.30 and 3.97 total admissions per patient, respectively.</p>	<p>38.4% (length of stay &lt;2 years) and 40.2% (length of stay&gt;2 years) of patients had previous relationship instability.</p> <p>50.6% (length of stay &lt;2 years) and 51.7% (length of stay&gt;2</p>

	mean age of first conviction at 19.6 (length of stay <2 years) and 18.7 (length of stay>2 years).	78.5% (length of stay <2 years) and 92.0% (length of stay>2 years) of patients had a diagnosis of psychotic illness.	years) of patients had no social support available.
Gibbon <i>et al</i> , 2013 (550 patients admitted between 1983 and 2003).  Same cohort as Ricketts <i>et al</i> , 2001: extended to 2003.	<p>The average number of previous convictions was 6.6 per patient (increasing from 5.9 between 1983 and 1987 to 8.7 between 1999 and 2003).</p> <p>The average age at first conviction was 18.0 (decreasing from 19.3 between 1983 and 1987 to 16.5 between 1999 and 2003).</p> <p>The percentage of patients with custodial sentences under the age of 18 increased from 18.7% between 1983 and 1987 to 37.5% between 1999 and 2003.</p>	<p>The prevalence of previous inpatient care decreased from 76.9% between 1983 and 1987 to 45.8% between 1999 and 2003.</p> <p>The prevalence of previous self-harm increased from 27.5% between 1983 and 1987 to 64.6% between 1999 and 2003.</p> <p>The prevalence of previous attempted suicide increased from 31.9% between 1983 and 1987 to 60.4% between 1999 and 2003.</p>	<p>Patients with a history of alcohol misuse increased from 20.9% between 1983 and 1987 to 52.1% between 1999 and 2003.</p> <p>Patients with a history of drug misuse increased from 12.1% between 1983 and 1987 to 60.4% between 1999 and 2003.</p> <p>The prevalence of problematic behaviour increased from 40.7% between 1983 and 1987 to 79.2% between 1999 and 2003.</p>

			A history of experiencing alleged sexual (11.0% between 1983 and 1987 to 37.5% 1999 and 2003) and physical child abuse (14.3% between 1983 and 1987 to 66.7% between 1999 and 2003) increased over time.
Earnshaw, Shaw, Thomas & Haeney, 2019 (179 patients admitted in 1985, 1995, 2005 and 2012).	N/A	The prevalence of a diagnosis of psychotic disorder increased over time from 67.0% in 1985 to 80.0% in 2012.	N/A

## 1.9 Gatekeeping

Traditionally, unstructured professional judgement was used to make decisions about gatekeeping to and from forensic secure care. The only defining criterion that differentiated the three levels of forensic security was the risk of the forensic patient and this provided a vague parameter to guide gatekeeping decision making (National Public Services for Wales, 2006; Rutherford & Duggan, 2007). This ambiguity enabled discrepancies to emerge in gatekeeping across medium secure hospitals throughout England and Wales where different NHS regions faced distinctive pressures, biases and heuristics (Coid *et al*, 2001; Grounds *et al*, 2004; McRae *et al*, 2012). Evaluations of clinician decision making in forensic practice have been sparse, and therefore clarity of the factors that influence unstructured judgement were unclear; preventing services from acknowledging biases and implementing preventative strategies. The recent development of more systematic measures to aid gatekeeping decision-making in practice provided scope to help resolve these issues. Only recently has literature started to explore how structured professional judgement (SPJ) tools help improve decision making across forensic mental health services (Kennedy, O'Neill, Flynn, Gill & Davoren, 2013). Gatekeeping decision making has a significant humanitarian impact on the freedom of forensic patients, along with economic implications due to the high cost of forensic mental health services, and therefore research to understand gatekeeping is crucial to ensure effective matching of patients to levels of security.

Interviews and surveys were previously used in research to gain an understanding about gatekeeping in medium security. A range of factors have been found to be associated with gatekeeping, including whether the patients were mentally ill, their compliance and motivation to receive treatment, along with the presence of aggressive, sexually inappropriate or self-harming behaviour (Melzer *et al*, 2004; Grounds *et al*, 2004). Gatekeeping decision making have also shown sensitivity to pressures within medium secure hospitals; including staffing, ward environments, and resource pressures (Grounds *et al*, 2004; McRae, 2012), this highlights the challenge of ensuring systematic gatekeeping across services throughout England and Wales with each service operating under a different range of internal factors. Unstructured decision making related to gatekeeping was ineffective in medium security where at least one fifth of referrals were refused admission who required this level of care,

and a quarter of referrals were inappropriately placed at this level of care (Melzer *et al*, 2004).

Bias also became embedded in gatekeeping where medium secure hospitals previously avoided admitting forensic patients with a diagnosis of personality disorder. At least 60.0% of rejected referrals from high to medium security were diagnosed with Personality Disorder between 1997 and 2008 (Tetley, Evershed & Krishnan, 2010). Clinicians perceived that forensic patients with Personality Disorder and Mental Illness were difficult to manage together, justifying this decision making (Tetley & Krishnan, 2011). Even Dangerous and Severe Personality Disorder (DSPD) secure services that were purposefully designed for this patient group (those with a personality disorder) received many referrals for those diagnosed with a psychotic disorder (10.1%; Freestone *et al*, 2012), this highlights the challenge for patients with personality disorder to enter the forensic care pathway. The amended Mental Health Act (MHA, 1983 as amended in 2007) was likely to help overcome this bias, as it made mental health services more accessible to individuals diagnosed with personality disorder (see section 1.1 for an outline of the MHA amendments).

Unstructured judgement has been criticised due to the risk of unconscious bias which is associated with inconsistent, non-transparent and unfair practice (Kahneman & Klein, 2009; Burns, 2016). The reliance on this type of decision-making has consequences for over-restrictive practice, inappropriate management of risk and unnecessary spending on secure beds. The development of systematic measures, most notably structured professional judgement tools, address this challenge to transform gatekeeping decision-making to become systematic, transparent and fair.

### ***Measures (admission)***

A systematic approach was needed to aid gatekeeping beyond simply focusing on risk assessment to judge the security needs of patients. Few systematic measures have been developed that embed a range of important factors (e.g. environment and mental health) to help determine this security need, one being the Dangerousness, Understanding, Recovery and Urgency Manual- Triage Security (DUNDRUM-1; Kennedy *et al*, 2013). Table 1.3 provides a list of the variety of measures that were tested to measure and predict the security need of forensic patients. These tools helped move away from unstructured judgement to

more objective gatekeeping of forensic patients to and from different levels of security (Jeandarme, Habets & Kennedy, 2019) and are described in the next paragraph to highlight their validity to support gatekeeping decision making.

The OPRISK, Security Needs Assessment Profile (SNAP) and DUNDRUM-1 were each designed as aids to determine the security need of forensic patients, and all three measures have been shown to predict the level of security that patients are admitted to. The OPRISK was tested on 161 referrals to high secure hospitals in the UK and shows strong predictive validity for those accepted to this level of care (AUC=0.765, 95% CI [0.686 to 0.844]; Brown & Lloyd, 2008). The SNAP is also a promising measure, as it has been shown to differentiate patients based on where they are admitted to along the forensic care pathway (Collins & Davies, 2005). The DUNDRUM-1 appears to exceed the progress of other measures, and has started to become perceived as the ‘gold standard’ for gatekeeping amongst forensic mental healthcare literature, although requires further testing both in the UK and internationally (Adams, Thomas, Mackinnon & Eggleton, 2018; Jeandarme & Habets, 2019). Unlike the OPRISK, this measure (DUNDRUM-1) was designed to aid decision making to all levels of the forensic care pathway, including open conditions and absolute discharge. DUNDRUM-1 has good predictive validity for identifying those stepping down to open conditions (AUC=0.805, 95% CI [0.680 to 0.930]), and those stepping down to low security (AUC=0.866, 95% CI [0.784 to 0.949]). Although originally designed to support gatekeeping decision-making (Flynn *et al*, 2011; Davoren *et al*, 2012; Adams *et al*, 2015; Freestone *et al*, 2015; Jones, Patel & Simpson, 2019), the DUNDRUM-1 is multifunctional where it can be used as a ‘best practice’ framework to evaluate accuracy in clinical decision-making and capture heuristics (Lawrence *et al*, 2018; Jeandarme & Habets 2019; Gulati *et al*, 2019), and it provides a control measure to evaluate treatment outcomes (O’Reilly *et al*, 2019). Despite the flexible use of the DUNDRUM-1, the tool is in its early stages of implementation across forensic secure services in the UK with a small literature base, and therefore more research is needed before any consideration of it becoming part of ‘gold-standard’ practice.

**Table 1.3** Descriptions of measures shown to assess security need.

Measure	Purpose
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Dangerousness, Understanding, Recovery and Urgency Manual- Triage Security (DUNDRUM-1; Kennedy <i>et al</i> , 2013)	Aid clinician decision making when allocating patients to different levels of security.
Security Needs Assessment Profile (SNAP; Collins & Davies, 2005)	Measure of security need and matches patients to the correct security level.
A Structured Checklist of Operationalised Risk Factors (OPRISK; Brown & Lloyd, 2002, 2008)	Predicts those who require admission to high secure hospital.

### **1.10 The provision of medium secure care**

Forensic patients are diverted to medium secure hospitals to receive care and treatment for their mental health difficulties, as opposed to the custodial approach of a prison sentence (Department of Health and Home Office, 1992). Therefore, the goal of clinicians in medium security is to help alleviate mental health difficulties and promote wellbeing. Medium secure hospitals are multi-disciplinary and require input from Psychiatry, Psychology, Occupational Therapy, Social Work and Nursing professions in order to provide a holistic, biopsychosocial approach to care and treatment (NHS England, 2018). Yet, medium secure hospitals are also required to meet the purpose of managing risk via the relational, procedural and physical security measures that they employ. Medium secure care is predicated on the assumption that patients can change both in terms of their mental wellbeing and in terms of the risk that they pose to others, it is important that medium secure hospitals can use routine risk assessments in order to track change. The need to monitor risk and adjust security justifies the continued commissioning of these high cost low-volume services because they are designed to serve the interest of public protection (Kennedy *et al*, 2002; Centre for Mental Health, 2011). At times, balancing rehabilitation and public protection can appear mutually exclusive where clinicians struggle to test positive risk taking and promote patient liberty due to fears of future victimisation and crime (Brown & Fahy, 2009).

#### ***Care and treatment***

A national framework was introduced that provided a set of standards that governed the provision of medium secure hospitals across England and Wales, with regular reviews to ensure practice evolved with clinical governance and updated policies (NHS England, 2018). The framework asserted the need for medium secure hospitals to be recovery and outcome focused where patient pathways are identified within four weeks of admission. Components of care and treatment were specified and entailed medication, meaningful activities, and therapeutic programmes; including individual and family therapy, substance misuse groups, creative groups and anger management support (National Public Services for Wales, 2006). In order to provide evidence based practice in line with the Mental Health Act (MHA, 1983 as amended in 2007), each forensic patient is provided with a routine Care Programme Approach (CPA) review every six months to monitor service delivery. The Care Programme Approach was devised for general mental health services throughout England and Wales, and later adopted into secure services. Although it was mentioned in the MHA, it was never statutory. In Wales, the Mental Health (Wales) Measure 2010 put care and treatment planning on a statutory footing, with a specified care and treatment plan template and statutory requirements for any patient receiving secondary mental health care or more to have a nominated care coordinator and a written care and treatment plan and for it to be reviewed at specified intervals. Examination of medium secure provision is reliant on check-list procedures to assure they abide policy (National Public Services for Wales, 2006). How medium secure hospitals work and their impact on forensic patients remain unclear; for example, in terms of quality of life, recovery, or subsequent service use. Several outcome measures have been developed over the last decade across forensic mental health services to provide insight into the impact of medium security.

### ***Outcome measures***

Evidence about the effectiveness of forensic mental health care is crucial to justify ongoing commissioning from stakeholders for these high-cost low-volume services. The majority of literature available focused on reconviction outcomes that has skewed the perception of success as being based on public protection with less focus on patient recovery and quality of life. Patient recovery has been considered equivocal from the clinicians' perspective, and there is consensus that outcomes should be more multidimensional capturing all areas of patient progression (de Ruiter & Nicholls, 2011; Abou-Sinna & Luebbbers, 2012; Kennedy *et al*, 2013). However, no standard battery of outcome measures has been



developed to guide practice in forensic mental health services, therefore an abundance of outcome measures emerged leading to inconsistent tools being used between services. One study identified 450 outcome measures across forensic mental health research (Fitzpatrick *et al*, 2010). The literature became overpopulated with original papers of novel, poorly validated measures, as opposed to a breadth of evidence confirming the applicability and validity of few robust measures. This inconsistency caused difficulty identifying the best outcome measures to apply as part of routine forensic practice to monitor patient progress. Routine Outcome Measures (ROMs) have only recently been recommended for adoption in a national framework across Wales to promote their use in practice (All Wales Mental Health and Learning Disabilities Core Data Set Project Steering Board). The recommended measures are not specific to forensic mental health services that likely require unique measures to accommodate outcomes associated with risk.

To date, one international review of routine outcome measures across forensic mental health services has been published (Shinkfield & Ogloff, 2014). The review confirmed the large number of measures available and provided an evaluation of their efficiency in forensic practice. Five optimal measures were identified (see table 1.4), including the Health of Nation Outcome Scales- Secure (HoNOS-secure), Short Term Assessment of Risk and Treatability (START), Camberwall Assessment of Need- Forensic Version (CANFOR), DUNDRUM programme completion and recovery (DUNDRUM-3 and 4 respectively) and the Atascadero Skills Profile (ASP). These measures cover a range of factors related to patient progress; including functioning, recovery, risk and security need. The ASP showed good reliability and validity, although has not been tested beyond the original publication (Vess, 2001). The CANFOR correlated with measures of mental health difficulties (e.g. suicide, anxiety, hallucinations and depression), but has been unable to differentiate between forensic patients stepping up or down the forensic care pathway (Davoren *et al*, 2012). The START showed good predictive validity for identifying patients successful at stepping down from secure care (AUC=0.899 to 0.904; Davoren *et al*, 2013), as did the DUNDRUM-3 and 4 (AUC=0.902 and 0.848 respectively; Davoren *et al*, 2013). The HONOS-secure tracked changes in patient stability over ninety days among different forensic cohorts, and has differentiated between forensic patients in medium and low security (Sugarman, Walker & Dickens, 2009; Dickens & O'Shea, 2017).

**Table 1.4** Descriptions of different outcome measures.

Measure	Purpose
Dundrum Programme Completion and Recovery (DUNDRUM-3 AND 4; Kennedy <i>et al</i> , 2013)	Monitors patient change and readiness for discharge to less secure or community settings.
Camberwall Assessment of Need- Forensic Version (CANFOR; Thomas <i>et al</i> , 2003)	Repeatable needs assessment for forensic mental health patients.
Short Term Assessment of Risk and Treatability (START; Webster <i>et al</i> , 2009)	Repeatable measure to assess patient strengths against a range of risks.
Health of Nation Outcome Scales- Secure (HoNOS-Secure; Sugarman & Walker, 2007)	Assesses clinical progress against the need for a secure setting and risk management.
Atascadero Skills Profile (ASP; Vess, 2001)	Assesses functioning that is relevant to post-discharge success.

*Dangerousness, Understanding, Recovery and Urgency Manual (Programme Completion and Recovery)*

Although all outcome measures showed good validity in forensic mental health services, the DUNDRUM-3 and 4 scales together appeared to serve a greater range of purposes. Table 1.5 reflects the ability of the DUNDRUM-3 and 4 to measure security need, functioning, recovery and risk. These scales showed superiority to measure security need and risk when compared with the CANFOR (O'Dwyer *et al*, 2011; Davoren *et al*, 2012) and the START (Abidin *et al*, 2013).

The DUNDRUM-3 and 4 mapped onto changes in security need through patient engagement with care and treatment and recovery. Development of the DUNDRUM 3 and 4 scales drew on various models of recovery and change, including the five pillars of treatment, Maslow's hierarchy of needs (Maslow, 1943), stages of change (Prochaska & DiClemente, 1983), engagement and the five stages of recovery (Anderson *et al*, 2003; Weeks *et al*, 2010). This theoretical approach distinguishes the DUNDRUM quartet from other structured professional judgement tools such as START which is founded on individual factors associated with risk rather than any psychological theories of behaviour change. The

DUNDRUM manual (Kennedy *et al*, 2016) provides a detailed outline about the background, theory and development of the scales. Similar to the conclusions outlined in section 1.9 of this thesis, it is concluded that further research is needed to explore the applicability of these DUNDRUM scales across forensic secure services in the UK to assure their robustness as routine outcome measures.

**Table 1.5** Statistical findings of the DUNDRUM programme completion and recovery.

Authors	Results	Statistical Analysis
O'Dwyer <i>et al</i> 2011	<p>DUNDRUM-3 and 4 scores significantly differed between:</p> <ul style="list-style-type: none"> <li>- different leave statuses (no leave, escorted and unescorted).</li> <li>- different levels of security.</li> </ul>	<p>Leave status:</p> <p>DUNDRUM-3 (<math>F=38.1</math>, <math>df=2</math>, <math>p&lt;0.001</math>)</p> <p>DUNDRUM-4 (<math>F=76.8</math>, <math>df=2</math>, <math>p&lt;0.001</math>)</p> <p>Different levels of security:</p> <p>DUNDRUM-3 (<math>F= 45.9</math>, <math>df= 6</math>, <math>p&lt; 0.001</math>)</p> <p>DUNDRUM-4 (<math>F= 33.9</math>, <math>df= 6</math>, <math>p&lt; 0.001</math>)</p>
Abidin <i>et al</i> , 2013	DUNDRUM-3 and 4 predicted inpatient violence and self-harm.	<p>Inpatient violence:</p> <p>DUNDRUM-3 (<math>AUC=0.832</math>, <math>p&lt;0.001</math>)</p> <p>DUNDRUM-4 (<math>AUC=0.728</math>, <math>p&lt;0.011</math>)</p> <p>Self-harm:</p> <p>DUNDRUM-3 (<math>AUC=0.750</math>, <math>p&lt;0.028</math>)</p> <p>DUNDRUM-4 (<math>AUC=0.713</math>, <math>p&lt;0.043</math>)</p>

Davoren <i>et al</i> , 2013	DUNDRUM-3 and 4 differentiated between those ready for conditional discharge and those not.	Conditional discharge: DUNDRUM-3 (AUC=0.902, $p<0.001$ ) DUNDRUM-4 (AUC=0.848, $p<0.001$ )
Davoren <i>et al</i> , 2012	Only DUNDRUM-4 was able to predict those who stepped up to higher security (negative moves).	Negative moves: DUNDRUM-3 (AUC = 0.643, $p>0.050$ ), DUNDRUM-4 (AUC = 0.719, $p<0.032$ )
Davoren <i>et al</i> 2015	Clinician rated DUNDRUM-3 and 4 predicted those who moved up (negative moves) and down (positive moves) the different levels of security.  Both scales were able to predict conditional discharge.	Positive moves: DUNDRUM-3 (AUC= 0.718 $p<0.005$ ) DUNDRUM-4 (AUC=0.695, $p<0.011$ )  Negative moves: DUNDRUM-3 (AUC= 0.760 $p<0.019$ ) DUNDRUM-4 (AUC=0.784, $p<0.010$ )  Conditional discharge: DUNDRUM-3 (AUC= 0.961 $p<0.001$ ) DUNDRUM-4 (AUC=0.844, $p<0.011$ )
Richter <i>et al</i> 2018	Scores on DUNDRUM-3 significantly changed over	DUNDRUM-3 change over time: Overall ( $p<0.004$ )

	time only for those with a length of stay below 5.8 years.	Under 5.8 years ( $p < 0.030$ ) Over 5.8 years ( $p > 0.050$ )
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### ***Risk Assessment***

The purpose of ensuring public protection often outweighs the aim of rehabilitation due to the various stakeholders involved and the greater cost of future crime and victimisation relative to over-restrictive practice (Brown & Fahy, 2009). This bias has likely been driven and perpetuated by continued media and political pressure regarding the assumed association between mental health difficulties and violence (Doyle & Dolan 2002). Therefore, medium secure hospitals tend to prioritise risk management in practice against other patient outcomes (Fitzpatrick *et al*, 2010). Over the years, risk management has evolved where historically clinicians relied on unstructured judgement, and more recently this has shifted to the reliance of systematic measures. Unstructured judgement provided a person-centred approach to understand risk, although this only predicted risk of reoffending slightly better than chance with large variations in accuracy and competence between clinicians (Faust & Ziskin, 1988; Lidz, Mulvey & Gardner, 1993; Hart, Michie & Cooke, 2007). There was consensus amongst researchers and clinicians that risk assessment across services could no longer solely rely on unstructured clinician judgement, as this has been shown to be consistently prone to unconscious bias with no evidence-base, transparency or replicability (Guy, Douglas & Hart, 2015). The development of risk assessment tools has helped to overcome this shortfall (Grove & Meehl, 1996). Actuarial measures were the first to become embedded in forensic practice that were eventually replaced by Structured Professional Judgement tools (SPJs) to aid risk assessment and management (Scott & Resnick, 2006). Medium secure hospitals were encouraged to use these tools routinely as part of standard practice (NICE, 2009). There was long-standing debate about the superiority of actuarial measures or SPJs in forensic practice (Hart, 1998), although research has moved on and reached the conclusion that an integrative approach using both types of measures in practice is valid (Snowden *et al*, 2007). Despite this, the majority of services now tend to rely on SPJs only; for risk assessment (Lamont & Brunero, 2009; Khirya, Weaver & Maden, 2009; Tully, 2017).

### *Actuarial risk prediction*

Monahan (1984) recommended a shift from unstructured professional judgement to actuarial risk assessment by identifying actuarial risk markers that predict offending, and combining them into a statistical model that provides a probabilistic estimate of risk of offending in a specific time period. Actuarial measures are static and simple in nature because they tend to rely on fixed information. Actuarial risk assessment has been broadly criticised because actuarial tools often fail to account for changes in dynamic risk. Actuarial methods also exclude professional judgement concerning the relative salience of particular risk factors for a given individual or person-specific factors associated with individual offending behaviour (Ho, Thomson & Darjee, 2009). Despite criticism, actuarial measures have shown superiority when compared with unstructured judgement in predicting risk on a group level (Dawes, Faust & Meehl, 1989; Grove & Meehl, 1996); and examples of validated tools used in forensic secure services are discussed.

Examples of actuarial measures include the Offender Group Reconviction Scale (OGRS-2); originally designed for prison samples, the Violence Risk Appraisal Guide (VRAG); originally designed for psychiatric populations, and the Psychopathy Checklist-Revised (PCL-R); a tool not designed specifically for risk assessment but a good predictor of reconviction. Evidence of the predictive validity of actuarial tools commonly tested in forensic mental health research or used across forensic mental health services is provided in table 1.6. Other actuarial measures, including the Risk Matrix 2000 (Thornton *et al*, 2003), only have available literature tested on prison populations and are therefore not included in the table (see Yang, Wong & Coid, 2010 for further detail). All actuarial measures showed good predictive power of reconviction, although the VRAG was the most widely used in forensic practice (Cooke, Michie & Ryan, 2001). False positive predictions were deemed to reflect the invalidity of actuarial tools, although this may be an indication of any treatment effects of medium security. Therefore, actuarial measure may provide a baseline to evaluate the success of medium secure hospitals at reducing risk of offending.

Hart (1998) criticised actuarial approaches in practice due to a number of shortfalls, including the ignorance of critical person-centred information, the neglect of the dynamic nature of risk (e.g. mental health factors, care and treatment, patient progress and

rehabilitation), generalisability issues and the avoidance of factors that may be logical, but not empirically supported. Therefore, actuarial measures fail to take into account the efforts and professional ethos of care and treatment from clinicians in forensic secure services, which may explain the resistance to use them in practice (Doyle & Dolan, 2002). Medium secure hospitals rely on risk assessment to predict risk scenarios, to reduce risk of absconding, to inform access restrictions and to guide treatment, management and rehabilitation of forensic patients (Khiroya, Weaver & Maden, 2009). Actuarial measures tend to simplify risk assessment to purely focus on risk prediction, ignoring all these other aspects of risk management, along with formulating, controlling and preventing risk (Moore, 1996). Whether actuarial measures could be adapted to become more desirable to use in forensic practice without costing their predictive validity is unknown.

**Table 1.6** Actuarial measures and evidence of their predictive validity of reconviction for forensic patients.

Measure	Purpose	Predictive Validity
Offender Reconviction Scale- 2 (OGRS-2; Copas & Marshall, 1998 (revised by Taylor, 1999)	Designed to predict reconviction (general and violent) for the offender population.	Snowden <i>et al</i> , 2007  AUC= 0.744 to 0.765 for general reconviction with a follow up period from six months to five years.  AUC= 0.756 to 0.720 for violent reconviction with a follow up period from six months to five years.  Gray <i>et al</i> , 2004 Mean follow up period of six years. AUC= 0.810 for all reconvictions.
Violence Risk Assessment Guide (VRAG; Quinsey, Harris, Rice & Cormier, 1998)	Developed to predict violence amongst patients discharged from high secure hospitals.	Ho, Thomson & Darjee, 2009 AUC= 0.681 to predict any violent incidents in two years following discharge.  AUC= 0.640, 0.594 and 0.591 to predict minor, serious, and non-violent charges/convictions.

		<p>Doyle &amp; Dolan, 2006 AUC=0.657 to predict violence in the community up to six months following discharge.</p> <p>Snowden <i>et al</i>, 2007 AUC= 0.837 to 0.746 for general reconviction with a follow up period from six months to five years. AUC= 0.862 to 0.756 for violent reconviction with a follow up period from six months to five years.</p> <p>Coid <i>et al</i>, 2011 Mean follow up period of almost two years. AUC= 0.700 violent reconvictions.</p>
Psychopathy Checklist-Revised (PCL-R; Hare, 1991, PCL-SV; Hart, Cox & Hare, 1995)	Diagnostic instrument to measure degree to which individual matches a psychopathic personality.	<p>Ho, Thomson &amp; Darjee, 2009 (PCL-SV) AUC= 0.625 to predict any violent incidents up to two years following discharge. AUC= 0.627, 0.385 and 0.519 to predict minor, serious, and non-violent charges/convictions.</p> <p>Doyle &amp; Dolan, 2006 AUC=0.687 to predict violence in community up to six months following discharge.</p> <p>Gray <i>et al</i>, 2004</p>



		Mean follow up period six years. AUC= 0.660 for all reconvictions.  Coid <i>et al</i> , 2011 Mean follow up period of almost two years. AUC= 0.630 for violent reconvictions.
Static-99; Hanson & Thornton, 1999	Uses risk factors empirically shown to be associated with sexual reconviction and combines them to create a total score that predicts risk of sexual reconviction.	De Vogel <i>et al</i> , 2004 AUC= 0.710 for sexual offending over an average of 11.7 years.

### *Structured professional Judgement (SPJs) tools*

SPJs were developed to bridge the gap between unstructured clinician judgement and actuarial measures. They remain evidence-based, but provide flexibility to allow for case-specific assessments to consider person-centred factors that are associated with the risk in forensic patients (Murray & Thomson, 2010). The Historical Clinical and Risk Management-20 (HCR-20; Webster *et al*, 1997) is the most common SPJ used across forensic mental health services in the UK and worldwide (Khiroya, Weaver & Maden, 2009; Lamont & Brunero, 2009; Tully, 2017). The HCR-20 was developed to aid clinicians in identifying risk factors and to gauge the level of risk an individual posed. Twenty items (ten historical, five clinical and five risk management) were scored for presence on a three-point scale. The third version of the HCR-20 removed the concept of scoring and added a coding for relevance as well as presence. This enabled the measure to be used in formulating and contextualising risk, which helped move away from risk prediction alone and towards multifunctional purposes of risk assessment and management planning.

Although the HCR-20 was not designed to predict reconviction, it has been tested and compared against actuarial risk predictors (see table 1.7). The HCR-20 showed comparable predictive validity of risk with some measures, but was inferior relative to the OGRS-2 (Gray *et al*, 2004; Snowden *et al*, 2007). This supported the notion that actuarial and SPJ measures generally are equivocal risk predictors, and differences in risk prediction between tools is reflective of the robustness of the individual measures, as opposed to the type of measure. For example, a meta-analysis ranked both the SVR-20 and VRAG as superior predictors of offending relative to the HCR-20 and PCL-R (Singh, Grann & Fazel, 2011). Variations in the methodologies of different studies was a challenge in comparing risk assessment tools in forensic practice. There were distinctions in the cohorts recruited, the follow up periods since discharge, and the outcomes collected (Coid *et al*, 2015). Methodological differences have been reported to explain 42.0% of variance between tools, whilst only 25.0% of variance may actually reflect the predictive validity of different risk measures (Schwalbe, 2007; Yang, Wong & Coid, 2010).

Literature has moved away from simply comparing actuarial and SPJ tools and accepted that value of both types of measures in conjunction, to ensure holistic risk management (Doyle & Dolan, 2002). It has also been suggested that all measures of risk have reached a ceiling effect, as the literature consistently showed moderate predictive validity for reconviction (Coid *et al*, 2011; Kennedy, O'Reilly, Davoren, O'Flynn & Sullivan, 2019). Yet, there has been minimal research focused on the individual factors embedded in risk assessment measures to determine the scope for improvement (Coid *et al*, 2009). Evaluations of risk assessment measures have mainly been directed towards risk prediction of reoffending, overlooking other elements of risk management in forensic practice. It would be meaningful, for example, to deduce how well the HCR-20 maps onto other areas of risk assessment; including whether the presence of risk factors outlined in the HCR-20 significantly match the future risk scenarios drawn from detailed chain analysis of past offending behaviour and observed risk behaviours of the forensic patients.

**Table 1.7** SPJs and evidence of their predictive validity of reconviction for forensic patients

Measure	Purpose	Predictive Validity
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<p>HCR-20; Webster <i>et al</i> 1997 (revised version published by Douglas <i>et al</i>, 2013)</p>	<p>Instrument for risk assessment of violence in forensic psychiatric practice.</p>	<p>Ho, Thomson &amp; Darjee, 2009  <i>Historical items</i>  AUC= 0.605 to predict any violent incidents in two years following discharge  AUC= 0.605, 0.538 and 0.512 to predict minor, serious, and non-violent charges/convictions.</p> <p>Doyle &amp; Dolan, 2006  <i>Historical items</i>  AUC=0.675 to predict violence in the community for up to six months following discharge.  <i>Total items</i>  AUC=0.797 to predict violence in the community for up to six months following discharge.</p> <p>Gray <i>et al</i>, 2004  Mean follow up period of six years.  <i>Historical items</i>  AUC= 0.620 for all reconvictions.  <i>Total items</i>  AUC= 0.610 for all reconvictions.</p> <p>Coid <i>et al</i>, 2011  Mean follow up period of almost two years.  AUC= 0.670 for violent reconvictions.</p>
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SVR-20; Boer, Hart, Kropp & Webster, 1997	Checklist for assessing risk of sexual reconviction.	De Vogel <i>et al</i> , 2004 AUC= 0.800 for sexual offending over an average of 11.67 years.  Kanters <i>et al</i> , 2017 AUC= 0.760 sexual, 0.750 violent, and 0.700 general reconviction across an average of 5.9 years following discharge.
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There is a lack of literature that explores candidate risk factors of poor progress through medium security in terms of poor therapeutic engagement, poor recovery and changes in risk of violence. Although Structured Professional Judgement tools (SPJs) have become increasingly popular in forensic mental health literature over recent decades and provide scope to capture patient changes, they have predominantly been tested only to deduce their validity; whether that is to match onto the discharge pathway of patients (DUNDRUM programme completion and recovery) or to predict recidivism (HCR-20). There is scope to use SPJs as an outcome measure to help identify candidate risk factors of poor progress through medium secure care. This has been demonstrated by a recent international study that only identified sex and high scores on the PCL-R as possible markers for changes in risk of violence whilst detained in forensic secure care (Olsson, Strand, Kristiansen, Sjöling & Asplund, 2013).

To date, most of our understanding of what influences progress in forensic secure care is by capturing characteristics that are more prevalent in those labelled long-stay patients relative to those with shorter admission periods. Long-stay patients may reflect being stuck in services due to poor progress and poor therapeutic engagement (Völlm *et al*, 2018). Several patient factors have been noted to be more prevalent in long-stay patients (detained for approximately five years or longer) compared with those with shorter lengths of stay, and these include severe offences (violent/sexual), a diagnosis of a personality disorder, a psychotic related diagnosis and substance misuse (Edward, Steed & Murray, 2002; Jacques, Spencer & Gilluley, 2010, Shah *et al*, 2011 & Huband *et al*, 2018). It would be useful to explore these independent factors as candidate predictors of patient progress by testing them against more robust measures that represent patient change in secure care; including the

DUNDRUM quartet, as opposed to relying on prolonged length of stay as an indication of poor progress or limited change.

### **1.11 Where patients go next?**

Risk assessment and outcome measures serve the decision-making process to determine the appropriate care pathway for forensic patients. Multiple pathways became available following the introduction of medium secure care, including absolute or conditional discharge, step down to less secure settings, step up to high security, or remission to prison. Outcome measures designed to aid this decision process were only recently developed to allow a move away from unstructured clinical judgement (Kennedy *et al*, 2013). Prior to this most evaluations of pathways out of medium security were likely based on either unstructured professional judgement (Ricketts *et al*, 2001; Edwards, Steed & Murray, 2002; Maden *et al*, 2006a; Davies *et al*, 2007) or actuarial and structured professional judgement tools concerned with predicting risk alone, rather than recovery/change and treatment need. Forensic patients were predominantly discharged to the community throughout the 1980s and 90s (27.3% to 54.5%), followed by less secure services (10.7% to 34.3%), and prison (7.5% to 26.5%; Ricketts *et al*, 2001; Edwards, Steed & Murray, 2002; Maden *et al*, 2006a; Davies *et al*, 2007). Whereas transfers to high or other medium secure hospitals were less common. The variation may be reflective of regional differences between medium secure hospitals with different availabilities of step-down services and distinct risk thresholds between clinicians (Coid *et al*, 2001). Pathways out of medium secure care likely changed over the last two decades with the increasing use of structured measures to aid clinical decision making (Kennedy *et al*, 2013), but also due to societal shifts and the changing landscape of forensic services. Pressure to ensure least restrictive practice has grown with the introduction of the European Convention on Human Rights, de-stigmatisation of mental health and both media and inspection report exposures of abusive practice in secure services (Department of Health and Social Care, 1999; Flynn, 2012; NHS England, 2015b). The expansion of step down and community forensic services also helped forensic patients step down from medium security. However, sparse empirical evidence is available to capture changes in pathways out of medium secure care over recent years.

Changes in the discharge pathway out of medium security has been investigated from the 1980s to 2012 (Earnshaw *et al*, 2019). Although transfers to high security had decreased,

the number of patients discharged to further secure care had increased over time. This maps onto the decommissioning of high security and expansion of step down services. The number of patients directly discharged to the community has decreased over time and prison remissions remained steady. A recent evaluation using a national cohort to capture trends in the discharge pathway for patients in the UK between 2010 and 2011 showed that approximately 52.0% were discharged to the community, 25.0% were discharged to low security, 20.0% were discharged to prison, and 3.0% were discharged to high security (Coid *et al*, 2016). These findings helped capture how patient pathways from medium security changed over time and nationally, although neither study explored the factors that predict different discharge pathways or evaluated the accuracy of this decision-making process in terms of patient risk, reconviction and recovery outcomes.

The current literature base provides a vague understanding of individual risk factors that affect a patient's discharge pathway from conditions of medium security. Few studies have reached contradictory findings as to whether sex differences and diagnosis are predictive static factors of unsuccessful discharge (Saad & Sashidharan, 1992; Taylor, Goldberg, Leese, Butwell & Reed, 1999; Hilton & Simmons, 2001; Dibben, Wong & Hunt, 2005; Jewell *et al*, 2017; Davoren *et al*, 2013), with some consensus about restriction orders being a good indicator of whether a patient will be discharged from inpatient care (Jewell *et al*, 2017). Whilst, demographic factors linked with ethnicity and age have shown no influence on a patient's pathway from forensic secure care (Taylor *et al*, 1999). Some dynamic factors linked with progress through forensic secure care have been tested and shown as associated with the discharge route of patients; these include the leave status of patients, inpatient aggression and agitation, acuteness of psychotic illness, and risk of violence (HCR-20 total and clinical risk; Martin & Martin, 2016; Jewell *et al*, 2017). However, most literature is outdated or not based in the UK and therefore further research is needed to identify those at greatest risk of less successful discharge pathways.

### ***The challenge of remission to prison.***

Forensic patients detained in medium secure hospitals under section 47, 48, 35, or 38 of the Mental Health Act (1983 as amended in 2007) can be remitted to prison. This typically occurs if those on remand or prior to sentence (s35 or 38) show no evidence of suffering from a mental health difficulty to explain their offence (NHS England, 2019), or if those already

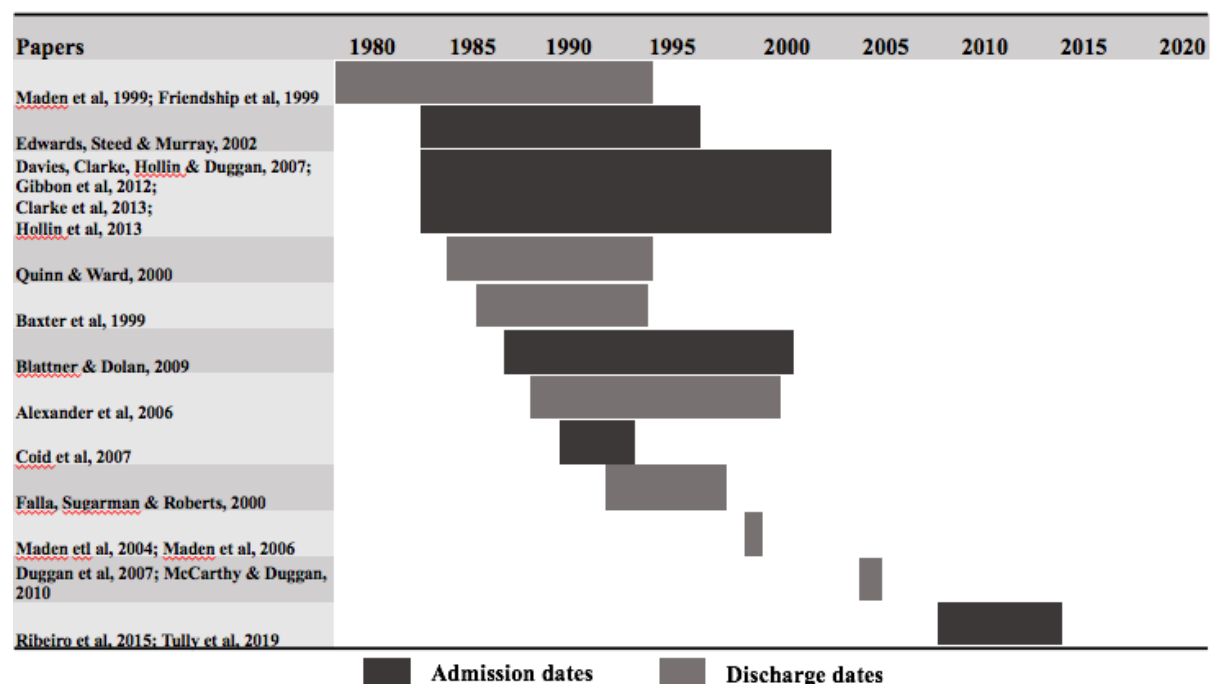
sentenced (s47 or 48) no longer require treatment or the treatment is ineffective (NHS England, 2019). Therefore, remission to prison is not uncommon, although it has doubled over recent decades that has caused concern about the effectiveness of diversion schemes (Birmingham, Awonogun & Ryland, 2017). Remission rates increased from 8.0% to 20.0% between the 1980s/90s to 2010/11 (Maden *et al*, 1999, 2006a; Doyle *et al*, 2014). This conflicts with evidence that remission rates remained steady over time in medium security (Earnshaw *et al*, 2019), and may reflect variation in remission to prison between regions across the UK.

Arguably, remission to prison prevents bed-blocking in medium security with inappropriate placements to ensure availability for those known to benefit from forensic secure care. However, the typical profile of patients remitted to prison include having a serious mental health difficulty comorbid with a diagnosis of personality disorder, greater risk of future offending and poor motivation to engage with treatment (Doyle *et al*, 2014). Forensic secure services may be more appropriate to meet these complex needs in comparison with prison (Department of Health, 1992). The impact of remission on treatment effects, reoffending risk, and mental health outcomes remains unknown (Birmingham *et al*, 2017), along with the economic implications of remission in terms of future health, social care and criminal justice system costs of tackling untreated, mentally unwell offenders' ongoing needs and impact on society.

### **1.12 Outcomes following medium secure care.**

The Butler Report (Home Office & DHSS, 1975) highlighted the need for evaluative literature in conjunction with the development of medium secure hospitals. Reconviction has been perceived as the gold standard outcome to evaluate and judge the efficiency of medium secure care (Brown & Fahy, 2009). This was partly due to the large public interest in reconviction rates to ensure public protection. There has been debate about whether offending behaviour following discharge supersedes mental health outcomes as an indicator of forensic service success (Bailey & MacCulloch, 1992; Friendship, McClintock, Rutter & Maden, 1999). A small literature base is available that investigated readmission as an outcome measure of medium security (see table 1.8). Very few patients receive an absolute discharge from forensic secure care (Ministry of Justice, 2019), instead community treatment orders and restriction orders have been regularly implemented to ensure the availability of adequate

support and aftercare services in the community (Humphreys, Kenney-herbert & Gray, 1998; Lawton-Smith, Dawson & Burns, 2008), with forensic patients recalled to forensic mental health services if they display violent or offence paralleling behaviour. Therefore, readmission may provide a more accurate depiction of offending risk and behaviour compared with reconviction, particularly given that only an estimated 5.0% to 8.2% of all cases of offending behaviour referred to Crown Prosecution Service reached the threshold for court prosecution in the UK over the last three decades (Lewis, 1990, as cited in Edwards *et al*, 2002; Home Office, 2018). Of the sparse literature available that collected readmission outcomes, some studies collected this in conjunction with reconviction outcomes. This helped increase the chances of capturing risk behaviour following discharge with patients either dealt with through forensic mental health or the criminal justice system. It has been argued that these outcomes provide proxy measures of relapse and risk behaviours (Baxter, Rabe-Hesketh & Parrott, 1999; Falla, Sugarman & Roberts, 2000; Edwards *et al*, 2002; Maden *et al*, 2006a; Davies, Clarke, Hollin & Duggan, 2007; Tully, Cappai, Lally & Fotiadou, 2019). International literature is available that reports long-term outcomes of forensic mental health care (Lund *et al*, 2013; Tabita, DeSanti & Kjellin, 2012; Nilsson *et al*, 2011), but may generalise poorly to the UK because countries vary with distinct criminal justice and mental health systems and unique legislation that causes difficulty comparing findings (Sampson, Edworthy, Völlm & Bulten, 2016). Therefore, this thesis only reports long-term outcomes explored in the UK.





**Figure 1.4.** Admission and discharge periods of forensic patient cohorts across the literature that investigated reconviction and readmission.

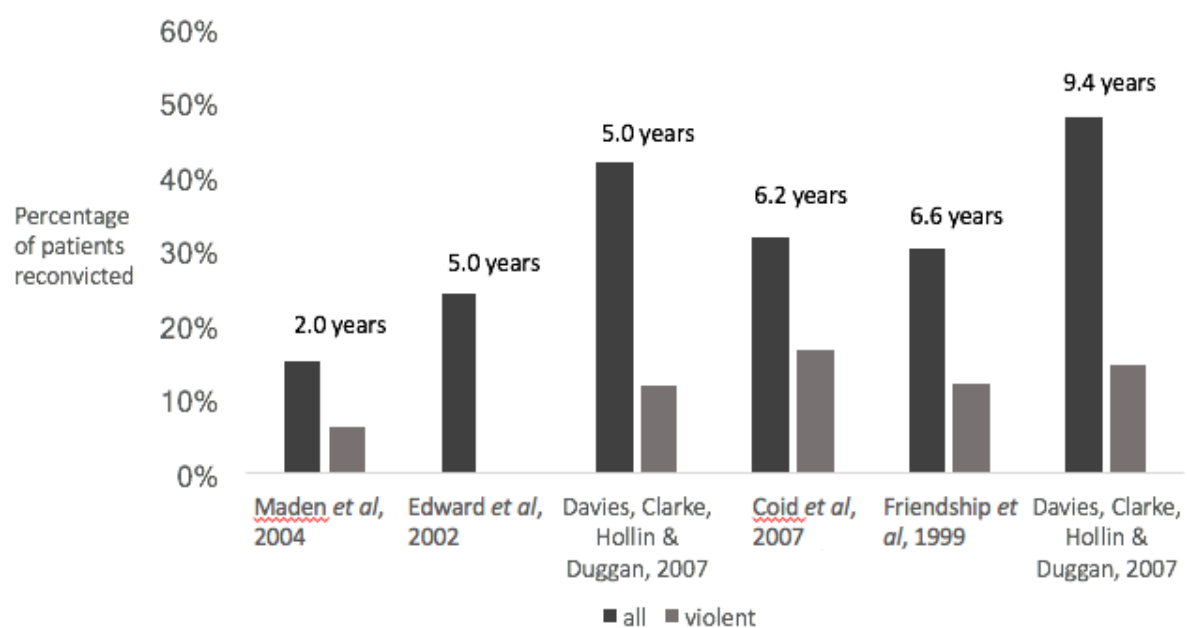
### ***Reconviction***

There is a lack of breadth in the research to examine the effectiveness of forensic mental health in terms of whether they meet the objectives to ensure public protection and reduce risk of reoffending. Of the little research there is, the majority have been based on forensic psychiatric patients admitted to and discharged from medium secure services nearly two decades ago (see figure 1.4).

Figure 1.5 presents the percentage of reconvictions for any and violent offences across the literature, and shows a gradual escalation with the increasing time period following discharge. Forensic patients showed lower reoffending rates when compared with matched controls from prison based on age, sex and released time-points (Home Office, 2003). For example, 58.2% of prisoners released in 2001 and 15.0% of forensic patients discharged between 1997/98 were reconvicted within two years (National Audit Office, 2002; Maden, Scott, Burnett, Lewis & Skapinakis, 2004). The prevalence ratio of reconviction by prisoners was between 1.4 to 7.7 compared with forensic mental health patients based on literature in the UK (Fazel, Fimińska, Cocks & Coid, 2016). This validated the efficacy for the forensic care pathway in reducing risk of reoffending to ensure public protection, and justified the commissioning of these high-cost low-volume services.

The variation in reconviction between the literature that focused on specific homogenous samples highlights the possible influence of patient characteristics on this outcome, for example 52.2% of arsonists (Hollin *et al*, 2013), 59.5% of those diagnosed with personality disorder (McCarthy & Duggan, 2010), 11.0% of those with intellectual disabilities (Alexander, Crouch, Halstead & Piachaud, 2006) and 21.0% of high secure patients admitted to medium security were reconvicted (Blattner & Dolan, 2009). Attempts have been made to identify patient characteristics associated with reoffending to understand those at greatest risk (see table 1.8). Reports were consistent finding criminogenic factors (number of previous convictions), clinical factors (mental health classification), social factors (substance misuse), age on admission, length of admission and restriction orders were each associated with reconviction of those discharged from medium security.

Medium secure provision has evolved and therefore the treatment and care provided for forensic patients in the last two decades likely differed from the care provided for those investigated in previous literature (papers reported in figure 1.5). Changes during this time of service evolution have affected long-term outcomes where reconviction increased between 1983 and 2003 (Gibbon *et al*, 2013). How changes in service provision over recent years affected reconviction outcomes remains unknown; including the impact of the amended mental health legislation and shifts in the infrastructure of forensic secure care (see section 1.1 to 1.6). A recent female cohort was used to explore reconviction from a medium secure hospital where a total of 17.5% of forensic patients were reconvicted after a follow up period of 3.8 years (Tully *et al*, 2019). However, females only account for less than a fifth of the forensic secure population and their criminogenic behaviour arguably differs when compared with males (Lart *et al*, 1999, as cited in Maden *et al*, 2006a; Coid *et al*, 2007). Female reconviction rates may not be representative of the reoffending behaviour of male medium secure patients across the UK, and therefore studies restricted to female samples may not be a useful parameter to evaluate the success of the majority of medium secure hospitals. Continued examination is necessary to assure adequate implications of medium secure care for the continued commissioning of these high-cost low-volume services.



**Figure 1.5** Percentage of patients reconvicted for all and violent offences across different time periods.



**Table 1.8.** Literature that investigated reconviction outcomes following medium secure care.

<i>Paper</i>	<i>Nature</i>	<i>Patient population</i>	<i>Diagnosis/Legal Category</i>	<i>Percent of patients reconvicted</i>	<i>Predictors of reconviction</i>	<i>Significant difference only (reconvicted/not reconvicted)</i>
Friendship, McClintock, Rutter & Maden, 1999	Longitudinal, retrospective study based in one medium secure hospital.  Clinical records, Special Hospitals' Case Register, Prison, Offenders Index (OI), and NHS Central Record.	234 patients (209 followed up) discharged between 20 <sup>th</sup> October 1980 to 31 <sup>st</sup> October 1994.  Mean follow up period of 6.6 years.	Primary diagnosis: Schizophrenia (71.0%) Personality disorder (13.0%)	24.0% (12.0% convicted of serious offence)  30.0% if exclude those who spent no follow up time in community.	Significant: Younger age at first admission, shorter length of stay, and more previous convictions.  Non-significant: Younger age at first conviction.	Significant: Age at first admission, length of admission, previous convictions, and age at first conviction.  Non-significant: Sex, referral source, violence, restriction order, ethnicity, diagnosis, and discharge pathway.

Edward, Steed & Murray, 2002	Longitudinal, retrospective study based in one medium secure hospital.  Clinical records and the Offender Index (OI).	225 patients admitted between October 1983 to 31 <sup>st</sup> October 1996.  Follow up period at two years and five years.	Primary diagnosis: Schizophrenia/Psychosis (90.0%)  Personality disorder (8.0%)	10.0% at two-year follow up.  24% at five-year follow up.	n/a	Significant: Number of previous convictions.
Davies, Clarke, Hollin & Duggan, 2007	Longitudinal, retrospective study based in one medium secure hospital.	595 patients (554 followed up) admitted between July 1983 to 30 June 2003.	Category under MHA: Mental Illness (67.2%)  Psychopathic disorder (26.6%)	Standard list offences  25.6% at two-year follow up.  41.7% at five-year follow up.	n/a	Significant: Mental health classification, sex difference (for standard list offences at five-

	Clinical records, Offender Index (OI), Prisons, and Social Service records.	Mean follow up period of 9.4 years.		47.8% overall follow up.  Grave offences 6.7% at two-year follow up. 11.7% at five-year follow up. 14.4% overall follow up.		year follow up only).
Sahota <i>et al</i> , 2010	Longitudinal, retrospective study based in one medium secure hospital.	595 patients (93 females and 502 males followed up) admitted between July 1983 to 30 <sup>th</sup> June 2003.	Category under MHA: Mental Illness (52.7% female and 72.1% male) Psychopathic disorder (44.0% female and 24.2% male)	<i>Any offence</i> 40.7% females 45.8% males  <i>Serious offence</i> 29.7% female 28.0% male	Significant: Younger age on admission, more previous convictions, absence of restriction order, and shorter length of stay.  Non-significant:	Significant: Sex differences.

	Clinical records and the Offender Index (OI).	Mean follow up period of 9.4 years.			Sex differences.	
Gibbon <i>et al</i> , 2013	<p>Longitudinal, retrospective study based in one medium secure hospital.</p> <p>Clinical records and the Offender Index (OI).</p>	<p>595 patients (550 followed up) admitted between July 1983 to 30<sup>th</sup> June 2003.</p> <p>Mean follow up period of 9.4 years.</p>	Category under MHA: Mental Illness (67.2%) Psychopathic disorder (26.6%)	<p><i>Patients admitted in first decade (1983-1993)</i></p> <p>25.4% at two-year follow up. 36.9% at five-year follow up.</p> <p><i>Patients admitted in second decade (1993-2003)</i></p> <p>27.0% at two-year follow up. 45.9% at five-year follow up.</p>	<p><i>Time to reconviction</i></p> <p>Significant: Age on admission, number of previous convictions, length of stay, psychopathic disorder (for community discharge only), and grave index offence (for community discharge only).</p> <p>Non-significant: Age at conviction, Sex differences, ethnicity, custodial sentences under age eighteen, problem behaviour at school, contact with child mental health services, alleged</p>	n/a

					child abuse, previous inpatient care, previous self-harm and suicide, and previous drug and alcohol misuse.	
Baxter, Rabe-Hesketh & Parrott, 1999	Longitudinal, retrospective study based in one medium secure hospital.  Clinical records and the Home Office Criminal Records.	63 patients discharged between 1985 and 1 <sup>st</sup> January 1994.  Mean follow up period of 3.9 years.	All patients had a primary diagnosis of Schizophrenia.	30.0% violent reconvictions (although 73.0% reported violent re-offenses).	Significant: Conduct disorder, younger age, drug use, alcohol problems, and absence of restriction order.	n/a
Coid <i>et al</i> , 2007	Longitudinal Retrospective Study based on medium secure units across 7 regions.	1613 patients admitted between 1989 and 1993 (discharged by 31 <sup>st</sup> December 1998).	Primary diagnosis Schizophrenia (59.5%) Personality disorder (14.0%)	31.7% across entire follow up period (16.4% violent reconvictions).	Significant: Sex differences, primary diagnosis, age at first court appearance, ethnicity, number of previous convictions and length of stay.	n/a



	Clinical Records, Offenders Index, and NHS Central Register	Mean follow up period of 6.2 years.		22.7% missing outcome data.	Non-significant: Current age, substance dependence and restriction order.	
Falla, Sugarman & Roberts 2000	Longitudinal Retrospective Study based in one medium secure unit  Clinical records and the Home Office and Police Records	85 patients discharged between 1992 and 1997.  Mean follow up period of 3.5 years.	n/a	7.0% for serious offence.	n/a	n/a
Maden <i>et al</i> , 2004	Longitudinal, retrospective national study	959 patients discharged between 1 <sup>st</sup> April	Primary Diagnosis: Schizophrenia (66.2%) Personality Disorder (11.8%)	15.0% at two-year follow up (6.0% violent reconvictions).	Significant: Previous offending, substance misuse, sexual abuse,	n/a

	(34 medium secure hospitals).  Clinical records and the Offender Index (OI).	1997 and 31 <sup>st</sup> March 1998.  Follow up period of two years.			length of stay, self-harm history, and contact with services at follow up.  Non-significant: Diagnosis and number of previous admissions.	
Maden <i>et al</i> , 2006a	As above	As above	As above	16.0% males at two-year follow up. 9.0% females at two-year follow up.	Significant: Age, self-harm history, drug problems, and number of previous convictions.	n/a
Duggan, Mason, Banerjee & Milton, 2007	Prospective, naturalistic study based in one medium secure hospital.  Offender Index.	44 patients discharged by 30 <sup>th</sup> September 2005.  Follow up period of five years.	All patients had a diagnosis of personality disorder.	<i>Community discharge only (24 patients)</i> 58.0% at five-year follow up.	n/a	n/a

McCarthy & Duggan, 2010	Prospective, naturalistic study based in one medium secure hospital.  Offender Index.	81 patients discharged (unknown time period).  Follow up period of five years (up to 10 <sup>th</sup> October 2008).	All patients had a diagnosis of personality disorder.	<i>Community discharge only (37 patients)</i>  59.5% at five-year follow up (10.8% rate of grave offences)	n/a	n/a
Tully, Cappai, Lally & Fotiadou, 2019	Longitudinal, retrospective study based in one medium secure hospital.  Clinical records.	50 patients (all female) admitted between April 2008 and November 2014.  Median follow up period of 3.8 years.	Primary diagnosis: Schizophrenia (78.0%) Personality Disorder (18.0%)	<i>All discharged (only 40 patients had available data)</i>  17.5% across entire follow up period (10.0% violent offences).	n/a	Significant association with readmission:  Length of stay, conditions, restrictions, probation, and alcohol and drug use.

## ***Readmission***

There has been limited research available to provide an idea of the success of medium secure hospitals on mental health outcomes (see table 1.9). Similar to reconviction data, the majority of published research that has investigated readmission was based on patients admitted to and discharged from medium security between 1980 and 2003. The readmission rates appear to have been sporadic across the literature ranging from 1.8% to 89.0%. A meta-analysis attempted to merge all UK based and international literature to depict crude readmission rates that ranged from 2926 to 16641 per 100,000 person years (Fazel *et al*, 2016).

There has been consensus that the previous psychiatric inpatient history of patients is a good predictor of readmission outcomes following medium secure care (Maden *et al*, 1999; Clarke *et al*, 2013; Jewell *et al*, 2017). Less is clear about other individual risk factors; including ethnicity, age on admission, criminal history, adverse childhood experiences and substance misuse with inconsistent findings from different papers (see Appendix C). Differences in the prevalence of these individual factors between cohorts across different studies may explain the variation in readmission outcomes (Sahota *et al*, 2010; Clarke *et al*, 2013), although further research is needed to provide insight into the individual risk factors of readmission using an up to date sample.

Most literature exploring readmission outcomes is outdated and may not be able to account for current medium secure provision in light of changes in legislation practice creating a different mental health landscape (see sections 1.1 to 1.6; Clarke *et al*, 2013). Only two recent studies have explored readmission outcomes of medium security in the last decade (Ribeiro, Tully & Fotiadou 2015; Tully *et al*, 2019). Both relied on a female cohort and estimated that around 26.0% of patients were readmitted to hospital. Females have previously shown greater readmission rates relative to males (Sahota *et al*, 2010) and have different mental health and offending profiles (Bartlett & Hassell, 2001), and therefore these recent estimates cannot be generalised across the entire medium secure population that is disproportionately male (Maden *et al*, 2006a). Further research is needed to determine whether patients discharged from medium secure hospitals maintain successful mental health outcomes and to identify those at greatest risk of relapse and recall. This may help services

implement prudent measures; including risk management and outpatient support for those at highest risk of poor outcomes.

**Table 1.9** Literature that investigated readmission outcomes following medium secure care.

<i>Paper</i>	<i>Nature</i>	<i>Patient population</i>	<i>Diagnosis/Legal Category</i>	<i>Percentage readmission</i>	<i>Predictors of readmission</i>
Maden, Rutter, McClintock & Gunn, 1999	Longitudinal, retrospective Study based in one medium secure hospital.  Clinical records, Offender Index (OI), NHS Central Records, and prison records.	234 patients (209 followed up) discharged between 20 <sup>th</sup> October 1980 to 31 <sup>st</sup> October 1994.  Mean follow up period of 6.6 years.	Primary diagnosis: Schizophrenia (71.0%) Personality disorder (13.0%)	74.0% across entire follow up period to all hospitals.	Significant differences only (readmitted vs not readmitted.  Number of previous convictions.  Non-significant: See Appendix C.
Edward <i>et al</i> , 2002	See table 1.8	See table 1.8	See table 1.8	1.8% at two-year follow up (from community).  6.4% at two-year follow up (from community).	n/a
Davies <i>et al</i> , 2007	See table 1.8	See table 1.8	See table 1.8	69.2% across entire follow up period to all hospitals.  28.3% to medium security.  14.9% to high security	n/a

Clarke, Duggan, Hollin, Huband, McCarthy & Davies, 2013	Longitudinal, retrospective Study based in one medium secure hospital.  Clinical records and the Offender Index (OI).	595 patients (550 followed up and 490 had available readmission data) admitted between July 1983 to 30 <sup>th</sup> June 2003.  Mean follow up period of 9.5 years.	Category under MHA: Mental Illness (67.1%) Psychopathic disorder (27.3%)	<i>All sample</i> 22.0% at one year follow up to all hospitals. (31.6% if exclude those who spent no follow up time in community or had missing data). 69.2% across entire follow up period to all hospitals.  <i>Community discharge only</i> 26.0% to medium security.	Significant: <i>Readmission</i> Previous inpatient treatment and self-harm history.  <i>Length to readmission</i> Previous inpatient treatment and mental health classification.  Non-significant: See Appendix C.
Sahota <i>et al</i> , 2010	See table 1.8	See table 1.8	See table 1.8	56.1% females to medium or high security (87.5% to any hospital)	Significant differences only (readmitted vs not readmitted): Sex differences.

				38.2% males to medium or high security (65.6% to any hospital)	Non-significant: Length of stay, restriction orders and alcohol and drug use.
Baxter <i>et al</i> , 1999	See table 1.8	See table 1.8	See table 1.8	89.0% to hospital (73.0% multiple admissions).	n/a
Falla <i>et al</i> , 2000	See table 1.8	See table 1.8	See table 1.8	17.0% readmitted to hospital.	n/a
Maden <i>et al</i> , 2006a	See table 1.8	See table 1.8	See table 1.8	<i>Community discharge only (549 patients)</i> 28.2% readmitted to hospital.	n/a
Ribeiro <i>et al</i> , 2015	Longitudinal, retrospective study based in one medium secure hospital.	45 patients (all female) admitted between April 2008 and May 2012.	Primary diagnosis: Schizophrenia related disorder (80.0%) Personality Disorder (9.0%)	<i>All discharged (30 patients)</i> 26.7% readmitted to hospital.	n/a



	Clinical records.	Unknown follow up period.			
Tully, Cappai, Lally & Fotiadou, 2019	See table 1.8	See table 1.8	See table 1.8	<i>All discharged (46 patients)</i> 26.0% readmitted to hospital.	Significant association with readmission: n/a  Non-significant: Length of stay Conditions, restrictions and probation Alcohol and drug use

## *The challenges of measuring patient outcomes*

The retrospective nature of previous literature that examined long admission and discharge periods was associated with a high level of missing data and inaccuracy, as most studies relied on case-note analysis of healthcare records which were often incomplete. Loss of data at follow up ranged from no missing data to 14.0% for reconviction (Baxter *et al*, 1999; Maden *et al*, 2006a; Duggan *et al*, 2007), and from 9.2% to 16.6% for readmission (Baxter *et al*, 1999; Edwards *et al*, 2002; Maden *et al*, 2006a). These disparities likely reflected the changes in ethical procedures over time where legislation became more stringent with greater governance of research in the UK. Researchers easily collected data without the consent of patients until the Health and Social Care Act (2001) was implemented. Few studies aiming to gather data without patient consent have gained section 60 approval under this new legislation (Davies *et al*, 2007), and those that sought patient consent faced the significant challenge of patient attrition (Paris, 2003; Duggan *et al*, 2007). Despite more stringent measures, recent literature likely benefitted from the revolution of technology where electronic healthcare records have become available and have been considered to improve data collection through case note analysis, and reducing missing information (Ribeiro *et al*, 2015; Tully *et al*, 2019).

Reconviction data sourced from the Home Office via the Offender Index (OI) has caused difficulty managing missing data. The Offender Index has been considered a flawed tool where an estimated 9.0% of convictions were not reported (Buchanan, 1998). It was common for forensic patients to change their name and this was reported for a total of 16.6% patients discharged from forensic secure care (Völlm, Jamieson, Gorden & Taylor, 2002). The Offender Index requires patient names, or known aliases to provide accurate criminogenic information, and therefore this proves a challenge when exploring reconviction outcomes of forensic patients. Furthermore, disparities were reported when different sources of reconviction information were compared. Approximately 20.0% of convictions reported in patient case notes were not presented in the Offender Index, and 25.0% of convictions reported in the Offender Index were not reported in patient case notes (Edwards *et al*, 2002). Reoffending rates were also shown to increase from 30.0% to 73.0% when collected through healthcare records compared with Home Office criminal records (Baxter *et al*, 1999). Few studies relied on multiple sources of data to deal with inaccuracies and inconsistency (Edwards *et al*, 2002; Davies *et al*, 2007).

The Offender Index also created the challenge of providing the date of reconviction, as opposed to the date when the offence was committed. Court proceedings and convictions may have occurred years after the offence committed (Maden *et al*, 2006a), and therefore the Offender Index fails to provide a true representation of survival rates for reoffending following discharge. There has been further concern that offences prior to discharge may be invalidly labelled as reconvictions due to the delay in prosecution and sentencing. Multiple sources of criminogenic data had been cross referenced to prevent pseudo convictions by ensuring the offence occurred after discharge (Edwards *et al*, 2002; Maden *et al*, 2006a), although this was not common practice across all previous literature.

The broad problem of relying on conviction data as a proxy to measure re-offending behaviour is that many forensic patients are likely to be dealt with through mental health services, as opposed to the criminal justice system following discharge. Very few offences by people with serious mental ill health and active mental health service involvement reach conviction in the UK (Lewis, 1990; Home Office, 2018) and the growing use of diversion and liaison schemes has helped shift forensic patients to the forensic care pathway as early as possible in the criminal justice process (see section 1.5). Therefore, the collection of readmission data, most notable recalls to hospital, may be more appropriate to evaluate the success of medium secure care.

Only two reviews have explored a variety of medium secure hospitals in the UK to gain a national representation of forensic secure care (Maden *et al*, 2004, 2006a; Coid *et al*, 2007). Whereas, most studies have relied on cohorts from a single medium secure hospital; limiting the generalisability of research when interpreting outcomes. Different NHS regional providers have unique relational security approaches, service pressures, and aftercare resources that likely impact on the care and treatment provided to cause variations in patient outcomes. There are also discrepancies between previous studies with different sources of data, follow up periods (one to 9.5 years), sample sizes, patient characteristics, and measures of long-term outcomes. Therefore, valid comparisons are almost impossible preventing a general understanding of patient outcomes following medium secure care across the UK.

### ***1.12 Gaps in the literature***

### ***Outdated research***

The majority of literature that has investigated medium secure provision date back almost two decades. How the Mental Health Act (1983 as amended in 2007) and the Mental Health (Wales) Measure (2010); for Wales only, influenced medium secure care remains unknown, nor is there an understanding of how the changing landscape of forensic mental health services affected medium secure provision. The sparse investigation of recent service provision is insufficient to develop a valid interpretation about medium security across the UK (Ribeiro *et al*, 2015; Tully *et al*, 2019). Therefore, updated research is necessary to provide insight into modern secure provision to highlight what works well, and what could be improved to promote quality practice and successful patient outcomes.

### ***Limited longitudinal data to capture change***

Although many studies have covered extensive admission or follow up periods post-discharge, very few studies have captured changes in service provision over time. Only two studies have investigated changes in patient characteristics and outcomes from medium security over time (Gibbon *et al*, 2013; Earnshaw *et al*, 2019), and both demonstrate significant changes in these areas across different time periods (see table 1.2). This means that historical findings about medium secure care cannot be applied to understand provision today; as provision has likely changed. An understanding of changes in medium secure care over the last two decades would further help identify improvements, but also possible decline in provision that will inform future practice.

### ***Connecting all stages of the forensic care pathway***

To date, no literature has investigated all stages of the forensic care pathway, including factors that influence admission, the care pathway, recovery, discharge and long-term outcomes using one cohort. Long-term outcomes have been typically explored in isolation, with few studies focusing on predictors of reconviction and readmission as secondary objectives (Davies *et al*, 2007). Also, what actually takes place in medium secure care remains unclear; as most literature simply reported long-term outcomes with no indication of what happened during the admission period. Medium secure hospitals tend to share some common characteristics, with most, if not all, applying or working towards the

standards set out by the Royal College of Psychiatrists Quality Network for Medium Security (Royal College of Psychiatry, 2016), involving multidisciplinary teams and with basic agreement about levels of physical and procedural security, albeit with localised interpretations of these standards. However, the active ingredients of the care environment: what elements are necessary to produce effective outcomes, is not clear at all. The DUNDRUM-3 and 4 provide some scope to explore the outcomes of care and treatment on forensic patients and the recovery process (Kennedy *et al*, 2013). However, both DUNDRUM scales have seldom been used in the UK as routine outcome measures, nor has there been any investigation of how outcomes of care and treatment affect risk and recovery following discharge. Therefore, future research covering all aspects of the forensic care pathway and how they are integrated would be useful to inform future practice and help identify the active ingredients of effective care and treatment.

### **1.13 The purpose of the proposed research; where to fill the gaps.**

#### ***Context and background***

There is considerable scope to further explore medium secure provision to develop a more nuanced understanding of the impact of medium secure care over time, moving beyond simply reporting the various phases of the forensic care pathway in isolation (Centre for Mental Health, 2011). The challenge associated with previous literature investigating a single hospital can be resolved by exploring the various aspects of the forensic care pathway using a national cohort of discharged patients from medium security between 1997 and 1998 (Maden *et al*, 2004, 2006a). This may expand our understanding of reconviction by exploring predictive factors in greater depth on a national scale, but also provides a baseline of medium secure care and patient outcomes to enable valid comparisons. Research investigating the changes in service provision over the last two decades is essential, with a specific focus on changes in gatekeeping, care pathways, recovery and patient outcomes from medium security. This will develop a cohesive model that links policy context, patient characteristics, care pathways and patient outcomes, and may identify what works well in medium security to ensure successful patient outcomes, but also factors that lead to less desirable pathways (in light of policy reform) and outcomes. The implications will inform various stakeholders, including clinicians, commissioners, the Ministry of Justice, and will be in the public interest.

The following chapters provide a cross sectional re-analysis of medium secure care on an all-England and Wales scale to provide a baseline of service provision and patient outcomes, and a detailed longitudinal examination of how service provision and patient outcomes have evolved over the last two decades for a South Wales cohort.

### *Structure of the chapters*

#### **Chapter 2: What can we learn from history: patient characteristics and medium secure provision for a national cohort of discharged patients.**

Chapter two provides a descriptive analysis of the criminogenic, clinical and social characteristics of a national (England and Wales) cohort of discharged patients from medium security between April 1997 and March 1998, along with service provision; including pathways for patients, lengths of stay and restrictions. This provides a national baseline for later chapters to determine how medium security has changed over recent years. The chapter also explores how patient risk, service provision and reconviction were interrelated.

#### **Chapter 3: Changes in patient characteristics and medium secure provision over time.**

Chapter three explores the changes in service provision of medium secure care throughout the various phases of the forensic care pathway up to discharge. Changes in the clinical, criminogenic and social profile of discharged forensic patients from 1999 to 2017 are investigated, taking account of systemic changes in legislation. Shifts in service provision over time are also reviewed; including lengths of stay, the imposition of restriction orders, and selected pathways to and from medium security. Patient progress is identified through the use of the DUNDRUM-1 and 4 to capture changes throughout admission, and factors that predict this are explored. This helps to identify those at greatest risk of poor progress through medium security to inform services of those who may require more intensive care and support.

#### **Chapter 4: Factors that predict the discharge pathway from medium security: what influences clinical decision making?**

Factors that govern clinician decisions about the discharge pathway for forensic patients out of medium secure care have been sparsely explored. This chapter attempts to reveal what areas of patient progress influence this decision process by using the DUNDRUM-3 and 4 as ‘best practice frameworks’ as anchor points. Risk factors for unsuccessful discharge from medium security, whether they are poor patient progress or static patient risk factors, are explored.

## **Chapter 5: Readmission following medium secure care.**

Little is known about the success of medium secure hospitals to manage mental health difficulties and prevent risk behaviour or relapse over the last two decades. This chapter investigates whether there has been any significant change in readmission over time from 1999 to 2017; for readmission in general but also recalls to hospitals. Patient risk factors and service provision are explored to identify what predicts readmission to hospital.

## **Chapter 6: Discussion**

The discussion summarises the findings of all chapters to show how medium secure provision and patient outcomes have changed over time through comparisons with the national cohort that provides a baseline (Chapter two) and with previous literature outlined in this chapter. The discussion explores the different elements of the forensic care pathway to help build a holistic view of medium secure hospitals and to identify predictors of poor progress and outcomes. The strengths and limitations of the methodology are discussed, along with the implications of the findings and recommendations for future research.

## **CHAPTER 2**

### **What can we learn from history: patient characteristics and medium secure provision for a national cohort of discharged patients**

#### **2.0 Abstract**

##### **Objectives**

This chapter further develops understanding of medium secure care on a national (England and Wales) scale and is based on a new analysis of existing data from a cohort discharged between 1997/98. This historical data provides a foundation for examining later trends and for conceptualising the impact of changes in legislation and service provision. The influence of patient characteristics and monitoring on reconviction were also explored.

##### **Method**

A retrospective case note analysis was conducted on a national cohort of 958 patients who were discharged from 35 medium secure hospitals across England and Wales between 01 April 1997 and 31 March 1998. Criminogenic, clinical and social characteristics were compared to determine significant risk factors for reconviction. The association between discharge pathways and restriction orders with reconviction were investigated.

##### **Results**

Criminogenic factors showed the strongest prediction of reconviction relative to clinical and social characteristics. Criminogenic factors showed no significant association with the discharge pathway for patients or allocation of restriction orders. Discharge pathways and restriction orders were significantly associated with reconviction, although the impact of the latter was only significant for patients estimated to be at high risk of violent/sexual reconviction.

##### **Conclusion & Implications**

For medium secure patients, criminogenic factors were effective in predicting reconviction without the need to consider other factors. Despite being strong predictors for reconviction, criminogenic factors played no role in determining the discharge pathway for patients, nor the allocation of restriction orders. The impact of discharge pathways and restriction orders



raises questions about the humanitarian, clinical and cost effectiveness of medium secure provision twenty years ago.

## **2.1 Introduction**

Medium secure hospitals were established as an intermediate service to help forensic patients step down from conditions of high security, to admit patients in crisis from general psychiatric services and to help divert forensic patients away from the criminal justice system (Department of Health and Social Services, 1974; Home Office & DHSS, 1975; Department of Health, 1992). Despite initial slow development of medium secure hospitals, swift expansion occurred throughout the 1990s. A total of 29 NHS and seven private hospitals were built by 1999 that accounted for 1663 beds (Grounds *et al*, 2004). Medium secure hospitals separate from other levels of forensic security based on vague parameters; including accommodating patients who pose an immediate risk (Ruetherford & Duggan, 2007) and implementing specific procedural, physical and relational security measures (e.g. height of fence perimeter and staff to patient ratio; Kennedy, 2002). Those who recommended the development of such services highlighted the need for regular evaluation and research governance to ensure they meet their purpose (Home Office & DHSS, 1975). Medium security was mostly examined throughout the 1980s and 1990s, with less literature available over the last two decades. Most literature focused only on one aspect of service provision; whether that was to understand the characteristics of patients admitted to medium security, or to evaluate the success of public protection by reducing risk of reconviction. An integrated understanding of medium security is unavailable to link risk factors with pathways through medium security and long-term outcomes.

The characteristics of forensic patients admitted to medium security are of interest for several reasons; to help differentiate the patient characteristics associated with different levels of forensic secure care (high, medium, low secure services), to develop an understanding of gatekeeping decision making and to identify the complexity of needs amongst those admitted to medium security. Forensic patients admitted to medium security are often reported to have complex histories where they experienced abuse and trauma in their early years along with regular contact with the criminal justice system and mental health services throughout their lives (Higgo & Shetty, 1991; McKenna, 1996; Edwards *et al*, 2002; Coid *et al*, 2007; Shah *et al*, 2011; Gibbon *et al*, 2013). The reason for admission to secure care is usually linked with a

violent index offence, and forensic patients typically have a diagnosis of a psychotic related disorder with comorbid substance misuse problems. There has been variation in the prevalence of each of these factors amongst different cohorts of medium secure forensic patients. The development of the forensic care pathway was ad-hoc and not designed around patient needs (Coid *et al*, 2001), and therefore it was not clear what the best fit was between patient and level of security across the 1980s and early 2000s. This likely enabled regional differences to emerge with unique policies, resources and risk thresholds between NHS providers, along with distinct base rates between geographical locations (Coid *et al*, 2001; Bellis *et al*, 2016; Office for National Statistics, 2020); as no national framework was available until 2007 to ensure consistency in the patient group admitted to medium secure hospital (Department of Health, 2007). Therefore, an accurate description of the criminogenic, clinical and social profile of patients admitted to medium security across the UK has been difficult to develop based on single-service reviews.

Associations between patient characteristics and reconviction have been examined to help identify those at greatest risk of public harm. These forensic patients were found to be typically male, young at admission, had a diagnosis under the mental health classification of psychopathic disorder, had many previous convictions and had substance misuse problems (Baxter *et al*, 1999; Friendship *et al*, 1999; Edwards *et al*, 2002; Davies *et al*, 2007; Sahota *et al*, 2010; Gibbon *et al*, 2013). In other words, had high levels of anti-sociality and criminogenic need. There is variation in the literature concerning the reconviction rates of forensic patients discharged from medium security. Regional differences between the medium secure hospitals and discrepancy in the length of time that patients were followed up likely explained much of this variation. For example, the reconviction rate increased from 10.0% to 47.8% as follow up periods are extended from two to an average of nine years (Friendship *et al*, 1999; Edwards *et al*, 2002; Davies *et al*, 2007; Coid *et al*, 2007). Disparities between medium secure hospitals and variable measurement have caused difficulty integrating and generalising any findings to understand risk of reconviction nationally in the UK.

A national review of medium secure provision was commissioned by the Department of Health and this helped provide a more comprehensive understanding of reconviction on a national scale (Maden *et al*, 2004). The review led to two publications; the first identified a general reconviction rate of 15.0% in two years following discharge from medium security.

This review identified offending history of patients as the strongest predictor of reconviction, followed by a history of exposure to sexual abuse and substance misuse problems (Maden *et al*, 2004). Clinical factors, including diagnosis and previous psychiatric history showed no significant association with reconviction, this observation conflicts with other previous findings (Baxter *et al*, 1999; Davies *et al*, 2007). The second publication confirmed that males were at greatest risk of reconviction (Maden *et al*, 2006a), although sex differences were less apparent when criminogenic history and clinical features were considered (Davies *et al*, 2007; Sahota *et al*, 2010). Consistent with previous literature, the national review claimed that the strongest independent predictors of reconviction were age at admission, history of self-harm, history of drug problems and number of previous convictions (Baxter *et al*, 1999; Friendship *et al* 1999; Maden *et al*, 2006a; Sahota *et al*, 2010); whereas there was debate of whether diagnosis and sex differences were predictors. The national review helped provide an accurate depiction regarding the impact of medium secure provision on public protection across the UK (Maden *et al*, 2004; 2006a). The review gave insight into those at greatest risk of reconviction, although this was only explored up to two years following discharge. An additional (Maden *et al*, 2006b) paper extended the follow up period up to six years for this national cohort but did not explore the stability or otherwise of risk factors for predicting long term reconviction. Therefore, it would be useful here to investigate whether risk factors remain robust for predicting reconviction in this patient group over longer follow up periods.

The gap in the literature regarding what takes place in medium secure care has prevented an understanding of risk factors that guide clinical decision-making in forensic practice and how service provision may have affected those at risk of reconviction (Maden *et al*, 2004; 2006a; Coid *et al*, 2007). To date, only restriction orders and length of stay have been explored as examples of how service provision predicts reconviction. Forensic patients with shorter lengths of stay have shown higher rates of reconviction (Friendship *et al*, 1999; Sahota *et al*, 2010) and the integration between patient risk factors and length of stay has been explored robustly (Shah *et al*, 2011). These findings have been controversial but indicate modest success with patients subject to restriction orders having lower reconviction outcomes relative to those without. As restriction orders are designed exclusively for public protection, it is reasonable to suppose that restriction orders should be applied to those at highest risk of causing the most public harm. There is currently no evidence regarding

whether restriction orders interact with risk factors for reconviction (Friendship *et al*, 1999; Baxter *et al*, 1999; Coid *et al*, 2007; Sahota *et al*, 2010).

Mental Health Act (MHA, 1983) restriction orders under Section 41 allow for a number of conditions that vary for each patient following discharge and are applied at the discretion of the courts. Patients need to abide by these conditions in order to remain discharged from secure services. Patients are likely to be recalled to hospital if a condition is breached (Street, 1998). Although no longer detained under the MHA, restriction orders prolong the patients' partial loss of liberty by making continuing discharge conditional because the patient can be subject to recall to hospital at the direction of then, the Home Secretary and now the Secretary of State for Justice. The legal provision is designed ostensibly to enhance public protection. Restriction orders require the resources to provide routine supervision and monitoring. Administering and enforcing restriction orders prolong the economic and humanitarian cost of forensic patients' care and treatment. Sparse evidence is available to understand how restriction orders have been used or how they work for ensuring public protection. Resolving the gap in our knowledge is critical, especially when considering that restriction orders are being used with increasing frequency for forensic patients in the UK; rising from 3118 in 2003 to 4821 by 2018 (Ministry of Justice, 2019).

Unlike restriction orders, the impact of different discharge pathways on reconviction has not yet been explored. Each year, the percentage of forensic patients remitted to prison from medium security has risen from 12.8% in 1998 to 20.0% in 2011 (Doyle *et al*, 2014). Those remitted to prison have been described as being typically complex, high risk patients with comorbid personality and mental health difficulties and who show poor engagement with care and treatment (Doyle *et al*, 2014). The high expense of admission to medium security has been justified by the success of reducing risk of reconviction (Fazel *et al*, 2016). How remission to prison impacts on the treatment effects (if any) of medium security on patient recovery and outcomes, and how this discharge pathway impacts on reconviction are unknown. This prevents an evaluation of the cost and public protection implications of remission to prison.

The purpose of this chapter is to determine what medium secure hospitals looked like nationally between April 1997 and March 1998 to provide a baseline to explore changes over time in subsequent chapters. This chapter outlines a study that developed a holistic

understanding of medium security by integrating patient characteristics, service provision and reconviction. This may inform prudent forensic practice by highlighting which patient groups benefit from specific discharge pathways, and continued monitoring via restriction orders following discharge. The specific objectives of this study were to identify:

- (1) the typical profile of forensic patients admitted to medium security across the UK;
- (2) the greatest risk factors that predicted reconviction across six years following discharge to understand those who may require greater support and more stringent risk management to prevent reconviction; and
- (3) how patient risk factors related to decisions about service provision; the discharge pathway for forensic patients and the imposition of restriction orders, and how this impacted on reconviction.

## **2.2 Method**

### **Sample**

Patients were discharged from 35 NHS and private medium secure hospitals across England and Wales between 01 April 1997 and 31 March 1998 (Maden *et al*, 2004). Data was collected from 958 patients (836 male) by the original authors. The average age on admission was 25.2 years (SD=8.36) and most patients were white British (63.4%), with 28.3% from Black, Asian and Minority Ethnicities (BAME).

Most patients were admitted directly from the criminal justice system under interim hospital orders or as prison transfers (41.6%), followed by those admitted under civil sections (32.2%) and few were admitted under hospital orders from other secure services (20.4%). A total of 117 discharged patients had no index offence and 154 had no criminal history prior to the index offence. The majority of discharged patients had a psychotic related primary diagnosis (63.8%). Other primary diagnoses included personality disorder (9.8%), mood disorder (10.7%), a drug related diagnosis (3.7%) and intellectual disability (1.4%). Approximately 1.6% of discharged patients had no diagnosis and 8.8% were unknown.

### **Ethics**

The original author, Professor Tony Maden, provided consent for the data containing the national cohort of discharged patients to be re-analysed to help contextualise the findings of this PhD thesis. The original study was granted ethical approval by the London Multi-

Centre Research Ethics Committee and did not require patient consent due to difficulties locating individuals following discharge (Maden *et al*, 2004). Ethical approval was granted under the Cardiff Metropolitan University School of Sport and Health Sciences research ethics framework (Project Reference Number: PGR-1365) to carry out the re-analysis of the raw, anonymised data from the original and follow up study (Maden *et al* 2004; 2006b).

## **Design**

The study was a retrospective, secondary analysis of case note data based on an existing database from previous literature (Maden *et al*, 2004). One criminogenic, four clinical and six social factors were coded as candidate predictor variables of two outcomes; 1) any reconviction and 2) violent or sexual reconviction across three follow up periods (0-2 years, 0-4 years, and 0-6 years). Reconviction was coded as a binary measure (yes/no). Any reconviction comprised of all offence types. Violent or sexual reconvictions included assault, malicious wounding, robbery and assault with intent to rob, common assault, murder, gross indecency with children, indecent assault on female, manslaughter and rape.

The Offender Group Reconviction Scale 2 (OGRS-2; Copas & Marshall, 1998; Taylor, 1999) represented the criminogenic history of the forensic patient and provided a score that estimates the probability of reconviction (see table 2.1 for outline of criminogenic factors incorporated into the OGRS-2). Clinical factors of patients included history of self-harm, a diagnosis of psychosis, a diagnosis of personality disorder and the total number of previous psychiatric admissions; the former three variables were coded as binary measures (yes/no). The social history of forensic patients was also collected and included previous alcohol related problems, drug related problems, experiences of physical and sexual child abuse and employment that were all coded as binary variables (yes/no). Educational history was coded as an ordinal measure from no education achievement, O-levels and equivalent; CSE or GCSE, A-levels, to an undergraduate degree or higher. Criminogenic, clinical and social factors were compared and combined to identify the key predictive factors of reconviction.

Discharge pathways and legal status were investigated to determine their association with reconviction and with patient risk factors of reconviction. Discharge pathways were coded into three categories based on whether patients were directly discharged to the

community or open conditions, remained in secure services or were remitted to prison. The legal status of discharged patients was coded into a binary measure (yes/no) depending on whether they were subject to restriction orders following discharge (section 41 of the MHA, 1983).

## Materials

### *Offender Group Reconviction Scale 2*

The Offender Group Reconviction Scale 2 (Taylor, 1999) is a modified version of the original OGRS based on a probation sample (Copas & Marshall, 1998). It includes four additional criminogenic variables, along with the original six criminogenic and demographic variables from the OGRS (see table 2.1 for description of each OGRS-2 variable). The authors combined the variables using a statistical algorithm to calculate a total score that represents the probability of reconviction within two years following release. The OGRS-2 is a valid prediction tool for both any and violent reoffending following treatment in secure psychiatric care (Snowden *et al*, 2007). The OGRS-2 was unable to calculate scores for individuals with no or missing criminogenic history and therefore could not be applied to 247 discharged patients from this cohort.

**Table 2.1** OGRS-2 variables to calculate probability score of reconviction score.

<i>Variable</i>
1. Offenders age at time of current sentence
2. Gender
3. Number of youth custodial sentences
4. Current offence category (based upon standard list offences and broken down into 27 detailed offence categories)
5. Age at current conviction (split into ten age bands)
6. Age at first conviction
7. History of burglary*
8. History of breach*
9. Previous violent convictions*
10. Previous sexual offence conviction*

\* additional criminogenic items added to OGRS-2.

## Procedure

Clinicians from the 35 medium secure hospitals across England and Wales provided data about the clinical and social history of each discharged patient. This information was sourced from healthcare records. Criminogenic history and reconviction data within two

years following discharge were obtained from the Offenders Index managed by the Home Office. Reconviction data that extended over a follow up period of six years was obtained from the Offenders Index during a subsequent study using the original cohort of discharged patients (Maden *et al*, 2006b). Incomplete and missing offence data from the Offenders Index was, as far as possible, obtained from health care records held by the medium secure hospitals. Table 2.2 outlines the total missing data for each variable. Calculations of OGRS-2 probability scores and collection of reconviction data were carried out by different researchers during the preceding studies (Maden *et al*, 2004; 2006b).

**Table 2.2** Number of forensic patients with missing data for each variable.

Variable	Total missing (%)
<i>Criminogenic</i>	
Index offence	105 (11.0%)
OGRS-2	247 (25.8%)
<i>Clinical</i>	
Primary diagnosis	83 (8.7%)
Self-harm history	112 (11.7%)
Number of previous psychiatric admissions	118 (12.3%)
<i>Social</i>	
Alcohol related problems	108 (11.3%)
Drug related problems	115 (12.0%)
Physical child abuse	114 (11.9%)
Sexual child abuse	114 (11.9%)
Employment	118 (12.3%)
Education	140 (14.6%)
<i>Service Provision &amp; Patient Outcomes</i>	
Length of stay	81 (8.4%)
Legal status	54 (5.6%)
Referral source	85 (8.9%)
Discharge pathway	87 (9.1%)
Reconviction	47 (4.9%)

## Data Analysis

Analysis of the data included in this chapter was completed using SPSS Version 25.0 and R Version 3.6.1. The Holm Bonferroni procedure corrected for multiple statistical tests (Holm, 1979). Frequency data and descriptive statistics are presented to enable comparisons



with chapter three to show how the profile of patients and service provision in medium security had changed over the last two decades.

Binary logistic regression was used to identify predictive risk factors of reconviction with two categorical outcomes; reconviction or no reconviction (Field, 2013). Criminogenic, clinical and social variables were inputted as three separate models. A variety of categorical and continuous independent variables were inputted into each model; the Box-Tidwell procedure showed a linear relationship between the continuous variables with reconviction. The Omnibus tests of model coefficients was used to deduce whether each model significantly predicted reconviction. Each predictor variable was examined using Exp(B) to provide an odds ratio that showed changes in odds of reconviction with an increase in one unit of the predictor variable; values above 1.00 suggest an increase in odds of reconviction, whereas values below 1.00 suggest a decrease in odds.

Receiver Operating Characteristic (ROC) analysis was used to quantify the accuracy of criminogenic, clinical and social variables to discriminate between two patient states; those who were reconvicted and those who were not reconvicted (Rice & Harris, 2005). The Area Under the Curve (AUC) ranged between zero and one; zero representing the predictor variables that incorrectly classified all patients and one representing perfect discriminative ability. An AUC at 0.50 indicated that the predictor variables were no better than chance for discriminating between reconvicted and non-reconvicted patients (Mossman, 1994). AUC values that exceed 0.70 are usually accepted as strong predictors of reconviction (Rice & Harris, 2005).

Inferential statistics (chi-square analysis and Analysis of Variance; ANOVA) are reported that compared the predicted risk of reconviction between patients discharged across different pathways and between restricted and non-restricted patients, along with identifying the association between reconviction with the different discharge pathways, and with the imposition of restriction orders.

Multiple imputation was used to account for the missing data when completing the binary logistic regression to identify the predictive patient characteristics of reconviction, and when conducting Chi-square and ANOVA to identify the impact of the discharge pathways on reconviction. Missing data were imputed on SPSS version 25 based on multiple

imputation using chained equations (MICE) from R software. Data was imputed using a regression model with five imputations that included all candidate risk factors (see table 2.3); excluding criminogenic variables as missing data was not random (Sterne *et al*, 2009). Therefore, only 711 patients had available data for analysis in this study. The imputed results of the Chi-square and ANOVA tests were pooled using R software to obtain a summary estimate using the ‘miceadds’ package.

Multiple imputation was not used when identifying the impact of restriction orders on reconviction using chi-square analyses, as all 711 patients had available data. Instead, the 711 discharged patients included in these analyses were compared with the 247 who had non-random missing criminogenic data based on age on admission ( $t = -0.89, p > 0.373$ ), and ethnicity, diagnosis and sex ( $X^2 = 2.20, p > 0.138$ ). They showed no significant difference across each of these variables, although they significantly differed based on the referral source and legal status ( $X^2 = 144.99, p < 0.001$ ). This was expected given that at least 154 of those excluded had no criminogenic histories, and therefore could only be admitted under civil sections.

## 2.3 Results

At follow up, 161 patients (16.8%) were reconvicted within two years following discharge. This rose to 230 patients (24.0%) after four years, and to 270 patients (28.2%) following six years post-discharge. Of those who were reconvicted, 72 patients committed violent or sexual offences in the first two years, which rose to 137 after four years and 172 after six years.

### *Risk factors that predict any and violent/sexual reconvictions.*

Table 2.3 outlines the frequency of patients with specific criminogenic, clinical and social characteristics, along with averages for scores on the OGRS-2 and mean number of previous psychiatric admissions.

Binary logistic regression was used to compare clinical, social and criminogenic predictive factors of any reconviction within six years following discharge from medium security. The OGRS-2 was the only criminogenic variable inputted as a model, as it included all criminal factors and minimised alpha inflation. The OGRS-2 alone significantly predicted

reconviction ( $X^2=107.46$ ,  $df=1$ ,  $p<0.001$ ). Higher scores on the OGRS-2 were significantly associated with greater risk of reconviction (see table 2.3).

The clinical model (all clinical variables in table 2.3) was a non-significant predictor of reconviction ( $X^2=7.97$ ,  $df=4$ ,  $p>0.050$ ). Each clinical factor showed no significant association with reconviction, although a diagnosis of a psychotic related disorder and a greater inpatient history were close to significance as protective factors of reconviction.

The social model included all six social factors presented in table 2.3 and was a significant predictor of reconviction ( $X^2=73.50$ ,  $df=6$ ,  $p<0.001$ ). A history of drug related problems was a significant risk for reconviction. All other social factors were non-significantly associated with reconviction, although greater educational history only became a non-significant protective factor following alpha adjustment and exposure to physical childhood abuse as a risk factor was close to significance.

**Table 2.3** Patient characteristics and their association with any reconviction within six years.

Variable	Number of patients (%)	Hazard ratio (95% CI)	P-Value
<i>Criminogenic</i>			
Age at first conviction: mean (SD)	21.34 (9.05)		
Total previous convictions: mean (SD)	6.11 (7.84)		
Index offence			
Violent or sexual	511 (53.1%)		
Non-violent/sexual	235 (24.5%)		
None	117 (12.2%)		
OGRS-2: mean (SD)	39.11 (26.40)	1.03 (1.03-1.04)	0.001**
OGRS-2 risk levels			
Some (0-10%)	338 (35.3%)		
Moderate (11-16%)	133 (13.9%)		
Raised (17-25%)	86 (9.0%)		
High (>25%)	154 (16.1%)		
<i>Clinical</i>			
Psychotic related disorder	691 (72.1%)	0.68 (0.46-1.01)	0.057
Personality disorder	94 (9.8%)	0.75 (0.44-1.30)	0.289
Self-harm history	353 (36.8%)	1.01 (0.75-1.37)	0.943
Number of previous psychiatric admissions: mean (SD)	3.67 (5.08)	0.97 (0.93-1.00)	0.063
<i>Social</i>			

History of Alcohol related problems	351 (36.6%)	1.23 (0.85-1.79)	0.272
History of Drug related problems	432 (45.1%)	2.75 (1.93-3.92)	0.001**
Victim of physical child abuse	168 (17.5%)	1.41 (0.94-2.13)	0.095
Victim of sexual child abuse	120 (12.5%)	0.89 (0.55-1.45)	0.645
Previous employment		1.16 (0.85-1.60)	0.346
Yes	455 (47.5%)		
No	385 (40.2%)		
Education		0.70 (0.53-0.91)	0.008*
No educational achievement	484 (50.5%)		
GCSE/O-levels/CSE	245 (25.5%)		
A-levels	48 (5.0%)		
Degree or higher	28 (2.9%)		

\* p<.05; \*\* significant following alpha adjustment

Significant and almost significant variables from table 2.3 were combined into a single model to determine whether prediction of reconviction was improved when criminogenic (OGRS-2), clinical (diagnosis of psychotic related disorder and number of previous admissions), and social (history of drug related problems, physical child abuse, and education) were considered collectively. The combined model was a significant predictor of any reconviction in six years following discharge ( $X^2=150.38$ ,  $df=6$ ,  $p<0.001$ ).

ROC curves were used to determine how well all four models (the criminogenic, clinical, social and combined models) predicted reconviction for any and violent or sexual offences over time.

**Table 2.4.** Discriminative validity of the criminogenic, social, clinical and combined model using Area Under the Curve (AUC) values.

Model	Any reconviction				Violent or sexual reconvictions			
	AUC	Standard Error	P-value	CI (95%)	AUC	Standard Error	P-value	CI (95%)
Clinical model								
0-2 years	0.592	0.029	0.002**	0.536-0.649	0.533	0.041	0.432	0.452-0.613
0-4 years	0.594	0.026	0.001**	0.543-0.645	0.552	0.031	0.103	0.490-0.614
0-6 years	0.588	0.025	0.001**	0.540-0.636	0.539	0.029	0.193	0.481-0.596
Social model								
0-2 years	0.681	0.026	0.001**	0.631-0.731	0.657	0.035	0.001**	0.589-0.725
0-4 years	0.689	0.024	0.001**	0.642-0.735	0.659	0.029	0.001**	0.603-0.715
0-6 years	0.695	0.023	0.001**	0.650-0.739	0.655	0.026	0.001**	0.603-0.707
Criminogenic model								
0-2 years	0.778	0.024	0.001**	0.732-0.825	0.718	0.034	0.001**	0.652-0.784
0-4 years	0.798	0.021	0.001**	0.757-0.839	0.751	0.025	0.001**	0.701-0.800
0-6 years	0.789	0.020	0.001**	0.749-0.829	0.748	0.024	0.001**	0.700-0.796
Combined model								
0-2 years	0.796	0.023	0.001**	0.752-0.841	0.734	0.034	0.001**	0.668-0.800
0-4 years	0.811	0.020	0.001**	0.772-0.851	0.756	0.026	0.001**	0.706-0.806
0-6 years	0.805	0.019	0.001**	0.767-0.843	0.753	0.024	0.001**	0.706-0.800

\* p&lt;.05; \*\* significant following alpha adjustment.

The OGRS-2 was the strongest predictor of reconviction for any offence type and for specific violent and sexual offences relative to social and clinical factors across all follow up periods (see table 2.4). The addition of clinical and social risk factors shown to be significantly or almost significantly associated with reconviction did not improve the predictive power of the OGRS-2 for all offence types across all follow up periods.

### *Service provision in medium secure hospital*

Table 2.5 shows the movement of forensic patients across the forensic care pathway between April 1997 and March 1998. Most patients were referred from prison and discharged to the community or open conditions.

**Table 2.5.** Service provision in medium secure care between April 1997 and March 1998.

Variable	Number of patients (percentage)
Length of stay: mean (SD)	423.87 (495.27)
Restriction order	420 (43.8%)
Referral source	
Community/open conditions	264 (27.6%)
General psychiatric unit/locked	71 (7.4%)
Medium security	78 (8.2%)
High security	48 (5.1%)
Prison	412 (43%)
Discharge pathway	
Community/open conditions	560 (58.5%)
Locked/general psychiatric unit	75 (7.8%)
Medium security	80 (8.4%)
High security	42 (4.4%)
Prison	114 (11.9%)

### *The link between service provision, patient characteristics and risk of reconviction.*

#### *Discharge pathway*

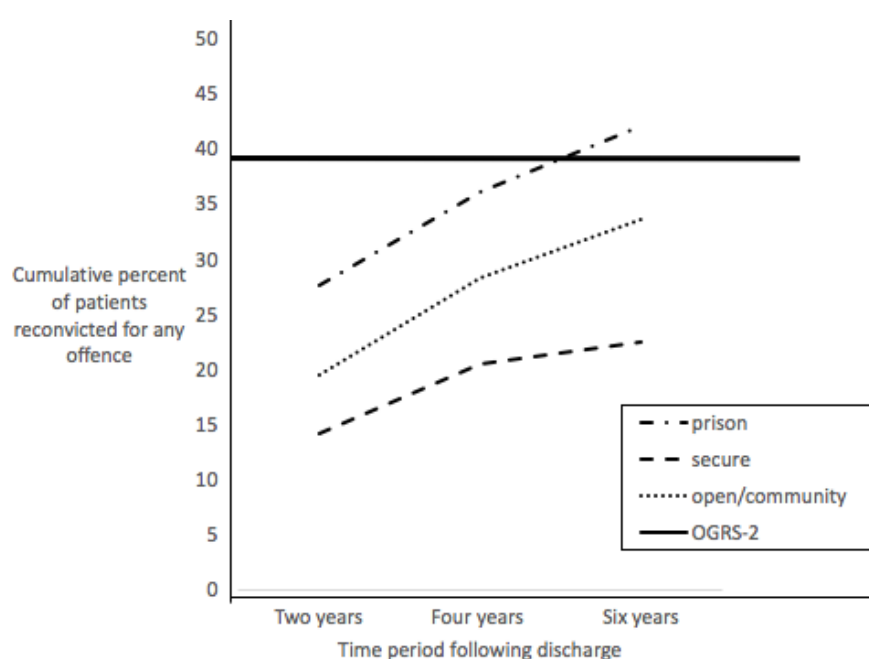
One-way Analysis of Variance (ANOVA) was used to determine whether OGRS-2 scores varied between patients discharged across different pathways; highlighting whether risk factors for reconviction informed clinical judgement about the discharge pathways for forensic patients. OGRS-2 scores were compared between those who successfully stepped down to open or community conditions, those who remained in secure services, and those remitted to prison; as shown in table 2.6. Scores were indistinguishable between the three

discharge pathways ( $F(2, 2829.95) = 0.16, p > 0.050$ ). This suggests criminogenic risk (as estimated by the OGRS-2 model) did not influence decisions about the discharge pathway for patients.

**Table 2.6.** Mean OGRS-2 probability scores for reconviction across each discharge pathway.

Discharge Destination	Mean
Open supported living or community	38.42
Secure services	40.14
Prison	40.36
Total	39.11

Three 2x3 chi-square analyses were used to compare the percentage of patients reconvicted between the three discharge pathways across two, four and six-year follow up periods.



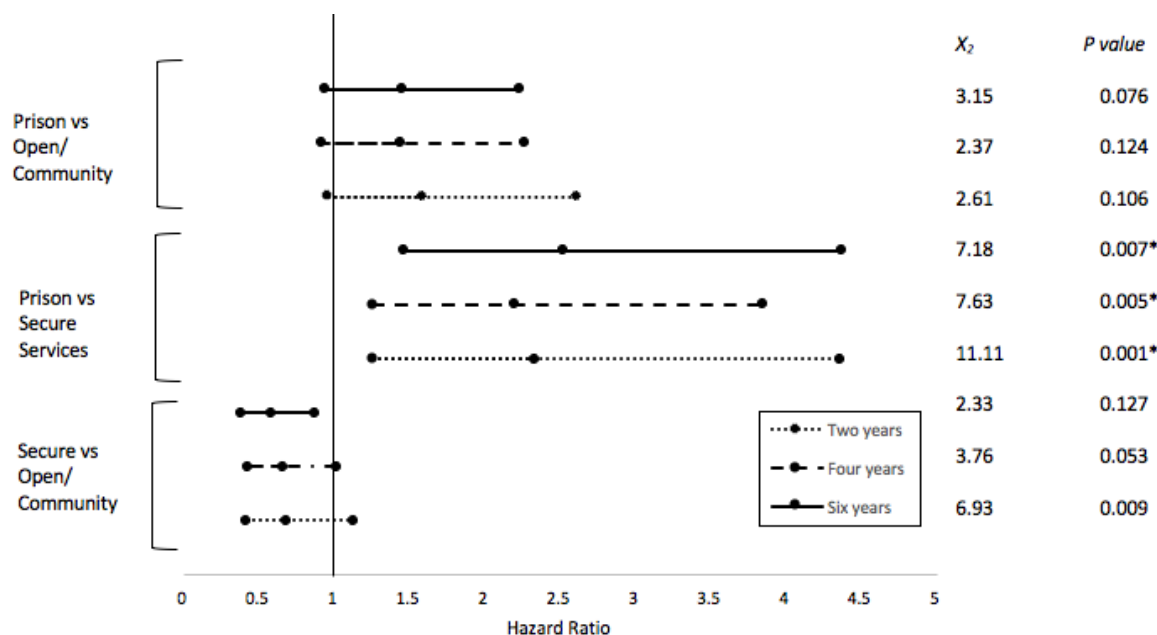
**Figure 2.1** Cumulative percentage of patients reconvicted for any offence for different discharge pathways two to six years post discharge.

Figure 2.1 shows that the cumulative percent of patients reconvicted increased over time for all discharge pathways from two to six years. Patients remitted to prison showed the highest percentage of reconvictions across all follow up periods where they exceeded their actuarial predicted risk (according to OGRS-2) by the sixth year following discharge. The second highest percentage of reconvictions was for those who successfully stepped down to

the community or open conditions. Those who remained in secure services showed the lowest percentage of reconvictions and were substantially below their actuarially predicted levels across all follow up periods. The association between the discharge pathway for forensic patients and the percentage reconvicted was significant after a follow up period of two-years ( $X^2 = 7.06, p < 0.050$ ), four-years ( $X^2 = 7.65, p < .0250$ ) and six-years ( $X^2 = 11.56, p < .0160$ ).

An additional 2x2 chi-square analysis showed that remand/convicted status of patients remitted to prison was not associated with subsequent reconvictions ( $X^2 = 3.75, p > 0.050$ ). This observation rules out the likelihood of pseudo-reconviction (delayed convictions for offences committed before psychiatric admission) driving the observed association between discharge pathway and reconvictions. Higher rates of pseudo-reconvictions should be expected for the remand-status patients (who were awaiting conviction and sentencing) if this were the case.

Further post-hoc 2x2 chi-square analyses were administered to identify the association between the percentage of patients reconvicted between each discharge pathway.



**Figure 2.2** Risk of reconviction across two to six years between each discharge pathway (ratio > 1 shows increased percent of patients reconvicted with first discharge pathway as reference category); \* significant association after alpha adjustment.

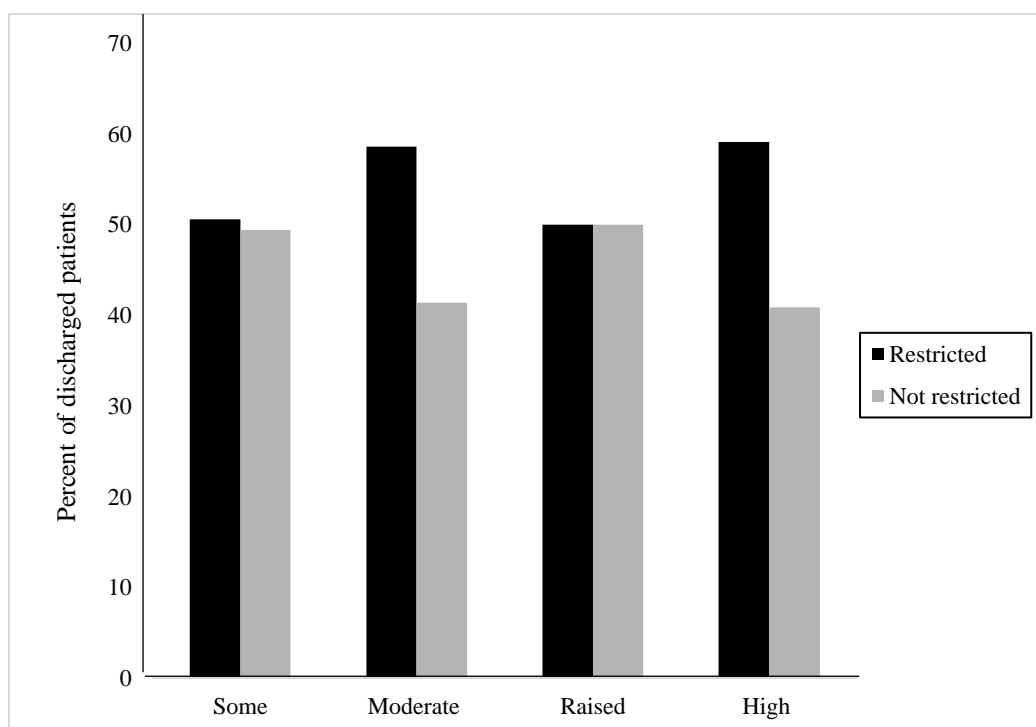
Figure 2.2 shows that those remitted to prison were at significantly raised risk of reconviction when compared with those transferred to further secure services across all follow up periods, but not when compared with patients who stepped down to the community



or open conditions. There were no significant associations between discharge location and reconviction when comparing forensic secure services with community or open conditions after alpha adjustment.

#### *Legal status (restriction order)*

Discharged patients were separated into four groups based on their OGRS-2 risk categories for violent or sexual reconvictions; low, moderate, raised and high risk. A 2x4 chi-square analysis was conducted to determine whether restriction orders were associated with actuarially estimated risk for violent or sexual reconviction within two years. This was only explored for violent or sexual reconvictions, as the four OGRS-2 risk categories were originally designed and validated to specifically predict violent or sexual reconvictions (Taylor, 1999).

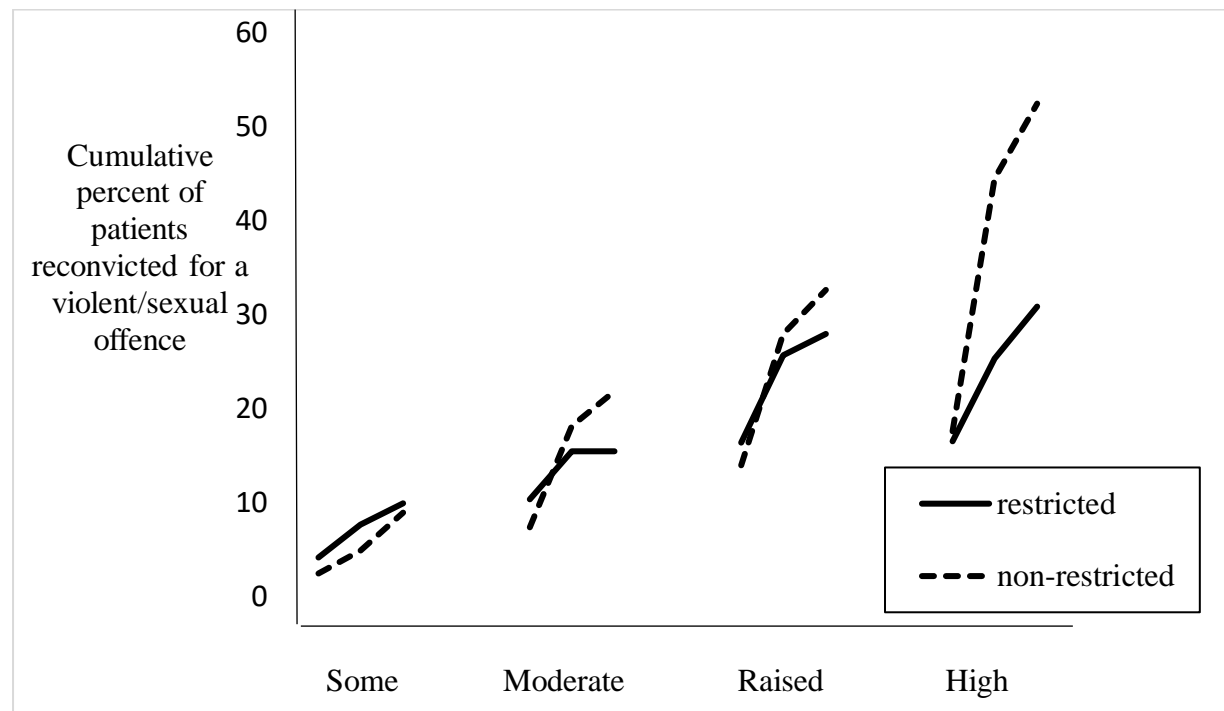


**Figure 2.3** Percent of discharged patients restricted or not restricted in each risk category for violent or sexual reconviction.

Figure 2.3 shows similar percentages of discharged patients under restriction orders across all four risk categories of violent or sexual reconvicting. No significant association

was found between the enforcement of restriction orders and the risk category of discharged patients according to OGRS-2 probability scores ( $X_2 = 4.89$ ,  $p > 0.050$ ).

A series of 2x2 chi-square analyses were administered to identify the association between the percentage of patients reconvicted for violent or sexual offences and restriction orders for each OGRS-2 risk category.



**Figure 2.4** Cumulative percent of patients reconvicted in each risk category based on whether a restriction order was applied (two to six-year follow up period).

Figure 2.4 shows that the cumulative percent of patients reconvicted gradually increased over time for all risk categories. Moderate, raised and high-risk patients showed a reduction in violent or sexual reconvicting over time if they were subject to a restriction order. Although, the association between restriction orders and the percentage of patients reconvicted for violent or sexual offences was only found to be significant for high-risk patients at four years ( $X_2 = 6.18$ ,  $p < 0.005$ ) and six years ( $X_2 = 7.27$ ,  $p < 0.004$ ) following discharge.

## 2.4 Discussion

The purpose of this preliminary analysis was to depict medium secure care on a national scale, and to explore the risk factors for reconviction and how this was intertwined with service provision; the discharge pathways for patients and imposition of restriction orders.

### *Medium secure care as a baseline*

The findings help us understand medium secure provision across England and Wales between April 1997 and March 1998. A criminogenic history was prevalent amongst the national cohort of forensic patients where at-least half engaged in violent or sexual offending behaviour with the average age of first conviction before or during their early twenties. Most patients had extensive criminal histories of at-least six previous convictions.

These findings help resolve the disparities amongst previous literature where some papers may have over-estimated the prevalence of serious offences and level of risk amongst the forensic patient population based on findings from a single hospital (Higgo & Shetty, 1991; Mohan *et al* 1997; Edwards *et al*, 2002; Shah *et al*, 2011). This highlights the caution that should be advised when interpreting findings from a single hospital, as base rates of offending and crime may vary widely between regions (Coid *et al*, 2001; Office for National Statistics, 2020) and there were likely differences in risk thresholds for admission. There was consensus that the criminogenic profile of patients became more complex over time (Gibbon *et al*, 2013), and therefore this national cohort provides a useful baseline to determine whether medium secure hospitals have admitted riskier patients over recent years; see chapter three.

Consistent with previous literature, a psychotic related disorder was the most common diagnosis amongst forensic patients across England and Wales and many patients had at-least three previous admissions (McKenna, 1996; Edwards *et al*, 2002; Shah *et al*, 2011). The prevalence of personality disorder was lower in the current national cohort relative to other studies (Ricketts *et al*, 2001; Coid *et al*, 2007). At-least one in ten patients experienced child abuse and almost half of patients had a history of substance misuse, although previous literature appeared to overestimate the prevalence of these factors in medium security across the UK (Gibbon *et al*, 2013). The findings from this national cohort highlight the complex criminogenic, clinical and social profile of forensic patients admitted to medium secure care.

Although there was consensus that length of stay had increased over time (Earnshaw *et al*, 2019), it was unclear whether the large variation in admission periods between 6.9 to 26 months across studies was a reflection of changes over time or regional differences (McKenna, 1996; Edwards *et al*, 2002). The results of the current study suggest that medium secure hospitals across England and Wales generally met recommendations that admission periods should not exceed two years (Home Office & DHSS, 1975) because the average length of stay was around fourteen months between 1997/98, this provides a reference point for later chapters to capture change in admission durations over the last two decades.

The sources of referral and discharge pathways from medium security across England and Wales were also explored to provide a national baseline of patient pathways. Prison was the main source of referral to medium security across the UK. Although the intent behind developing medium secure hospitals was, in large part, to provide more rapid step down from high security, the relative size of the prison population and the high prevalence of mental health problems, along with changes to the Criminal Procedure (insanity and unfitness to plead) Act 1991 may have influenced the numbers of prison referrals. Therefore, it was not unexpected that diversion from prison was more common relative to stepping patients down from high security or admitting those in crisis from general psychiatric services (Department of Health, 1992).

The most common discharge pathway for patients was directly to the community or open conditions followed by remission to prison. This was comparable to previous literature investigating discharge pathways throughout the 1990s (Ricketts *et al*, 2001; Edwards *et al*, 2002; Davies *et al*, 2007). The high prevalence of remissions to prison caused concern about the success of diversion schemes set up to ensure appropriate mental health support for the prison population (Department of Health, 1992). Overall, this national cohort provides clarity about medium secure care across England and Wales, alongside establishing a baseline to investigate changes over time in subsequent chapters.

### *Risk factors for reconviction*

Criminogenic, clinical and social characteristics were explored to deduce the most predictive risk factors of reconviction. Forensic characteristics reflected through the OGRS-2

actuarial risk measure showed the greatest predictive power of reconviction for all offence types up to six years following discharge. This predictive power did not improve with the addition of clinical and social factors that showed significant or almost significant associations with reconviction. This moves beyond simply reporting candidate risk predictors and significant differences between those reconvicted and not reconvicted following medium security (Baxter *et al*, 1999; Friendship *et al*, 1999; Edwards *et al*, 2002; Davies *et al*, 2007; Sahota *et al*, 2010; Gibbon *et al*, 2013).

A large literature base is available to explore risk assessment in forensic practice (Singh, Grann & Fazel, 2011; Fazel, Singh, Doll & Grann, 2012; Coid, Kallis, Doyle, Shaw & Ullrich, 2015), and therefore the author did not intend to evaluate this as an objective of this thesis. Although, the outcomes of the thesis support the consensus of a ceiling effect with risk assessment measures, as the discriminative ability of the OGRS-2 remained steady when modified with social and clinical variables. This does not overlook the importance of social and clinical factors to formulate and contextualise risk (Bonta & Andrews, 2007; Douglas *et al*, 2013), but simply justifies the notion that clinicians may only need to refer to a few criminogenic and demographic factors to make informed decisions about risk prediction that can then inform clinical decision making related to levels of restriction needed. Clinicians typically rely on structured professional judgement tools to guide risk assessment (Khiroya, Weaver & Maden, 2009), most notably the Historical Clinical and Risk Management 20 (HCR-20; Webster *et al*, 1997), although these measures have been criticised for their time demands and training needs (Viljoen, McLachlan & Vincent, 2010). The OGRS-2 may be useful to implement as part of standard practice to help clinicians make efficient, time-pressured decisions about risk management (Wolf *et al*, 2018). Future research could inform whether the predictive validity of the OGRS-2 is preserved amongst contemporary forensic patient populations and over time.

### *Service provision and reconviction*

The final objective was to determine the link between patient characteristics, service provision and reconviction. Although the OGRS-2 was identified as the strongest predictive factor for reconviction, the measure showed no influence on decisions about the discharge pathway for patients and whether to impose a restriction order. As risk factors for reconviction seem not to inform these aspects of service provision, a degree of residual

uncertainty remains regarding the basis of decisions in forensic practice and what guides them. Chapter four of the thesis explores this issue in some detail.

The OGRS-2 was further validated as a strong predictive measure of reconviction (Gray *et al*, 2004; Coid *et al*, 2007; Snowden *et al*, 2007), and therefore was used as a baseline to identify any impact of medium secure provision at reducing reconviction. The reduced percent of forensic patients reconvicted following discharge relative to actuarial estimates suggested treatment effects of medium security. However, those remitted to prison exceeded their expected risk relative to other discharge pathways after a follow up period of six years. This highlights the humanitarian and cost implications of remitting patients to prison where treatment effects were lost with a negative impact on public protection. Remission to prison has escalated over the last two decades from 8.0% to 20.0% (Maden *et al*, 1999; Doyle *et al*, 2014), causing concern for public protection based on the findings of this study. Unlike this study that reports equivalent risk levels of patients across different discharge pathways, a recent review between 2010 and 2011 reported higher risk levels in those remitted to prison compared to those discharged to the community from mediums security across the UK (Doyle *et al*, 2014). This reflects possible changes over time, although no attempt has been made to deduce the long-term outcomes of remission to prison using recent medium secure cohorts.

The application of restriction orders was effective in reducing reconvictions for violent or sexual offending, but only for OGRS-2 rated high-risk patients. Those categorised as low, moderate or raised risk who were given restriction orders showed no significant reduction in risk of reconviction, raising questions about the effectiveness of restriction orders for these patients. The lack of association between criminogenic factors and the application of restriction orders across all risk-categories of patients suggested unsystematic and ineffective use of restriction orders across England and Wales at the expense of loss of liberty for some. This could be resolved through the use of the OGRS-2 in the Crown Court decision process with risk categories as a parameter to inform whether to impose a restriction order, although this needs to be tested on an up-to-date cohort before making any recommendations.

### *Limitations*

This preliminary analysis was associated with a number of limitations. Similar to previous literature (Edwards *et al*, 2002; Davies *et al*, 2007), the reliance of the Offender Index to collect reconviction data likely underestimated true reoffending rates, as an unknown level of offending behaviour was either not detected, failed to reach the threshold for prosecution and conviction, or resulted in hospital recall of restricted patients rather than prosecution (Lewis, 1990; Buchanan, 1998; Home Office, 2018). Whilst, OGRS-2 was designed to predict reconviction, not undetected reoffending, from a public protection point of view, clinicians are interested in any and all offending behaviour. The Risk Matrix 2000 which was designed to predict sexual and violent reconvictions amongst convicted sexual offenders, (RM2000; Thornton *et al*, 2003) may be a better model for an actuarial measure of general reoffending, as it provides an estimate of likely reoffending rates against which to interpret reconviction figures.

Discharged patients also tend to be supervised and monitored by mental health services through aftercare that results in diversion away from the criminal justice system when reoffending occurs (Friendship *et al*, 1999; Gray *et al*, 2004). Almost half of patients from the national cohort in this chapter were subject to restriction orders, which reiterates that recall to hospital may have been a more likely outcome of heightening risk of offending behaviour following discharge compared with prosecution leading to reconviction. Collecting reoffending data and reasons for hospital recall from alternative sources, including healthcare records, or simply collecting readmission data as a proxy of risk behaviour following discharge would help overcome this challenge. The advantage of exploring readmission is to extend the evaluation of medium security to consider mental health outcomes and prevention of relapse, as well as public protection benefits (Robertson, 1989).

The study relied on ROC curves to determine the superior risk factors of reconviction. ROC curves have been criticised due to the susceptibility to changes in base rates, and because they represent a compromise between sensitivity and specificity (Szmukler, Everitt & Leese, 2012). Therefore, the predictive validity of the OGRS-2 may be different with changes in risk management strategies over time and may also be sensitive to changes in economic or social influences. However, as the purpose of this chapter is to provide a baseline of medium secure care, subsequent chapters capture changes in risk over time.

Alongside this, the OGRS-2 faces the challenge of neglecting a large sub-sample of the forensic mental health population: those who have not been convicted of any offences but who may have histories of violence, particularly familial and institutional violence that does not lead to prosecution. A number of patients admitted to medium secure hospitals across England and Wales between 1997/98 had no criminal history, and therefore this measure was not able to predict their risk following discharge.

The analyses were confined to the variables collected from preceding studies using the same national cohort of discharged patients (Maden *et al*, 2004; 2006b), which were predominantly restricted to binary measures. Methods used in forensic practice and research have improved over the last two decades, including validated tools (e.g. DUNDRUM quartet; Kennedy *et al*, 2013; and the Adverse Childhood Experiences Scale; Bellis *et al*, 2016) that may provide further insight into patient characteristics and service provision in medium security. This enables subsequent chapters to explore medium secure hospitals in greater depth relative to this preliminary analysis.

## *Conclusions*

The chapter provides a more nuanced understanding of the effect of medium secure care across England and Wales between April 1997 and March 1998, which establishes a baseline to capture changes in service provision across subsequent chapters. Criminogenic factors were shown to be the most predictive of reconviction amongst those with prior histories of criminal convictions, although this was not used to inform decisions regarding patient pathways and risk management in medium secure provision. Further research to understand how decisions are made in medium security and the associated outcomes would be informative to help guide future practice.



## **CHAPTER 3**

### **Changes in patient characteristics and medium secure provision over time.**

#### **3.0 Abstract**

##### **Objectives**

This chapter aims to determine how medium secure hospitals evolved between 1999 and 2017. Changes in service provision and the characteristics of forensic patients discharged from a single Welsh medium secure hospital were explored along with how these predicted patient progress through medium security.

##### **Method**

A longitudinal, retrospective case note analysis was conducted on a cohort of 285 forensic patients discharged from a single medium secure hospital in Wales. Forensic patients discharged between 1999 to 2006, 2007 to 2011, and 2012 onwards were compared in order to identify changes in patient characteristics and service provision, measures included; lengths of stay, imposition of restriction orders and patient pathways over time. The association between patient characteristics and treatment progress were investigated.

##### **Results**

Risk of violence, childhood trauma and previous unemployment became more prevalent features of patients discharged from medium security over time. Service provision significantly changed over time with more restriction orders imposed, the average length of stay increased and there were proportionately more discharges to step-down secure services. Childhood trauma and educational history collectively predicted patient progress through medium secure care.

##### **Conclusion and Implications**

Medium secure hospitals appeared to detain patients with higher risk and more complex social histories over time. Risk management (in terms of more frequent use of restriction orders, longer lengths of stay and more frequent use of secure step-down facilities on discharge) became more stringent in medium secure provision over time, despite

improvements in patient recovery over the same time period; suggesting a possible imbalance between public protection versus patient liberty.

### **3.1 Introduction**

Forensic mental health services underwent extensive development in the last two decades due to changes in legislation and policies that mapped onto both government shifts in policy and legislation along with societal norms. This was consistent with changes in the Mental Health Act (MHA, 1983 as amended in 2007) and the Mental Health (Wales) Measure 2010. Reviews and guidelines designed for the management of prisoners and females in forensic services also drove changes in service provision, along with reconfiguration of the entire forensic care pathway with more elements introduced to reflect a more stratified approach to security levels. Each of these milestones were likely to impact on medium secure care, although the evidence base is lacking to depict changes over time.

The MHA (1983 as amended in 2007) generalised the definition of mental illness, psychopathic disorder and mental impairment into one notion of mental disorder, and changed the requirement of treatability to treatment being available, to improve access to mental health services for patients previously excluded due to beliefs that they were ‘untreatable’. This removed the admission barrier of patients with a primary diagnosis of personality disorder into forensic settings, and therefore likely shaped the forensic population admitted to medium security (Tetley, Evershed & Krishnan, 2010) even whilst specialist personality disorder services were developing in prisons. The MHA also amended the role of the Responsible Medical Officer (RMO) to become the Responsible Clinician (RC) that enabled allied health professionals to become responsible for the case management of forensic patients. This provided opportunity to move away from the medical model to a biopsychosocial approach, and may have impacted on the care and treatment of forensic patients in medium security, even though the take up of Responsible Clinician roles by non-medical practitioners remains low, with just 56 non-medical Approved Clinicians registered in England and Wales by 2017 (Oates *et al*, 2018).

Although the Mental Health (Wales) Measure was introduced in 2010, it was not fully implemented until the end of 2012 (Welsh Government, 2017). This legislation indicates a statutory requirement for care and treatment planning to be formally written into a specified

care and treatment plan and routinely reviewed and co-produced between forensic patients and the MHA provider. Independent Mental Health Act Advocates also became readily accessible for all patients within medium secure care under civil and criminal sections of the MHA. These principles promoted forensic patients becoming more active in their pathway and helped towards more balance in the power between professionals and forensic patients. The Mental Health (Wales) Measure 2010 eased the process for discharged patients to be re-referred to forensic mental health services that likely increased the bi-directional nature of the forensic care pathway and readmissions to hospital.

The progress of diversion and liaison schemes established across England and Wales to support prisoners with mental health difficulties was reviewed with recommendations published in the Bradley Report (2009). One recommendation reflected the concern about the extensive delays prisoners faced for transfer to hospital with a suggested target to be fourteen days. The government welcomed the recommendation to reduce transfer delays, although did not confirm the fourteen-day target (Taylor, 2011). This likely added pressure to further prioritise prison transfers into medium security at the expense of other sources of referrals (see previous chapter; Rutherford & Duggan, 2007). The Bradley Report triggered the expansion of diversion and liaison schemes that reached 53.0% across England by 2016 (NHS England, 2016c). This effort to integrate the criminal justice system and forensic care pathway, together with the reducing number of high secure beds and the increasing number of non-acute beds in low secure and locked facilities, likely influenced medium secure care through the profile of patients, patient risk and needs and service provision; although sparse literature has explored this.

Reform across forensic mental health services to appropriately accommodate female forensic patients also influenced medium secure care. Forensic mental health services traditionally incorporated mixed sex wards, which faced heavy criticism due to concern about the safety of females living in male-dominated wards (Bartlett & Hassell, 2001). It was also identified that approximately 82.0% of females in high secure settings were inappropriately placed in the 1990s (Parry-Crooke & Stafford, 2009), highlighting the poor infrastructure for females to step down along the forensic care pathway. The *Women's Mental Health: Into the Mainstream* (Department of Health, 2002) argued for services to adapt to meet the needs of females. The number of beds in female-only services expanded from 93 to 543 across England between 2000 and 2009 (Parry-Crooke & Stafford, 2009). This helped ensure that

medium secure hospitals met expectations of least restrictive practice to match risk for both males and females, along with helping female patients move to regional settings closer to home (Department of Health & Home Office, 1992). Therefore, service provision in medium security improved to meet the needs of both male and female forensic patients (Tully, Cappai, Lally & Fotiadou, 2019).

The forensic care pathway underwent gradual change over the last two decades where the greatest density of secure beds shifted downwards to less secure settings. Low secure services expanded to provide 3732 beds across England by 2013, whereas the decommissioning of high secure care led to the availability of only 795 beds across England and Wales (NHS England, 2015a). Forensic community outreach services further eased the process to discharge patients from forensic mental health services who otherwise were rejected by general community mental health teams (Natarajan, Srinivas, Briscoe & Forsyth, 2012). The first forensic outreach community service was established in 1994 and reached a total of 37 services across England and Wales by 2004 (Judge *et al*, 2004). The expansion of low secure and community services and decommissioning of high secure services improved movement across the forensic care pathway.

The evolution of forensic mental health services led to changes in patient characteristics and service provision in medium security (Shah *et al*, 2011; Gibbon *et al*, 2013; Earnshaw *et al*, 2019). The complexity of forensic patients increased over time where extensive criminal and psychiatric histories and childhood trauma became more prevalent. Length of stay in medium security expanded from 1983 to 2005 that may reflect the increasing complexity of patients causing difficulty to move along the forensic care pathway. A growing number of patients were remitted to prison between 1983 to 2003 whilst discharges to other secure services and the community remained stable (Gibbon *et al*, 2013). When the discharge pathway was compared across a longer time-period between 1985 to 2012, discharges to the community fell from 71.0% to 20.0%, whereas discharges to secure services increased from 18.0% to 53.0% (Earnshaw *et al*, 2019). However, very few studies captured changes in medium security over the last two decades preventing a holistic understanding about the impact of different milestones across the forensic care pathway.

Most previous literature exploring patient characteristics in medium security typically focused on criminogenic behaviour, highlighting the priority for public protection where

other important factors, e.g. social history were often overlooked (see table 1.2 in chapter one; Maden *et al*, 2006a). Research across the UK started to address the significance of adverse childhood experiences to explain offending behaviour, self-damaging behaviour, and poor mental health outcomes (Bellis, Hughes, Leckenby, Perkins & Lowey, 2014; Bellis *et al*, 2016); although this research is in infant stages to understand the impact on the forensic psychiatric population (Gibbon *et al*, 2013). Adverse childhood experiences may be key risk factors to explain risk behaviour and recovery through medium security. This was noted by the authors of the OGRS where criminal profiles that predict recidivism were considered proxy-measures of underlying social factors (Copas & Marshall, 1998), and therefore this understanding would be informative for future care and treatment approaches and risk management strategies.

There has been little attempt to capture what actually takes place in medium secure care beyond simply reporting length of stay, source of referral and discharge pathways (Higgo & Shetty, 1991; McKenna, 1996; Edwards *et al*, 2002; Maden *et al* 2004; 2006a; Coid *et al*, 2007; Shah *et al*, 2011; & Gibbon *et al*, 2013). Routine outcome measures were only recently incorporated into national policy to evaluate service provision across mental health settings (All Wales Mental Health and Learning Disabilities Core Data Set Project Steering Board). Limited research investigated routine outcome measures in forensic secure practice to explore the security need of patients and readiness for discharge (Dickens & O'Shea, 2017; Richter *et al*, 2018). These measures could be used to evaluate the success of medium security and may reveal what changes for patients throughout admission and how this has adapted over the last two decades.

This chapter presents a study aimed at determining the changes in medium secure care over time between 1999 and 2017. This expands from the previous chapter by demonstrating how the recent milestones in forensic mental health services influenced the profile of patients admitted to medium security and service provision. The study also provided insight into what changed for patients in medium security and factors that predicted this. This may inform services about the risk factors of undesirable progress through medium security, and therefore more prudent measures could be implemented for patients at risk of worse recovery. The specific objectives of this study included:

- 1) identifying changes in patient characteristics between 1999 and 2017;

- 2) identifying changes in service provision between 1999 and 2017; and
- 3) deducing factors that predicted patient progress through medium secure care.

### **3.2 Method**

#### **Sample**

A total of 303 forensic patients were discharged from a single medium secure hospital in South Wales between July 1999 and November 2017, of these, 285 discharged patients had available records and were included in the study. The cohort consisted of 233 (81.8%) males and 49 (17.1%) females. The average age on admission was 34.8 years (SD=11.18) and the average age at discharge was 37.0 years (SD=11.20). 89.8% of the patients were white British and 10.3% were of Black, Asian and Minority Ethnicities (BAME) compared to 93.2% of white British in the general population in Wales (Office for National Statistics, 2018). The primary diagnosis of most discharged patients was a psychotic related disorder (69.8%), followed by a mood related disorder (12.3%), personality disorder (6.3%), anxiety related disorder (2.1%) and at-least 2.8% had no diagnosis recorded.

A total of 192 discharged patients had been detained in hospital previously, where 30 patients had been detained in conditions of medium security. Of those who were repeatedly detained at the medium secure hospital in South Wales, only the first admission was used to prevent repeated samples. Most patients were admitted to the medium secure hospital as transferred prisoners or under interim hospital orders prior to sentence (49.0%). Whereas 31.8% of patients were admitted under hospital orders following sentence and few were admitted under civil sections or were informally admitted (18.2%).

The cohort was separated into three groups based on the time period at which they were discharged. This mapped onto the different milestones in forensic mental health services described above. There were no available healthcare records for those discharged prior to July 1999, and therefore the first time-period included all 87 patients discharged from this date to December 2006. The second time-period included 98 patients discharged between January 2007 and December 2011 to account for the changes in the Mental Health Act (2007). The final time period included 100 patients discharged between January 2012 to November 2017, which followed the implementation of the Mental Health (Wales) measure.

## Study setting

The medium secure hospital opened in 1992 in a converted Victorian hospital as an interim facility to accommodate forensic patients from the South Wales (all local authority areas from East to West Wales and up to mid Powys). It initially consisted of two mixed-wards to accommodate nineteen patients. A third ward was developed by 1995 to provide a further fourteen beds.

A new purpose-built medium secure hospital was opened on the 11<sup>th</sup> May 2004 to replace the old building and initially opening 36 beds; increasing to 60 beds over time. The medium secure hospital included five wards; a Psychiatric Intensive Care Unit (PICU; 8 beds), an admission and assessment ward (14 beds), a female-only ward (10 beds) and two recovery/rehabilitation wards (14 beds each). The service provided specialist healthcare for people with mental health problems across South, West and Mid Wales.

## Ethics

The nature of the study created a complex ethical process. The study required approval from Health Care Research Wales via the Research Ethics Committee (REC), Health Research Authority via the Confidentiality Advisory Group (CAG), the Research and Development (R&D) Department of Bro Morgannwg University Health Board (recently superseded by Swansea Bay University Health Board) and Cardiff Metropolitan University's Research Ethics Committee.

### *Health Research Authority*

The longitudinal nature of the project covering a twenty-year period was associated with difficulty collecting patient consent. Discharged forensic patients were difficult to locate due to the possibility that they were no longer in contact with mental health services, may have changed their name or moved to an unknown address (Völlm *et al*, 2002). It was also perceived to be more intrusive to try and source data to locate discharged patients to request consent, and some forensic patients may not wish to be found by forensic mental health services. Historically, forensic patients have shown high refusal to take part in research that

may cause risk of biased findings (Duggan *et al*, 2007; Shah *et al*, 2011), which explains the minimal literature available to understand forensic mental health services. Therefore, approval was sought and granted to access healthcare records of discharged patients without their consent under Section 251 of the NHS Act, 2006 (succeeded section 60 of the Health and Social Care Act, 2001). This was approved by the Health Research Authority following the Confidentiality Advisory Group review (CAG reference: 18/CAG/0090).

#### *Health Care Research Wales*

Initially, conditional approval was granted from Wales REC 7, which was later converted into favourable approval following approval from the Health Research Authority (REC reference: 18/WA/0157).

#### *R&D health board*

The Bro Morgannwg University Health Board R&D (now Swansea Bay University Health Board) department granted approval following favourable opinion from both Health Research Authority and Health Care Research Wales.

#### *University Ethics*

The University provided the final ethical approval to enable the study to take place.

#### *Ethical Challenges*

There were several obstacles in the ethical process that caused delay in the thesis. Neither the Research Ethics Committee or Confidentiality Advisory Group felt they were in a position to grant favourable opinion first without the go-ahead from the other. This stagnated the progress of the thesis, but was eventually resolved with clarification that REC opinion was mandatory before a CAG review process could take place.

Secondly, in order for CAG to make any recommendation to the Health Research Authority as to whether to grant approval, an information governance toolkit was required to ensure the study met information governance standards that were General Data Protection



Regulation compliant (GDPR, 2018). It was found that the toolkit only applied in England and there was no clear indication of what the process might be for Wales. After liaising with various information governance and informatics departments, the author discovered that the NHS Wales Informatics Service provided this assessment. The NHS Wales Informatics Service confirmed that the study sufficiently met information governance policies to gain approval from the Health Research Authority.

The initial objectives for the studies included in this thesis was to include conviction data obtained from the Ministry of Justice. An information sharing agreement was developed and approved by Bro Morgannwg University Health Board and the Ministry of Justice, after satisfying a number of detailed queries about security of the information and compliance with GDPR. However, the author was ultimately unable to collect criminogenic data from the Ministry of Justice due to external circumstances (Covid-19 pandemic). Therefore, the conviction history of patients from the Police National Computer was unavailable to evaluate criminogenic factors or to calculate OGRS-2 scores to assess baseline risk of reconviction and compare with the previous chapter. As such, only the severity of the index offence, and social and clinical histories were collected to provide an indication of the typical patient profile.

## Design

The study incorporated a retrospective, longitudinal design that relied on a naturalistic cohort of forensic patients discharged between July 1999 and November 2017. Data was extracted and coded into criminogenic, clinical and social variables, along with variables that captured service provision and patient progress. Table 3.1 presents each variable collected and the relevant coding.

**Table 3.1** Variables included in the study and coding of each variable.

Variable	Coding	Source
Severity of the index offence	Ranged from zero (non-violent) to four (homicide etc.) based on the 'seriousness of violence' item of the triage security	Mental Health Review Tribunal reports.

	scale of the DUNDRUM quartet (Kennedy <i>et al</i> , 2013; see Appendix B).	Multi-Agency Public Protection Arrangement reports; based on the offence classification index (Crown Prosecution Service).
Psychotic related diagnosis	Coded as a binary measure (yes/no) based on the primary or secondary diagnosis of patients that were classified using ICD-10 (World Health Organisation, 1992).	Mental Health Review Tribunal reports. HCR-20 risk assessments; ‘history of major mental disorder’ item.
Personality disorder	Coded as a binary measure (yes/no) based on the primary or secondary diagnosis of patients that were classified using ICD-10 (World Health Organisation, 1992).	Mental Health Review Tribunal reports. HCR-20 risk assessments; ‘history of personality disorder’ item. Psychiatric pre-admission assessments.
Number of previous psychiatric admissions	The total number of previous inpatient admissions prior to the index offence; including general and secure psychiatric admissions.	HCR-20 risk assessments; ‘history of treatment and supervision response’ item. Mental Health Review Tribunal reports.
Adverse Childhood Experiences Scale (ACEs)	A scale with a total score that ranged between zero to nine. The score corresponded to the number of childhood adversities experienced under the age of eighteen. Each childhood adversity was	HCR-20 risk assessments; ‘early maladjustment item.’ Mental Health Review Tribunal reports.

	coded as a binary measure (yes/no) depending on whether it was experienced, and how often it was experienced; see Appendix A.	Social Work reports.
Institutionalised care	Binary measure (yes/no) based on whether the patient lived in an institutionalised settings prior the age of eighteen.	HCR-20 risk assessments; ‘early maladjustment’ item. Mental Health Review Tribunal reports. Social Work reports.
History of drug related problems	Binary measure (yes/no) based on whether the patient engaged in drug misuse prior to admission.	HCR-20 risk assessments; ‘substance use problems’ item.
History of alcohol related problems	Binary measure (yes/no) based on whether the patient engaged in alcohol misuse prior to admission.	HCR-20 risk assessments; ‘substance use problems’ item.
Education	Coded as an ordinal measure from zero to four; no education achievement, GCSE/CSE, A-levels, and degree or higher prior to admission.	Mental Health Review Tribunal reports. Social Work reports.
Employment	Coded as an ordinal measure from zero to four; no employment, unskilled, skilled, and professional employment prior to admission.	HCR-20 risk assessments; ‘employment problems’ item.
Referral source	Coded into five categories that included the criminal justice system, high secure hospitals, medium secure hospitals, less secure services (low secure hospitals,	Psychiatric and Nursing Pre-Admission Assessment Reports. Mental Health Review Tribunal reports.

	locked rehabilitation and PICUs), and the community or open conditions.	
DUNDRUM triage security and urgency scales	The average score for each scale was collected to determine security need on admission; see materials section for more detail.	Psychiatric and Nursing Pre-Admission Assessment Reports. HCR-20 risk assessments reports completed prior to or immediately following admission.
Legal status	Coded into three categories that included hospital orders (section 37 and 37/41 of MHA, 1983 as amended in 2007), prison and interim transfers (section 47/49, section 48/49, section 35, and section 38), and civil sections (section 2 and 3).	Mental Health Review Tribunal reports.
Restriction order	Binary measure (yes/no) based on whether the patient was restricted under the MHA (1983; as amended in 2007)	Mental Health Review Tribunal reports.
Historical Clinical and Risk Management-20 (HCR-20)	Total scores across the three subsections; historical, clinical and risk scales were collected.	HCR-20 risk assessment reports completed within one-year prior to discharge.
Length of stay	Calculated based on the total number of days from the date of admission to the date of discharge from the medium secure hospital.	Mental Health Review Tribunal reports. Psychiatry letters of discharge to the responsible health board. Psychiatry discharge reports.

DUNDRUM programme completion and recovery scales	The average score for each scale was collected to evaluate progress through medium security and readiness for discharge. The programme completion scale was scored based on patient engagement from admission to discharge, whereas the recovery scale was completed based on the presentation of patients within one-year prior to discharge.	Six-monthly Care Programme Approach (CPA) reviews. HCR-20 risk assessments; clinical and risk items. Mental Health Review Tribunal reports.
Discharge pathway	Coded into the same five categories as referral source to show the movement of forensic patients along the forensic care pathway.	Mental Health Review Tribunal reports. Psychiatry letters of discharge to the health board. Psychiatry discharge reports.

The rate of recovery was calculated by using the following equation for all discharged forensic patients. This calculation was used to account for the variation in lengths of stay of forensic patients discharged from the Welsh medium secure hospital.

$$\frac{\text{DUNDRUM Triage Security (average score)} - \text{DUNDRUM Recovery (average score)}}{\text{Length of stay (days)}}$$

## Materials

### *Adverse Childhood Experiences (ACEs)*

This study incorporated the nine ACEs from the Welsh ACE survey (Bellis *et al*, 2016; originally developed by Felitti *et al*, 1998); three reflect child maltreatment (sexual

abuse, physical abuse, and verbal abuse) and six map onto the childhood household (parental separation, witness of domestic violence, living with someone with mental illness, alcohol abuse or drug use). All ACEs were scored based on whether they were experienced prior to the age of eighteen. Sexual abuse, physical abuse and if the patient witnessed domestic abuse included a binary response of 'once or more than once' or 'never'. Verbal abuse included a binary response of 'more than once' or 'once/never'. All remaining ACEs included a binary response of 'yes' or 'no'. A copy of the ACEs questionnaire is provided in Appendix A. The number of ACEs present were summed together to provide a total ACEs score (zero to nine). The presence of four or more ACEs has been shown to be associated with increased self-damaging and antisocial outcomes (Van Niel, Pachter, Wade, Felitti & Stein, 2014; Bellis *et al*, 2016).

#### *Historical Clinical Risk Management-20 (HCR-20)*

As the study extended across a twenty-year period, two versions of the HCR-20 were administered in practice; HCR-20 version two (Webster *et al*, 1997) developed in 1997 and applied in services until it was succeeded by the HCR-20 version three in 2013 (Douglas *et al*, 2013). Both versions consisted of three subsections; historical items (static factors), clinical items (dynamic factors) and risk items (dynamic factors). Version three removed a scoring system to prevent the measure being over relied upon to predict reconviction.

Most forensic patients had HCR-20 version two in their healthcare records. All HCR-20 version three reports were converted into version two scores for the purpose of this study. This eased the process of quantifying the items and ensured consistency. Each item across the three subsections were scored on a three-point scale (zero: 'not present', one: 'partially present' and two: 'present'). The historical scale included ten items and the total score ranged between zero and twenty, whereas both the clinical and risk scales composed of five items each with the total scores ranging between zero and ten.

#### *Dangerousness, Understanding, Recovery and Urgency Manual (DUNDRUM quartet)*

The DUNDRUM quartet (Kennedy *et al*, 2016) consists of four scales that include triage security, urgency, programme completion and recovery. The former two were designed to aid pre-admission assessments and gatekeeping decision making. The triage security scale

includes eleven items that cover a range of factors representative of security need. The manual recommends the removal of two items of the triage security scale; ‘Seriousness of self-harm’ and ‘Immediacy of risk of suicide’ when determining the security need of patients (Kennedy *et al*, 2016). These items were omitted when average scores were calculated for each patient on this scale. The Cronbach’s alpha statistic for all eleven items is 0.95 (Flynn *et al*, 2011), and this is preserved (0.96) when both the ‘Seriousness of self-harm’ and ‘Immediacy of risk of suicide’ items are omitted (Flynn *et al*, 2011). The urgency scale includes six items to provide an indication of the urgency for admission with a Cronbach’s alpha statistic ranging from 0.68 to 0.82 depending on the referral source of patients (Flynn *et al*, 2011). The inter-rater reliability was evaluated through comparisons of scoring by the author with scores established from a previous study based in the same medium secure hospital (Lawrence *et al*, 2018). The kappa statistic for nine items indicates moderate to very good agreement ( $K_w = 0.48$  to  $0.87$ ,  $p < 0.001$ ; Altman, 1991), whilst two triage security items show poor agreement; ‘absconding/elopeing’ ( $K_w = 0.17$ ,  $p > 0.050$ ) and ‘legal process’ ( $K_w = 0.11$ ,  $p > 0.050$ ).

The latter scales; programme completion and recovery were designed to assist the clinical decision making for the readiness of forensic patients to step down the forensic care pathway. The programme completion scale comprises of seven items and the recovery scale comprises of six items (psychometric properties are outlined in chapter four). All items across the four scales incorporate a five-point rating system (zero to four) with each value matching the level of security need; as shown in table 3.2. The manual highlights that the quantitative nature of the DUNDRUM quartet should not lead to the assumption that they are actuarial to develop cut-off scores to determine thresholds for admission and discharge. Instead, they should be used as an aid to ensure consistent and transparent decision-making.

**Table 3.2** Rating system for each item incorporated in the DUNDRUM quartet.

Value	Level of security
0	Complete discharge or community placement
1	Open ward or residential placement
2	Low secure hospital or PICU
3	Medium secure hospital
4	High secure hospital

## Procedure

The author analysed all healthcare records from the medium secure hospital and collected data for the 285 patients included in the study. Forensic patients were identified from an electronic folder that stored healthcare records of all discharges from the medium secure hospital between July 1999 to present. Monthly Care Programme Approach (CPA) reviews that listed all inpatients between 2008 to present were also used to cross validate this. Weekly multidisciplinary meeting reports were used to cross validate those discharged from the medium secure hospital prior to 2008. This ensured that all forensic discharged patients were identified and included in the study. An outline of where data was sourced for each variable is provided in table 3.1. The percentage of missing data for each variable is outlined in table 3.3.

HCR-20 scores were predetermined based on risk assessments completed by clinicians whilst forensic patients were detained in the medium secure hospital. As some items in the third version of the HCR-20 did not completely match the second version, the author re-assessed these items to ensure coding matched the version two manual. The author received HCR-20 training by a qualified practitioner from the medium secure hospital prior to data collection to improve systematic completion of structured professional judgement tools. The author retrospectively completed the DUNDRUM quartet based on healthcare records with reference to the V1.0.30 manual (Kennedy *et al*, 2016).

Forensic patients discharged prior to 2007 had limited available healthcare records to meaningfully complete the DUNDRUM quartet and no available HCR-20 risk assessment reports. Therefore, these variables were not applied to the patients discharged from the medium secure hospital between 1999 to 2006. A number of patients discharged between 2007 and 2011 had missing data to prevent the collection or completion of these scales, as outlined in table 3.3.

**Table 3.3** Percentage of missing data across the three time periods of service provision for each variable.

Variable	1999-2006	2007-2011	2012 onwards	Total
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<i>Social</i>				
Adverse childhood experiences	9.2%	5.1%	4.0%	6.0%
Institutionalised care	6.9%	1.0%	0.0%	2.5%
Employment	10.3%	0.0%	0.0%	3.2%
Education	10.3%	2.0%	2.0%	4.6%
Drug related problems	5.7%	0.0%	0.0%	1.8%
Alcohol related problems	6.9%	0.0%	0.0%	2.1%
<i>Clinical</i>				
Psychotic related disorder	0.0%	0.0%	0.0%	0.0%
Personality disorder	0.0%	0.0%	0.0%	0.0%
Number of previous psychiatric admissions	11.5%	7.1%	7.0%	8.4%
<i>Forensic</i>				
Index offence	3.4%	1.0%	0.0%	1.4%
<i>Service provision &amp; patient outcomes</i>				
Referral source	2.3%	0.0%	0.0%	0.7%
Legal status	0.0%	0.0%	2.0%	0.7%
Length of stay	0.0%	0.0%	0.0%	0.0%
HCR-20 discharge				
Historical	n/a	23.5%	12.0%	17.7%
Clinical	n/a	25.5%	12.0%	18.7%
Risk	n/a	24.5%	12.0%	18.2%
DUNDRUM:				
Triage security	n/a	10.2%	7.0%	27.0%
Urgency	n/a	11.2%	7.0%	27.4%

Programme completion	17.2%	2.0%	0.0%	6.0%
Recovery	18.4%	2.0%	0.0%	6.3%
Discharge location	0.0%	0.0%	0.0%	0.0%

## Data Analysis

SPSS Version 25.0 was used for all statistical analyses included in the study. The Holm Bonferroni procedure was administered when multiple statistical tests were used to avoid type I errors (Holm, 1979).

Descriptive statistics and frequency data are presented to show how patient characteristics, service provision and patient outcomes varied between forensic patients discharged across the three time periods from 1999 to 2017. This also enables non-statistical comparisons with the national baseline outlined in chapter two.

Inferential statistics (Chi-square, Kruskal-Wallis, Analysis of Variance (ANOVA) and *t* test) were conducted to identify significant differences between patients discharged across the three time periods; 1999 to 2006, 2007 to 2011 and 2012 onwards. A Shapiro-Wilk test was used to evaluate whether each scaled variable violated the assumption of normality (Shapiro & Wilk, 1965). The assumption of normality was cross validated using a QQ (quantile/quantile) plot to compensate for risk of Shapiro-Wilk being over-sensitive to check for normality where sample sizes exceed 100 (Norman, 2010). The number of previous psychiatric admissions and the length of stay each violated the assumption of normality, but patients across the three time periods showed similar shapes around the median for both variables to enable Kruskal-Wallis H tests to determine differences in medians. Those discharged across the three time periods also showed similar shaped distributions for the severity of the index offence, employment and education; enabling the Kruskal-Wallis H tests to determine differences in medians.

Additional post-hoc tests (Mann-Whitney U and chi-square tests) were used to identify individual differences between each of the three time periods to determine when change occurred from 1999 to 2017.

The Shapiro-Wilk test and QQ plot showed the rate of recovery significantly deviated from a normal distribution, and therefore an ordinal regression with proportional odds was used to identify predictive patient factors associated with the rate of recovery through medium secure care. All patient factors added to the model were tested for multicollinearity; the lowest tolerance value was 0.66 with the Variance Inflation Factors (VIFs) ranging between 1.11 to 1.51. This suggested no violation of multicollinearity. The test of parallel lines compared the fitted model with varying location parameters and showed that the assumption of proportional odds was met to enable an ordinal regression to proceed ( $p > 0.050$ ). The rate of recovery was positively skewed towards the higher end of the distribution and therefore a complementary log-log function was used. The Deviance goodness of fit test was used to evaluate how poorly the model fitted the data; a significant result indicates a poor fit. The -2 log likelihood statistic evaluated the model fit with all patient factors compared to the intercept only (no variables included) to identify how well the model explained the rate of recovery.

Forensic patients with missing data outlined in table 3.3 did not significantly differ with those included in the study based on demographic information ( $X^2 = 3.15$ ,  $p > 0.076$ : sex, ethnicity, source of referral, legal status and diagnosis;  $t(283) = 1.24$ ,  $p > 0.214$ : age at admission). All patients discharged between 1999 to 2006 had missing data for both the HCR-20 and the DUNDRUM programme completion and recovery scales, and therefore they were removed from the analysis when identifying changes over time for these variables.

### **3.3 Results**

#### **Changes in patient characteristics over time**

##### *Criminogenic factors*

Most patients admitted to the Welsh medium secure hospital had committed a serious violent or sexual index offence, reflecting the common prevalence of high risk patients admitted to this level of security (see table 3.4). The severity of the index offence remained consistent over time; a Kruskal-Wallis analysis identified no significant difference between patients discharged from medium security across the three different time periods.

Scores on the historical scale of the HCR-20 indicated the risk levels of forensic patients based on historical information; providing a baseline before care and treatment from the medium secure hospital. An independent samples t-test showed significantly higher scores for those discharged from 2012 relative to those discharged between 2007 and 2011 ( $t = -3.103$  (161),  $p < 0.002$ ). This showed that the severity of risk of forensic patients discharged from medium security increased over time.

### *Clinical factors*

The prevalence of patients with a diagnosis of a psychotic related disorder or a personality disorder in medium security remained stable over time. Two 2x3 chi-square tests showed that neither a diagnosis of a psychotic related disorder or personality disorder were significantly associated with the different time periods at which patients were discharged; see table 3.4. The inpatient history of forensic patients became less complex over time with a reduction in the number of previous admissions of forensic patients discharged from 2007 onwards. A Kruskal-Wallis test showed that this reduction was non-significant.

### *Social factors*

Medium secure hospitals admitted more complex forensic patients over time with more extensive childhood trauma. Analysis of Variance (ANOVA) showed that the number of Adverse Childhood Experiences (ACEs) that forensic patients were exposed to significantly increased over time ( $F(2, 265) = 15.46$ ,  $p < 0.001$ ). Post-hoc tests with Bonferroni corrections revealed that only forensic patients discharged from 2012 onwards significantly differed from both groups of forensic patients discharged earlier ( $p < 0.001$ ). No significant difference was shown between forensic patients discharged from 1999 to 2006 against those discharged from 2007 to 2011 ( $p > 0.050$ ).

Table 3.4 shows the prevalence of forensic patients exposed to each adverse childhood experience had increased over time, excluding exposure to parental separation that remained consistent. A series of 3x2 chi-square analyses were conducted to determine whether the prevalence of each adverse childhood experience was significantly associated with the different time periods when patients were discharged. Only the 'verbal abuse' and 'drug abuse' items were significantly associated with the time period of discharge. Post hoc

2x2 chi-square analyses showed that both ACE items were significantly associated with the time period at discharge when those discharged from 2012 onwards were compared with those discharged across both earlier time periods ( $p < 0.001$ ). No significant association was identified when those discharged from 1999 to 2006 were compared with those discharged from 2007 to 2011 ( $p > 0.050$ ). This suggested that medium secure hospitals admitted more complex forensic patients over time with greater exposure to childhood trauma; early exposure to verbal abuse and drug misuse. Victimisation or exposure to sexual abuse, physical abuse, domestic violence, alcohol abuse or living with someone with a mental illness each became non-significantly associated with the time period of discharge following alpha adjustment. G-Power was used to determine the suggested sample size for significance of each of these ACEs, which specified the need for at-least 372 patients (Faul, Erdfelder, Buchner & Lang, 2009; Prajapati, Dunne & Armstrong, 2010).

The prevalence of discharged patients who were institutionalised prior to the age of eighteen increased over time. Although, a 2x3 chi square analysis showed no significant association between child institutionalisation and the different time periods when forensic patients were discharged.

Table 3.4 shows fluctuations in the prevalence of forensic patients with drug and alcohol related problems discharged from medium security over time. Two 3x2 chi-square analyses showed non-significant associations in these trends across the three discharge time periods.

Most patients admitted to medium security had a history of unskilled employment, whereas a history of skilled or professional employment were less common. The prevalence of forensic patients with no employment history was also high in medium secure care, and was shown to grow over time. A Kruskal-Wallis test was used to explore the differences in employment history between patients discharged across the three time periods, which was found to be significant (see table 3.4). Post hoc tests (Mann-Whitney U) showed significant differences in the employment history of those discharged from 2012 onwards compared with patients discharged from both earlier time periods ( $p < 0.016$  and  $p < 0.025$  respectively; significant with alpha adjustment). No significant difference was identified between the two earlier time periods of discharge ( $p > 0.050$ ).

As presented in table 3.4, most patients admitted to medium secure hospital had no academic qualifications, and this became a more prevalent feature over time. Although, the Kruskal-Wallis test identified no significant change in educational level between patients discharged across the three time periods from 1999 to 2017.

**Table 3.4** Differences in the percentage of patients with criminogenic, clinical and social characteristics across the three time periods of discharge.

Variable	Percentage of patients / %			X <sup>2</sup>	P-value
	1999-2006	2007-2011	2012 onwards		
<i>Criminogenic</i>					
Severity of index offence				0.89	0.642
No index offence	10.3%	11.2%	6.0%		
0	8.1%	6.1%	7.0%		
1	3.5%	5.1%	10.0%		
2	15.1%	5.1%	16.0%		
3	22.1%	26.5%	19.0%		
4	38.4%	44.9%	42.0%		
HCR-20 historical scale: mean (SD)	n/a	14.86 (4.14)	16.55 (2.74)		
<i>Clinical</i>					
Psychotic related disorder	73.6%	65.3%	76.0%	3.03	0.220
Personality disorder	32.2%	37.8%	33.0%	0.77	0.682
Number of previous psychiatric admissions: mean (SD)	4.17 (6.90)	2.55 (3.77)	2.61 (3.69)	5.95	0.051
<i>Social</i>					
ACEs: mean (SD)	2.37 (1.76)	2.90 (2.21)	4.08 (2.24)		
Sexual abuse	23.5%	30.1%	42.1%	7.27	0.026*
Physical abuse	33.8%	37.6%	54.2%	8.76	0.013*

Verbal abuse	35.0%	49.5%	81.3%	40.85	0.001**
Domestic violence	27.5%	34.4%	46.9%	7.40	0.025*
Parental separation	56.3%	51.6%	57.3%	0.69	0.710
Mental illness	28.8%	32.3%	46.3%	6.76	0.034*
Alcohol abuse	22.2%	30.1%	40.6%	7.02	0.030*
Drug abuse	6.2%	6.5%	25.0%	19.13	0.001**
Incarceration	7.5%	14.0%	16.7%	3.36	0.187
Institutionalised care	19.8%	22.7%	33.0%	4.77	0.092
Drug related problems	72.0%	60.2%	74.0%	4.99	0.083
Alcohol related problems	56.8%	65.3%	61.0%	1.36	0.506
Employment				8.22	0.016**
None	29.5%	30.6%	44.0%		
Unskilled	47.4%	50.0%	46.0%		
Skilled	17.9%	16.3%	9.0%		
Profession	5.1%	3.1%	1.0%		
Education				3.52	0.172
None <sup>a</sup>	51.9%	55.8%	64.1%		
CSE/GCSE/NVQ	33.8%	35.8%	29.3%		
A-level	7.8%	4.2%	5.4%		
Degree or higher	6.5%	4.2%	1.1%		

\*p<0.05; \*\*significant following alpha adjustment; a= no previous educational achievement.

## Changes in service provision over time

Figure 3.1 presents changes in the referral source of forensic patients admitted to medium secure hospital over time with the national baseline from chapter two as a reference point. The Criminal Justice System remained the most common source of admission into medium security across time. Whilst admissions directly from the community decreased from 1999 to 2017, transfers from other medium secure hospitals increased over time. Forensic patients stepping down from high secure hospital or moving up from less secure settings were less prevalent sources, but remained relatively consistent over time. A 5x3 chi-square analysis identified a significant association across the three time periods of discharge with the different referral sources ( $X^2 = 33.05$ ,  $df = 8$ ,  $p > 0.050$ ). Post hoc 5x2 chi-square analyses

showed this association was significant when those discharged between 1999 and 2006 were compared with both later discharge time periods ( $p < 0.003$ ), whereas no significant association was shown when those discharged from 2006 to 2011 were compared with those discharged from 2012 onwards ( $p > 0.412$ ).

The DUNDRUM triage security and urgency scales provided insight into the security need of forensic patients on admission and the urgency for admission. The average scores presented in table 3.5 showed that, on average, patients matched the need for medium security, suggesting that patients were appropriately placed in the medium secure hospital. Scores were consistent between those discharged from 2007 to 2011 and those discharged from 2012 onwards. An independent samples *t*-test was used to analyse whether the average scores were significantly different between patients discharged across both time periods. No significant difference was identified on the triage security scale ( $t(113) = 0.789, p > 0.050$ ) and the urgency scale ( $t(112) = 0.517, p > 0.050$ ). This suggested no change in the security need of patients over time.

The number of discharged patients detained under restriction orders increased over time (see table 3.5), and this association between the time period of discharge and the allocation of restriction orders was found to be significant following a 3x2 chi-square analysis. Post-hoc 2x2 chi-square analyses showed that this association was only significant when comparing those discharged from 2012 onwards against those discharged between 1999 to 2006 ( $p < 0.014$ ). All other associations were non-significant (2007-2011 vs 2012 onwards ( $p > 0.025$ ); 1999-2006 vs 2007-2011 ( $p > 0.050$ )).

The length of stay increased over time where those discharged prior to 2007 were typically admitted around two years compared with those discharged from 2012 onwards who were detained for an average of an extra year. The length of stay significantly differed between the patients discharged across the three time periods. Post-hoc tests (Mann-Whitney U) identified significantly longer admission periods for those discharged from 2012 onwards relative to both earlier time periods ( $p < 0.001$  and  $p < 0.009$  respectively), with the admission periods comparable between the two earlier time periods ( $p > 0.050$ ).

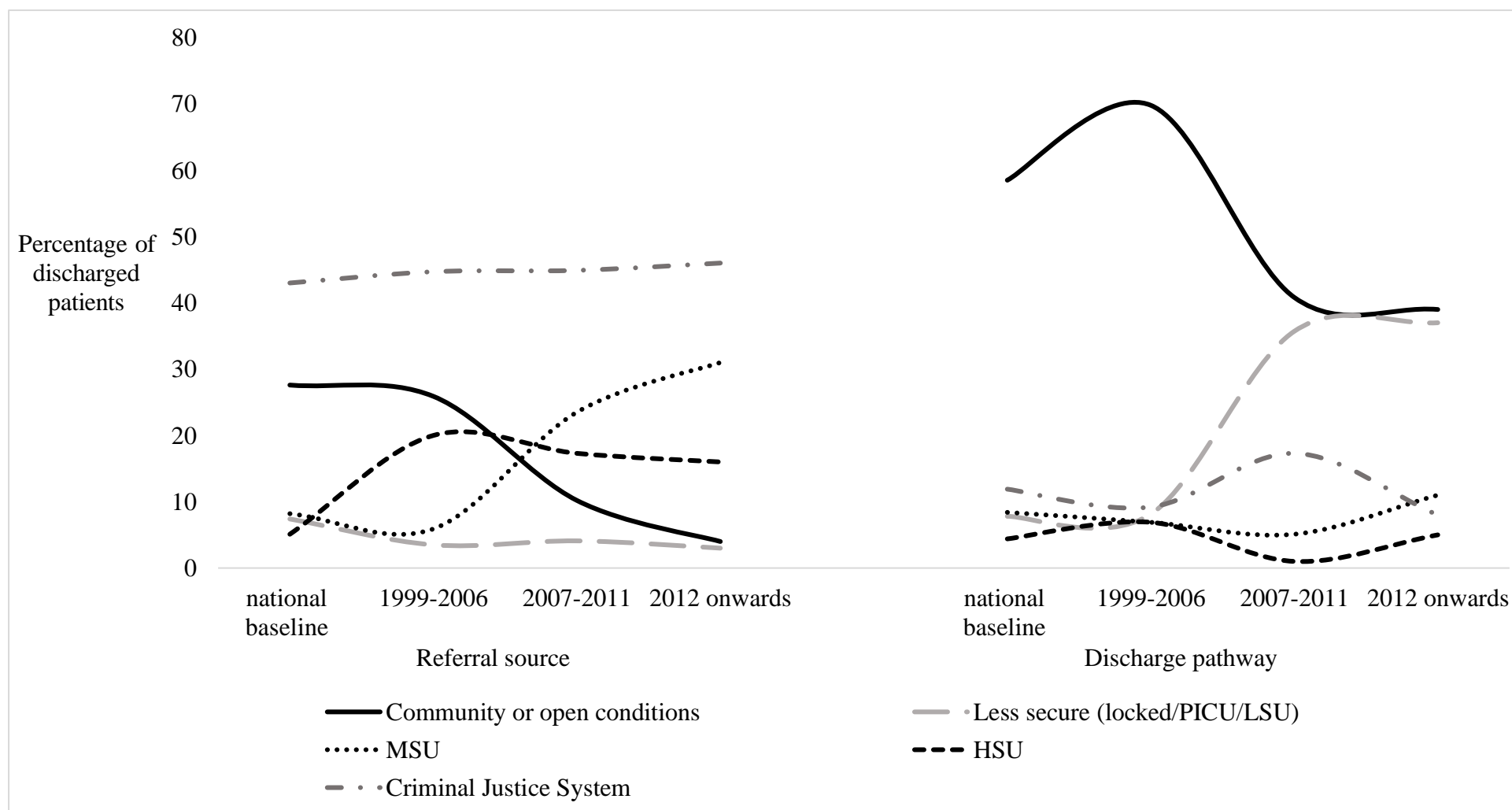
The pathway out of the medium secure hospital across all three time periods is presented in figure 3.1, along with the national baseline from chapter two as a reference



point. Whilst direct discharges to the community or open conditions gradually reduced over time, step down services became more common discharge pathways out of medium secure hospital. Transfers to medium or high secure hospital and remissions to prison were less common discharge pathways that remained relatively stable over time. A 5x3 chi-square test showed a significant association between the discharge pathway for patients discharged across the three-time periods ( $X^2= 28.24, p<0.001$ ). This association was significant only when those discharged from 1999 to 2006 were compared with those discharged across both later time periods ( $p<0.001$ ), and not when both later time periods were compared ( $p>0.050$ ). A further 3x2 chi-square test showed no significant association between the three time periods of discharge and remissions to prison ( $X^2= 5.53, p>0.05$ ); suggesting that this did not change over time.

**Table 3.5** Differences in average scores between forensic patients discharged across the three time periods.

Variable	Mean (SD)			$X^2$	<i>P-value</i>
	1999-2006	2007-2011	2012 onwards		
Restriction order: percentage of patients (%)	57.5%	61.2%	74.7%	6.69	0.035**
Length of stay (days)	717 (616)	851 (681)	1072 (690)	17.08	0.001**
DUNDRUM					
Triage Security	n/a	2.91 (0.43)	3.00 (0.34)		
Urgency	n/a	2.16 (0.45)	2.26 (0.49)		
Programme Completion	2.18 (0.61)	2.21 (0.79)	2.24 (0.79)		
Recovery	2.44 (0.69)	2.44 (0.83)	2.14 (0.81)		
HCR-20					
Clinical	n/a	4.34 (2.76)	4.39 (2.67)		
Risk	n/a	4.90 (2.46)	5.21 (2.51)		



**Figure 3.1** Percentage of patients with different referral sources and discharge pathways across the three discharge time periods (national baseline from chapter two included as reference point).

## **Changes in patient progress in medium secure care over time**

The HCR-20 assessments were compared between forensic patients discharged from 2007 to 2011 and 2012 onwards to evaluate differences in risk of violence at discharge. Total scores on the clinical scale appeared consistent for all patients discharged from medium security, whereas patients discharged from 2012 onwards showed a slight elevation in total scores on the risk scale compared to those discharged earlier (see table 3.5). Two independent samples t-tests identified no significant difference in scores between the two time-periods for either the clinical scale ( $t(159) = -0.129, p > 0.050$ ) or the risk scale ( $t(160) = -0.792, p > 0.050$ ); suggesting no change in the risk levels of patients discharged from medium security across time.

The programme completion and recovery scales of the DUNDRUM quartet mapped onto the readiness for discharge from conditions of medium security. On average, patients discharged across each time period showed average scores on both scales that indicated a readiness to step down to less secure conditions (e.g. low secure hospital or PICU; see table 3.5). Analysis of Variance (ANOVA) showed that scores on the programme completion scale remained stable over time with no significant difference between patients across the three time periods ( $F(2, 265) = 0.140, p > 0.050$ ). A significant difference was however reported as scores reduced on the recovery scale for those discharged from 2012 onwards relative to those discharged earlier ( $F(2, 264) = 4.497, p < 0.012$ ); and post-hoc tests with Bonferroni correction showed this difference was statistically significant compared to both earlier discharge periods ( $p < 0.048$  and  $p < 0.024$  respectively; significant with alpha adjustment). Those discharged from 1999 to 2006 and 2007 to 2011 showed similar recovery scores ( $p > 0.050$ ). This reflected better recovery outcomes following medium secure provision in recent years relative to provision from 1999 to 2011.

## **Predictive factors of patient progress through medium secure care**

The DUNDRUM quartet was used to deduce the rate of recovery through medium secure care whilst controlling for different lengths of stay (see rate of recovery equation in method section). An ordinal regression was used to identify predictive patient factors associated with the rate of recovery through medium security across 1999 to 2017. Table 3.6 presents all variables included in the regression model. The model was a non-significant

predictor of rate of recovery ( $X^2(13) = 22.16, p > 0.050$ ) and the deviance goodness of fit test was also not significant ( $p > 0.868$ ).

Table 3.6 shows that only the number of adverse childhood experiences and previous education were significant predictors of the rate of recovery of patients. Those with higher adverse childhood experiences and lower levels of educational achievement showed a greater rate of recovery; although these became non-significant individual predictors following alpha adjustment. The analysis was repeated to determine how much variance was accounted for by only these two patient factors (ACEs and education history). This modified model was a significant predictor of rate of recovery through medium security ( $X^2(2) = 15.92, p < 0.001$ ). The deviance goodness of fit test was non-significant ( $p > 0.050$ ).

**Table 3.6.** Predictive factors associated with rate of recovery using Ordinal Regression.

Variable	Wald	P-value
Age at admission	0.24	0.623
Sex	0.81	0.367
Ethnicity	0.01	0.997
<i>Forensic</i>		
Severity of index offence	1.33	0.250
<i>Social</i>		
Adverse Childhood Experiences	4.14	0.042*
Child institutionalisation	0.10	0.756
Employment	0.01	0.927
Education	5.83	0.016*
Drug related problems	0.05	0.830
Alcohol related problems	2.78	0.095
<i>Clinical</i>		
Psychotic related diagnosis	0.11	0.741
Personality disorder diagnosis	2.02	0.155
Number of previous psychiatric admissions	0.77	0.381

### 3.4 Discussion

The aim of this study was to investigate how the patients treated by a Welsh medium secure hospital changed over the last two decades. Specifically, this study aimed to identify changes in patient characteristics, service provision, and patient progress over time. This objective extended analysis beyond the previous chapter by identifying what actually changed for patients during medium secure care and by exploring the factors that predicted this.

#### *Changes in patient characteristics*

The results suggest that the Welsh medium secure hospital discharged patients with higher risk and greater social complexities over time, whereas the clinical features of forensic patients remained relatively stable.

Consistent with previous literature, the medium secure hospital appeared to detain patients of greater risk over time (Mohan *et al*, 1997; Ricketts *et al*, 2001; Gibbon *et al*, 2013). Those discharged later from medium security showed higher risk of violence based on the historical scale of the HCR-20 compared to those discharged prior to 2012. However, this change could not be explained by the nature of index offences alone, as the severity of the index offence remained relatively stable from 1999 to 2017. The unavailability of criminogenic information prevented a detailed understanding of how patient risk changed over time and would be meaningful to explore further.

Increased risk-related factors were also reflected in increased ACEs scores. The recording of ACEs in patient health care records may not have been systematic over time, and so this may not be an entirely reliable index of change over time, although it does hint towards increasing social adversity in this population over time. The data collected indicated that those discharged from 2012 onwards had greater exposure to adverse childhood experiences, most notably exposure to verbal abuse and living with someone who abused prescribed or illegal street drugs. These findings indicate that social complexity and deprivation of patients detained in medium secure hospital is increasing. Most previous

literature failed to focus on the social trauma experienced by patients (Higgo & Shetty, 1991; Mohan *et al*, 1997; Earnshaw *et al*, 2019). The national baseline from the previous chapter provided a reference point to confirm whether childhood trauma became a more prevalent feature of forensic patients detained in medium secure hospital. Although alpha adjustment corrected for the growing prevalence of patients with previous exposure to childhood physical and sexual abuse in the Welsh cohort from 1999 to 2017, comparisons with the national baseline support the concept that this prevalence had increased over time. This is consistent with previous claims that childhood trauma became a more common feature in the forensic psychiatric population (Gibbon *et al*, 2013).

The impact of ACEs as a global health burden was accepted by the World Health Organisation by 2009 (WHO, 2009). Mental health services have shifted in recent years to include ACEs as key considerations to understand mental health difficulties and behaviours, including being incorporated into the Power Threat Meaning framework to formulate the impact of trauma on people's lives (Johnstone & Boyle, 2018). To the author's knowledge, this was the first study that has explored ACEs beyond physical and sexual childhood abuse in a forensic mental health population (Gibbon *et al*, 2013). Further research would be useful to generalise the prevalence of ACEs in medium secure hospitals throughout the UK. This may shift attention from criminogenic features to a trauma-focused understanding of the presentations and behaviours of forensic patients (Copas & Marshall, 1998; Bellis *et al*, 2016).

Social deprivation also appeared more prevalent in the forensic psychiatric population discharged from medium security from 1999 to 2017. A history of unemployment prior to admission escalated from around one in four forensic patients to almost one in two. Comparisons with older samples from previous literature confirm the rise in unemployment of those detained in medium secure hospital (Davies *et al*, 2007). However, unemployment rates of those discharged from 2012 from the Welsh medium secure hospital are comparable to the national baseline from the previous chapter; suggesting no change over the last two decades when all patients across each medium secure hospital across England and Wales are considered. Other social factors, including educational history and substance misuse remained stable over the last two decades, further challenging the view that social deprivation has become a more prevalent feature of the forensic population detained in medium secure care.

The prevalence of forensic patients with a diagnosis of a psychotic or personality disorder also remained stable over time. Although the amended Mental Health Act (2007) attempted to improve accessibility to mental health services for those with a personality disorder, the growing availability of forensic secure care for this population may have been through Dangerous and Severe Personality Disorder (DSPD) services and the Offender Personality Disorder Pathway that succeeded them, rather than medium secure hospitals.

The inpatient history of forensic patients became less complex over time; although this marginally missed the cut-off value for significance. Previous literature is conflicting and therefore not able to explain this trend, where the psychiatric histories of forensic patients admitted to medium security were shown to increase between 1999 and 2008 (Shah *et al*, 2011). Whereas comparisons between the Welsh cohort and the national baseline from the previous chapter suggest no change in the number of previous admissions of forensic patients over the last two decades.

Comparisons between the findings of this chapter and the national baseline from the previous chapter demonstrate the caution needed when interpreting results from a single medium secure hospital. Many clinical, criminogenic and social factors with no reported change over the last two decades vary from the national baseline. Differences between this cohort and the national baseline may therefore be a reflection of distinct regional differences of the Welsh medium secure hospital relative to the rest of England and Wales.

### *Changes in service provision*

Changes in the provision of medium secure hospitals over the last two decades were demonstrated. The imposition of restriction orders, lengths of stay in medium security and the discharge pathways from this level of care significantly changed over time in the direction suggestive of a shift in attitudes towards risk containment and public protection; at the cost of the patients' liberty (Brown & Fahy, 2009).

The gradual increase in use of restriction orders over time is apparent through comparisons in this study, and comparisons between the Welsh cohort and the national baseline from the previous chapter. This is consistent with national reviews identifying a

4.0% increase in restriction order dispositions each year across the UK (Ministry of Justice, 2019). The findings of the previous chapter suggest inefficient use of restriction orders across England and Wales between 1997 and 1998. The increase in use of restriction orders shown in this chapter perpetuates this concern of possible imprudent practice at the cost of the patients' liberty. Although, this needs to be explored further to determine whether restriction orders are efficiently designated to patients, and if they reduce risk behaviour following discharge (see chapter five). The increasing number of patients detained under restriction orders in the Welsh medium secure hospital may simply reflect that medium security has become more 'forensic' in nature, and perhaps those under civil sections have been accommodated elsewhere to more appropriate placements; which would also be useful to investigate.

Consistent with previous literature, the average length of stay of forensic patients discharged from medium secure hospital increased over the last two decades (Earnshaw *et al*, 2019). This escalation is evident when those discharged from 2012 are compared with the national baseline of forensic patients from chapter two. The length of stay for those discharged from 2012 exceeded guidance of a two-year target outlined in the Butler Report (Home Office & DHSS, 1975), although this may reflect the increasing risk and complexity of the forensic psychiatric population over time requiring longer admission periods to reduce risk and manage mental health difficulties. Whether longer admission periods improve patient outcomes following discharge from medium secure care would be informative to justify the extended detainment in secure conditions; this is explored in chapter five.

The typical pathway from medium security shifted from direct discharge to the community or open conditions to step down services across 1999 to 2017. This shift is further demonstrated when comparing the findings with the national baseline from chapter two. These findings likely reflect the reconfiguration of forensic mental health services where commissioning transferred from high security with a greater abundance of step down services to bridge the gap between medium secure hospitals and the community (NHS England, 2015a). Yet, forensic community mental health teams also expanded across the UK over the last two decades to help patients step down from secure conditions (Judge *et al*, 2004); that likely aided the process of directly discharging patients to the community. Medium secure hospitals may have adopted a more conservative approach to discharge patients that ensured a preservation of public protection. The clinical decision process about the discharge pathways



for patients would be useful to explore to determine whether this shift may reflect changes in patient characteristics, a function of treatment progress, or simply representative of greater priority in risk management and public protection.

The admission and remission of prison to hospital transfers appeared stable over time and are consistent with the national baseline outlined in chapter two. This fails to reflect the developments of diversion and liaison services across the UK to move prisoners into forensic mental health services, most notably medium secure hospitals (Rutherford & Duggan, 2007; Bradley report, 2009; Durcarn *et al*, 2014). Prison remissions have been reported to double over the last two decades in the UK that cause concern about the management of mental health difficulties in the criminal justice system (Birmingham *et al*, 2017). The findings of this study may suggest distinctions in the Welsh medium secure hospital compared to the rest of the UK, and therefore identifying the specific regional providers that remit patients to prison at a greater rate will inform the Department of Health of where to target interventions to manage this.

#### *Changes in treatment progress and risk factors*

Forensic patients presented similar scores across both the clinical and risk scales of the HCR-20 from 2007 to 2017. This challenged justification for longer admission periods of patients discharged more recently, as they showed equivalent risk of violence at discharge relative to those discharged earlier with shorter periods of loss of liberty. Improvements in patient recovery from 2012 onwards may have justified the longer admission periods to ensure more successful patient outcomes. Scores on the DUNDRUM recovery scale reduced across the three time periods between 1999 to 2017, whereas scores on the programme completion scale did not significantly change. However, scores on the recovery scale reflected that patients discharged from 2012 onwards may have been more prepared to step down to open conditions relative to those discharged earlier; although the discharge pathway became more restrictive with more patients remaining in secure conditions. This further suggests more stringent practice in medium secure hospitals at the expense of patients' liberty that appear unjustified.

However, medium secure hospitals may have simply improved by matching risk levels to the necessary security need. The programme completion and recovery scales are

considered ‘best practice frameworks’ to govern the decision making about readiness of discharge to different levels of security (Lawrence *et al*, 2018; Kennedy *et al*, 2019). On average, DUNDRUM programme completion and recovery scores of those discharged from 2012 onwards matched the need for discharge to less secure services. The average scores of those discharged earlier also matched this discharge pathway despite that they were more commonly discharged directly to the community. The DUNDRUM programme completion and recovery scales have been validated previously as useful measures to aid clinical decisions about the discharge pathway for patients (O’Dwyer *et al*, 2011; Davoren *et al*, 2012; 2015). Whether these scales validly map onto the different discharge pathways for forensic patients discharged from the Welsh medium secure hospital is explored in chapter four.

To date, most research has attempted to reveal those at risk of reconviction to help implement appropriate risk management strategies (Baxter *et al*, 1999; Friendship *et al* 1999; Maden *et al*, 2006a; Sahota *et al*, 2010). This chapter instead explores predictive factors of progress through medium secure hospital. Surprisingly, greater exposure to childhood adversity and less educational attainment were close to significance as protective factors of a better recovery rate, and together predicted the recovery rate. If both protective factors are perceived as indicators of social deprivation, this may simply represent the impact of removing forensic patients from a socially deprived environment into conditions with structured care and support. This may also reflect the impact of care and treatment in medium security that possibly targets helping patients come to terms with trauma through therapy, as well as providing scope for patients to develop self-worth and a social role that they may have been deprived of through their early and adult development (Ward & Brown, 2004). The Good Lives Model (Ward & Brown, 2004) highlights the importance of the social environment and social roles to encourage rehabilitation amongst the forensic population.

## Limitations

A number of limitations to this study were considered. One limitation being the reliance of a single medium secure hospital that likely had distinct policies, pressures, security measures and step-down services available at discharge (Richards, 2006). The base rates of ACEs and social deprivation in Wales have been reported as higher relative to England that may suggest unique patient characteristics in the Welsh medium secure hospital

(Bellis *et al*, 2014; Bellis *et al*, 2016), and therefore may impact on the generalisability of this chapter to reflect changes in medium secure care across England and Wales. The disparity between Welsh patients discharged from 1999 to 2006 against the national baseline from the previous chapter undermines the Welsh cohort as representative of medium security across England and Wales.

The absence of criminal data prevented an understanding of how the criminogenic profile of patients changed beyond the severity of the index offence. The inconsistent and piecemeal reporting of criminogenic history across healthcare records failed to resolve this problem. Although the HCR-20 helped measure the risk of violence of forensic patients and how this changed over the past two decades, the OGRS-2 and the HCR-20 are incomparable to meaningfully capture changes in risk between the Welsh cohort relative to the national baseline from chapter two.

The retrospective collection of ACEs has been criticised previously for recall bias, poor reliability, and inaccuracies (Widom, Raphael & DuMont, 2004). Inconsistencies have been a common challenge with poor test-retest reliability previously reported (Fergusson, Horwood & Woodward, 2000). This is evident when only between 41.0% and 67.0% of sexual childhood abuse has been reported retrospectively in later life (Widom & Morris, 1997). This causes concern that ACEs may be underreported in the current study. However, conflicting literature has demonstrated valid and reliable retrospective reports of ACEs (Dube, Williamson, Thompson, Felitti & Anda, 2004; Kendall-Tackett & Becker-Blease, 2004; Gilbert *et al*, 2009). The accuracy of the reported ACEs in this study was also restricted to the credibility and precision of the healthcare records in the medium secure hospital. It may be useful to explore the prevalence of adverse childhood experiences across other medium secure hospitals to confirm the accuracy of reporting in this study. This may also confirm the changes in adverse childhood experiences over time that became non-significant following alpha adjustment.

The availability of healthcare records to collect data for those discharged between 1999 and 2006 was either inconsistent or missing. This led to an absence of data showing the risk of violence and security need of these patients, along with a proportion of missing data across all other variables. This hindered the ability to validly capture change over the past two decades.

## Conclusions

This chapter demonstrates that the Welsh medium secure hospital discharged patients of higher risk over time, along with greater exposure to adverse childhood experiences and social deprivation. Medium secure hospitals also became more restrictive in practice, despite that patients showed better recovery over time. It would be meaningful to deduce what governs decision-making in medium secure hospitals to explain why some patients, particularly those discharged more recently, were made subject to more restrictive measures.

Forensic patients who previously experienced childhood adversity with poor education achievements progressed better through medium security, which may reflect the care and treatment provided to target trauma and social deprivation, although this requires further exploration.

## **CHAPTER 4**

### **Factors that predict the discharge pathway from medium security: what influences clinical decision making?**

#### **Abstract**

#### **Objectives**

This chapter explores factors associated with decisions regarding the discharge pathway for patients leaving a medium secure hospital. The main objective of the study was to determine what information influenced clinical decision-making for pathways out of medium secure care.

#### **Method**

The programme completion and recovery scales of the DUNDRUM quartet were retrospectively completed for 268 patients discharged from a medium secure hospital (between July 1999 and November 2017). Sixty-four patients were discharged to medium or high security or prison, 78 stepped down to less secure services and 126 successfully discharged to open conditions or the community. Static factors of each patient were also collected.

#### **Results**

Only a few items in the programme completion and recovery scales significantly predicted those directly discharged to the community or open conditions, these included: improvement in self-care and activities of daily living, family and social networks, and leave status. A diagnosis of a psychotic related disorder and an improved leave status predicted those who stepped down to less secure services. The addition of all other items of both DUNDRUM scales, and the addition of other static patient factors were redundant for predicting the discharge pathway for patients. The programme completion and recovery scales were each able to differentiate patients discharged to medium security or higher levels of security, those who stepped down to less secure services and those discharged to the community or open conditions.

#### **Conclusion and Implications**

The programme completion and recovery scales were useful tools to apply in forensic services in the UK and can aid clinical decision making about the appropriate discharge pathway for patients. Clinicians in the Welsh medium secure hospital may have relied on only a few factors related to treatment progress and recovery to inform judgements about the discharge pathway for patients. Whether these areas of patient progress were crucial for successful long-term outcomes following discharge would be informative to justify why they predicted the discharge pathway for patients.

#### **4.1 Introduction**

Since the introduction of medium secure hospitals from 1980 the forensic care pathway has continued to evolve; multiple ‘step-down’ services have developed to bridge the gap between high security and the community (Department of Health & Home Office, 1992; Judge *et al*, 2004; Dix, 2005; 2013). In essence, a continuum of secure services evolved that embodied the forensic care pathway. Levels of security ranged through high security; medium security; low security; locked rehabilitation; community services to absolute discharge. The development of each of these services has been piecemeal and ad hoc in the absence of a national framework that specified the features of each level of security. Inconsistency in practice, ambiguity in gatekeeping (Lawrence *et al*, 2018), and arbitrary transfers between levels of security have resulted (Coid *et al*, 2001).

Vague definitions were established to distinguish between patients admitted to the different levels of security where those deemed grave, immediate or significant risk matched high, medium or low security respectively (Kennedy, 2002; National Public Services for Wales, 2006; Rutherford & Duggan, 2007). Distinct relational, procedural and physical security measures became the forefront to differentiate each security level across the forensic care pathway (Kennedy, 2002), and these measures have been widely accepted benchmarks that define high, medium and low security hospitals in the UK (Joint Commissioning Panel for Mental Health, 2013). However, clinicians often struggled to evaluate and match the presented risk of patients with the appropriate levels of security (Reed, 1997; Melzer *et al*, 2004), and this became an ongoing challenge across forensic mental health services (Centre for Mental Health, 2011). The vague criteria differentiating each level of security likely led to the reliance of subjectivity in clinical decision-making and enabled the opportunity for bias to emerge in forensic practice. Bias has been evident in gatekeeping decision-making across

England and Wales with the pressure of public protection in forensic secure services shifting clinical judgement towards risk aversion and errors in perceived risk (Mossman, 1994; Reed, 1997; Mulvey & Lidz, 1998; National Public Services for Wales, 2006).

Until recently, unstructured clinical opinion was the status-quo for informing decisions in forensic practice (Burns, 2016). Forensic mental health services regularly required clinicians to make decisions based on ambiguous and incomplete information in time pressured environments (Grounds *et al*, 2004; McRae, 2013). Such circumstances are considered optimal conditions for heuristic influences on human decision making; heuristics are mental shortcuts for reaching efficient decisions (Tversky & Kahneman, 1974). Although heuristics helped clinicians pick out key factors from expansive information, they were inevitably a source of bias and were often associated with error. A variety of heuristics and biases were shown in forensic practice; including representative, availability and anchoring heuristics, and confirmation bias (Murray & Thomson, 2010; Lilienfeld & Lynn, 2014). These were shown to operate in a number of contexts; including expert witness opinions in court proceedings (Acklin, Fuger & Gowensmith, 2015) and placement recommendations in forensic settings (Stredny, Parker & Dibble, 2012). There has been debate that inaccuracies in decision making across forensic services are simply random errors as opposed to systematic bias (Mossman, 2013). However, clinical expert witness reports demonstrated systematic bias dependent on whether the expert was appointed by the defence or prosecution (Murrie, Boccaccini, Johnson & Janke, 2008).

Over the last two decades forensic practice has moved away from unstructured clinical judgement with the aid of measures designed to inform or support decision-making, most notably risk assessment measures. Actuarial and Structured Professional Judgement (SPJ) tools were developed and became embedded in policy in order to promote best practice across forensic mental health services (Department of Health, 2007). Both types of risk assessment tools, including the Violence Risk Appraisal Guide (VRAG), the Historical Clinical Risk Management 20 (HCR-20) and the Static 99 have demonstrated superiority at predicting offending and antisocial behaviour when compared with unstructured clinical judgement (Guy, 2008; Murrie *et al*, 2008; Hanson, Morton-Bourgon, 2009). Bias still persisted in clinical judgement even when these measures were used as an aid, but to a less degree (Murrie *et al*, 2008; Murrie, Boccaccini, Guarnera & Rufino, 2013). This highlights that clinicians need to remain cautious and aware of susceptibilities that cause errors in

clinical judgement, although most evidence of bias in forensic practice has evaluated errors in risk assessments (Grove & Meehl, 1996; Hart, Michie & Cooke, 2007; Guy, Douglas & Hart, 2015). A variety of crucial decisions are made by clinicians in forensic practice beyond risk assessment, including decisions about gatekeeping and the readiness of forensic patients to step down the forensic care pathway. Such decisions have huge implications to public protection and patient liberty, although limited research has explored what influences them.

Mental Health Review Tribunals (MHRTs) review the lawfulness of detention under the Mental Health Act (MHA, 1983 as amended in 2007) and determine whether forensic patients can be discharged from forensic mental health services across England and Wales. The clinical opinion of members of the forensic patients' multidisciplinary team are weighted highly in this review process, particularly views presented in the psychiatric report (Hallett, 2016). However, clinician reports submitted to the MHRT have often been associated with error (Egleston & Hunter, 2002; O'Muirthe & Shankar, 2008); of particular concern is the reported over-emphasis of perceived risk (Dolan, Gibb & Coorey, 1999). Clinicians have relied on invalid information to judge patient risk in MHRT reports and have overlooked robust actuarial measures (e.g. VRAG) with confirmed predictive validity that supersedes unstructured judgement (Hilton & Simmons, 2001; McKee, Harris & Rice, 2007). Systematic bias and the disregard for validated risk assessment tools has challenged the credibility of multidisciplinary reports submitted to advise the MHRT about the discharge pathway for patients. Although risk assessment plays a critical role to inform judgements about the readiness of patients to discharge from forensic mental health settings, engagement with treatment and recovery are also considered crucial factors to inform this decision process (O'dwyer *et al*, 2011; Davoren *et al*, 2013; Jewell, Dean, Fahy & Cullen, 2017). Whether these alternative factors inform this decision-making process remains unclear. The DUNDRUM quartet has been established to fill this gap and provide a SPJ tool that considers patient progress whilst detained in hospital, in addition to the perceived risk of patients to aid discharge decision-making (Kennedy *et al*, 2013).

The DUNDRUM quartet consists of four scales; two were designed to aid gatekeeping decision making (triage security and urgency) and two support decisions about the readiness of discharge (programme completion and recovery). Each scale presents strong psychometric properties that distinguishes between those admitted and discharged to different levels of security (Flynn *et al*, 2011; O'Dwyer *et al*, 2011; Davoren *et al*, 2012; 2013). The



DUNDRUM quartet has been shown to surpass other measures of security need (Jeandarme & Habets, 2019; Habets, Jeandarme & Kennedy, 2020) and routine outcome measures in forensic practice to judge patient progress (O'Dwyer *et al*, 2011; Doveren *et al*, 2012; Abidin *et al*, 2013). There is scope for the DUNDRUM quartet to be implemented in forensic practice across the UK to improve clinical decision making and to explore patient progress in medium secure hospitals. However, the quartet has seldom been tested and applied in the UK (Lawrence *et al*, 2018). Extending the external validity of the DUNDRUM quartet requires extensive testing in England and Wales and also further afield before the scales can be universally endorsed for routine application in forensic practice.

The DUNDRUM quartet has also been used as a 'best practice framework' to expose possible errors in unstructured professional judgement about gatekeeping into different levels of secure care. The DUNDRUM triage security scale was inconsistent with court decisions about the recommended level of care needed, as court decisions recommended higher security needs in almost half of cases relative to the triage security scale (Jeandarme, Habets & Kennedy 2019). Immediacy of risk and legal processes were also revealed as possible anchoring heuristics that govern gatekeeping decision making into the forensic care pathway in Wales (Lawrence *et al*, 2018). These findings were useful to help services become aware of factors that influence judgements in forensic practice that may inform improvements and prevent bias. The programme completion and recovery scales would be useful to explore as 'best practice frameworks' to evaluate clinician decisions in medium secure hospitals and to identify the factors that dictate the perceived readiness of discharge from this level of security.

Although patient risk and recovery are considered fundamental factors to govern the readiness of patients to discharge from forensic mental health services (McKee, Harris & Rice, 2007; Davoren *et al*, 2013), static factors have been found to infringe this decision process (Jewell *et al*, 2017). Legal status plays a huge part in determining whether a patient should remain detained in hospital; at-least 33.0% of restricted patients have been approved to discharge from inpatient services relative to 8.0% of unrestricted patients between 2018 and 2019 across the UK (Care Quality Commission, 2020). This may simply reflect the different processes by which restricted and unrestricted patients are discharged; the former through the Ministry of Justice and MHRT reviews and the latter through the Responsible Clinician or by a MHRT review process (Jewell *et al*, 2017). Sex differences and diagnosis

have shown mixed results as factors that influence whether patients are likely to be discharged from psychiatric services (Saad & Sashidharan, 1992; Taylor, Goldberg, Leese, Butwell & Reed, 1999; Hilton & Simmons, 2001; Dibben, Wong & Hunt, 2005; Davoren *et al*, 2013). Whereas, it is reassuring that ethnicity and age have been confirmed as non-influential factors of MHRT decisions (Taylor *et al*, 1999). Although, much of this literature is outdated or is difficult to apply to the UK due to being tested in other countries with incomparable criminal and mental health systems. Moreover, many other static patient factors shown to be associated with risk following discharge from forensic secure services have not been investigated to determine how well they influence decisions of discharge; including social and criminogenic factors (Bonta, Blais & Wilson, 2013; although this was challenged in chapter one). The previous chapter demonstrates that many patient static factors showed no association with patient progress through medium security in Wales (excluding legal status that was not tested; see previous chapter), and therefore such information may be perceived as a distractor, as opposed to informative if influencing the decision process of a patient's discharge pathway.

This chapter presents a study that explored each item of the DUNDRUM programme completion and recovery scale, along with static patient factors to deduce what governed clinician decisions about the readiness of patients to step down from conditions of medium security. This may reveal biases in forensic practice with the DUNDRUM programme completion and recovery scales used as a 'best practice framework' (Lawrence *et al*, 2018), along with identifying patients at greatest risk of undesirable discharge pathways. The specific objectives of this study included:

- 1) identifying whether every item of the DUNDRUM programme completion and recovery scales predicted the discharge pathway for forensic patients; and demonstrating that decisions were consistent with both scales as a 'best practice framework';
- 2) determining whether static factors informed clinical decision-making about the discharge pathway for patients; and
- 3) deducing whether the DUNDRUM programme completion and recovery scales differentiated between patients discharged to different levels of security to confirm their applicability in the UK.

## 4.2 Method

### Sample

Of the 285 forensic patients discharged from the Welsh medium secure hospital between July 1999 and November 2017, only 268 had available data for the purpose of this study. Those with missing data did not differ significantly from the cohort included in this study across all demographic variables ( $X^2 = 3.09$ ,  $p > 0.079$ : sex, ethnicity, diagnosis and legal status;  $U = 1990$ ,  $p > 0.382$ : age at admission and referral source). Only the first admission was recorded to avoid sampling error from repeat admissions.

The patient cohort was separated into three groups based on the discharge pathway from the medium secure hospital (community or open conditions; lower secure care; same or higher security). A total of 204 patients successfully stepped down from conditions of medium security; 126 were directly discharged to the community or open conditions and 78 were discharged to step-down services (low security, locked rehabilitation or Psychiatric Intensive Care Units (PICUs)). Sixty-four patients were unsuccessfully discharged; to medium security ( $n=21$ ), high security ( $n=12$ ) or prison ( $n=31$ ).

### Design and Procedure

Ethical approval was granted by Health Care Research Wales (Research Ethics Committee reference= 18/WA/0157), Bro Morgannwg University Health Board Research and Development (R&D) department (recently superseded by Swansea Bay University Health Board), and the University's Research Ethics Committee. The Health Research Authority granted approval for the study to take place without the consent of discharged patients under Section 251 of the NHS Act, 2006 (Confidentiality Advisory Group reference: 18/CAG/0090).

The author carried out a between-subject retrospective analysis of healthcare records for all 268 forensic patients. The author retrospectively completed the DUNDRUM programme completion and recovery scales based on healthcare records using the DUNDRUM manual (V1.0.30; Kennedy *et al*, 2016) blind to the discharge pathway, but not

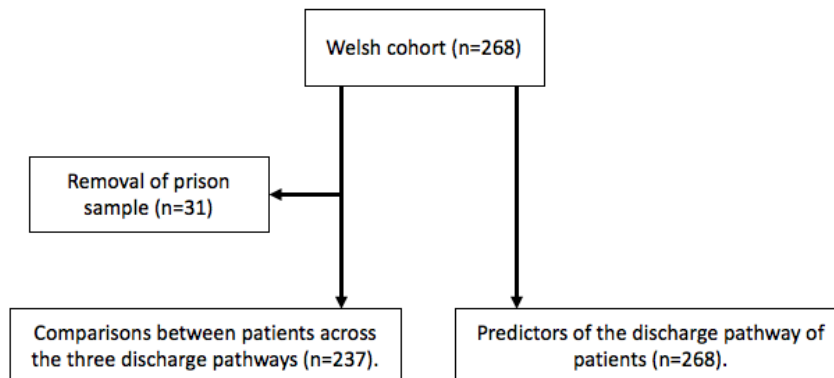
the discharge date. The author received training to complete the Historical Clinical and Risk Management-20 V3 (HCR-20; Douglas *et al*, 2013) prior to collecting or processing any of the data, which improved reliability to complete structured professional judgement measures for the thesis. Table 3.1 and the materials section in the previous chapter provide a detailed outline of how both scales were coded and where information was sourced. The average scores across the DUNDRUM programme completion and recovery scales were calculated, along with scores for the individual items (see table 4.1 for list of individual items).

A total of 90 patients had missing HCR-20 reports in their healthcare records. This prevented scoring of one item in the DUNDRUM recovery scale (item five; dynamic risk). The author simply omitted this item when calculating average scores for the complete scale. This item was excluded when each item was (1) evaluated for differentiating patients between the three discharge pathways, and (2) tested as a predictor for the discharge pathway from the Welsh medium secure hospital.

Table 3.1 from the previous chapter also outlines the healthcare records used to source the discharge pathways and static factors of patients; including the imposition of restriction orders and demographic (sex, ethnicity and age at admission), criminogenic (severity of index offence), clinical (diagnosis and number of previous psychiatric admissions) and social factors (number of Adverse Childhood Experiences; ACEs, institutionalised care, employment and education history, and drug and alcohol problems) for each patient. The coding for the imposition of restriction orders and demographic, criminogenic, clinical and social factors are also consistent with table 3.1 of the previous chapter, whilst the coding for the discharge pathway differs; as summarised in the sample section of this chapter. Staff from the medium secure hospital corrected any confusion about the security level of specific discharge pathways. Table 4.2 presents the distribution of missing data for each static factor across the three discharge pathways.

The DUNDRUM quartet was not established to evaluate appropriateness for remission to prison, as prison was excluded from the five-point rating system for each item across the DUNDRUM programme completion and recovery scales. Therefore, those remitted to prison from the Welsh medium secure hospital (n=31) were excluded from any analysis that evaluated how well the DUNDRUM programme completion and recovery

scales, and the individual items distinguished those discharged across different pathways (see figure 4.1).



**Figure 4.1** Sample size for different statistical analyses.

## Materials

*Dangerousness, Understanding, Recovery and Urgency Manual (Dundrum; Kennedy et al, 2016)*

### *Programme Completion and Recovery scales*

The programme completion and recovery scales of the DUNDRUM quartet were designed to measure a patient's engagement with their care and treatment and recovery to provide an indication of the changing security need, and therefore both scales are dynamic in nature. Both scales enable structured professional judgement about a patient's readiness to discharge across the forensic care pathway. The scales were developed with inspiration of several theories, including the five pillars of treatment, Maslow's hierarchy of needs (Maslow, 1943), stages of change (Prochaska & DiClemente, 1983), and the five stages of recovery (Anderson *et al*, 2003; Weeks *et al*, 2011). The Cronbach's alpha statistic of all items across both scales is 0.94 (O'Dwyer *et al*, 2011). This is preserved with the omission of one item that reassures the validity of findings in this chapter with the omission of one item for 90 patients.

Table 4.1 outlines the individual items embedded in the DUNDRUM programme completion and recovery scales. The five-point rating system of each item is reported in

chapter three (table 3.2). The Cronbach's alpha statistic for the seven programme completion items is 0.91 (O'Dwyer et al, 2011), whilst the Cronbach's alpha statistic for the six recovery items is 0.89. The Cronbach's alpha statistics range from 0.89 to 0.91 and 0.85 to 0.89 depending on any one item omitted from either scale respectively (O'Dwyer et al, 2011). Although the inter-rater reliability of the DUNDRUM-3 and 4 were not tested, this was completed for the DUNDRUM-1 based on the author's scoring compared with scoring from previous literature using the same cohort (Lawrence *et al*, 2018). Nine out of the eleven items report moderate to very good agreement between the two raters ( $K_w = 0.48$  to  $0.87$ ,  $p < 0.001$ ; Altman, 1991).

**Table 4.1** DUNDRUM programme completion and recovery items.

Item	Programme Completion	Recovery
1	Physical health	Stability
2	Mental health	Insight
3	Drug and alcohol work	Therapeutic rapport
4	Problem behaviour	Leave status
5	Self-care and activities of daily living	Dynamic risk
6	Education, occupation and creativity	Victim sensitivities
7	Family and social networks	n/a

**Table 4.2** Percentage of missing data for each variable across all three discharge pathways.

Variable	Community or open conditions	Lower secure care	Same, higher security or prison	Total
<i>DUNDRUM</i>				
Programme Completion	0.0%	0.0%	0.0%	0.0%
Recovery	0.8%	0.0%	0.0%	0.4%
Sex	0.0%	0.0%	0.0%	0.0%
Ethnicity	0.0%	0.0%	0.0%	0.0%

Age at admission	0.0%	0.0%	0.0%	0.0%
<i>Criminogenic</i>				
Severity of index offence	0.0%	0.0%	0.0%	0.0%
<i>Social</i>				
ACEs	4.8%	3.9%	4.7%	4.5%
Institutionalised care	1.6%	0.0%	1.6%	1.1%
Employment	2.4%	1.3%	1.6%	1.7%
Education	7.9%	6.4%	3.1%	3.7%
Drug related problems	0.8%	0.0%	1.6%	0.8%
Alcohol related problems	0.8%	0.0%	1.6%	0.8%
<i>Clinical</i>				
Psychotic related disorder	0.0%	0.0%	0.0%	0.0%
Personality disorder	0.0%	0.0%	0.0%	0.0%
Number of previous admissions	6.4%	9.0%	10.9%	8.2%

## Data Analysis

SPSS Version 25.0 was used to conduct the statistical analysis of the data and alpha adjustment was conducted using the Holm Bonferroni procedure (Holm, 1979).

Descriptive statistics are presented in the results section to show how patients discharged across the three different pathways performed on both the DUNDRUM programme completion and recovery scales; and on the individual items. Inferential statistics (Kruskal-Wallis test) were used to test the external validity of the programme completion and recovery scales on a medium secure cohort in the UK, by comparing average scores on both scales and individual scores on each item between the patients discharged across three different pathways. The distribution of scores between patients across the three discharge

pathways on both scales and each individual item showed unequal shapes, and therefore only the distribution of scores could be compared, as opposed to differences in median scores. Post-hoc tests (Mann-Whitey U) are reported that identified the specific differences in distributions of scores between each of the three discharge pathways compared with the other two.

Further descriptive statistics and frequency data are presented to show the prevalence of static factors amongst patients discharged across the three different pathways. The individual items of the DUNDRUM programme completion and recovery scales, along with static factors were further analysed using a series of logistic regressions to deduce predictive factors for the discharge pathway for forensic patients. This helped reveal factors that influenced the decision process for the discharge pathways from medium security.

The assumption of proportional odds was violated to carry out an ordinal regression with the discharge pathway coded as ordinal data. This violation indicated that each independent variable showed varying effects at each cumulative split of the discharge pathway outcome. Instead, multinomial logistic regressions were used to identify the specific factors that predicted the discharge pathway for forensic patients. This regression analysis was used to test the predictive ability of two models.

*Model one: all individual items of the DUNDRUM programme completion and recovery scales.*

All items showed a linear relationship with the logit transformation of the discharge pathway outcome. There were no issues of multicollinearity between the programme completion and recovery items to predict the discharge pathway outcome. The lowest tolerance value was 0.31 and the Variance Inflation Factors (VIFs) ranged between 1.24 and 3.24 to suggest no issues of multicollinearity, as a tolerance value below 0.10 and a VIF above 10 indicate concern of multicollinearity (Myers, 1990; Menard, 2002). No significant outliers were identified and therefore all assumptions were met to enable a multinomial logistic regression analysis.

*Model two: static patient factors.*

The number of adverse childhood experiences, the severity of the index offence, age at admission and number of previous psychiatric admissions showed linear relationships with



the logit transformation of the discharge pathway outcome. The lowest tolerance value was 0.66 and the VIFs ranged between 1.08 and 1.52 when exploring the predictive static factors for the discharge pathway for patients that suggested no issues of multicollinearity. No significant outliers were identified and therefore no assumptions were violated to prevent a multinomial logistic regression analysis.

The -2log likelihood statistics are reported to evaluate each model's fit to explain the discharge pathway for patients. The deviance goodness of fit test was used to evaluate how poorly each model fitted with the data, a significant result suggested a poor fit (Field, 2013). Finally, odds ratios are reported to indicate the variables that were a hazard of undesirable discharge pathways; remaining in medium security or higher.

Received Operating Characteristic (ROC) curves were used to determine whether different variables discriminated those who remained in medium security or higher compared with those who successfully stepped down the forensic care pathway. An Area Under the Curve (AUC) value at 0.50 stated that the variable was no better than chance to discriminate patients, whilst an AUC value above 0.70 suggested strong discrimination of those who remained in medium security or higher (Mossman, 1994; Rice & Harris, 2005).

The missing data for the 268 patients included in this study is reported in table 4.2. There were small percentages of missing data for the number of adverse childhood experiences and number of previous psychiatric admissions. Those with missing data for these two variables did not significantly differ with the remaining Welsh cohort ( $X^2 = 2.90$ ,  $p > 0.094$ : sex, diagnosis and legal status;  $U = 1344$ ,  $p > 0.463$ : age at admission and referral source). However, those from Black, Asian and Minority Ethnicities (BAME) had more missing adverse childhood information, as a number of patients were refugees with no available records related to their childhood histories.

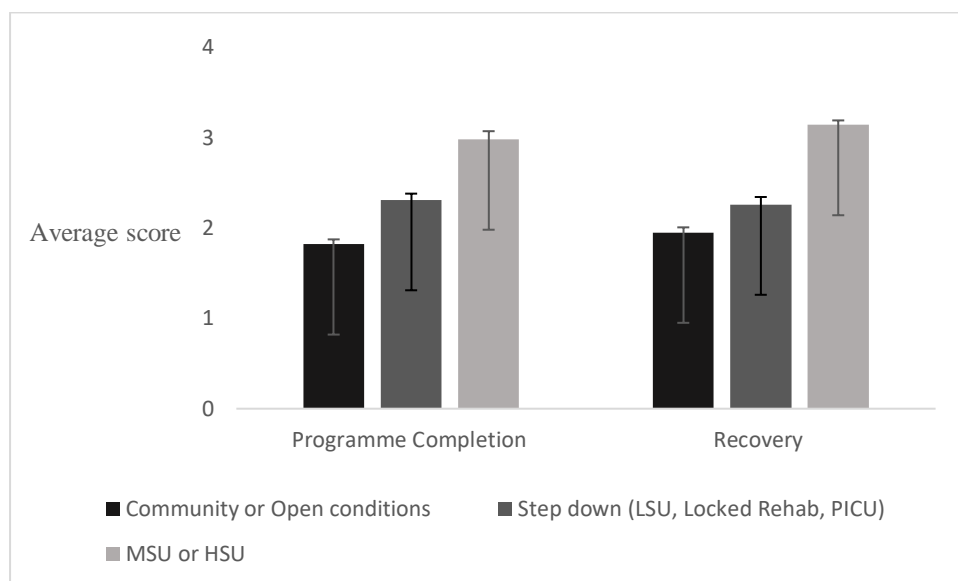
## 4.3 Results

### *Programme Completion and Recovery scales*

Figure 4.2 presents the average scores for patients discharged across the three different pathways on both the DUNDRUM programme completion and recovery scales.

Scores across both scales increased as the security level of the discharge pathway escalated. A Kruskal-Wallis analysis was used to determine whether average scores on both scales significantly differed between the three discharge pathways.

The distribution of average scores were significantly different between forensic patients across the three different discharge pathways for both the programme completion ( $H(2) = 67.89, p < 0.001$ ) and recovery scales ( $H(2) = 43.80, p < 0.001$ ). Post-hoc tests (Mann-Whitney U) showed patients discharged across each pathway significantly differed from the other two discharge pathways on both scales ( $p < 0.001$  to  $0.011$ ; significant with alpha adjustment). Both the programme completion (AUC = 0.826, 95% CI [0.768-0.884],  $p < 0.001$ ) and recovery scales (AUC = 0.888, 95% CI [0.845-0.932],  $p < 0.001$ ) significantly discriminated those unsuccessful at stepping down from conditions of medium security relative to those who successfully stepped down the forensic care pathway following alpha adjustment.

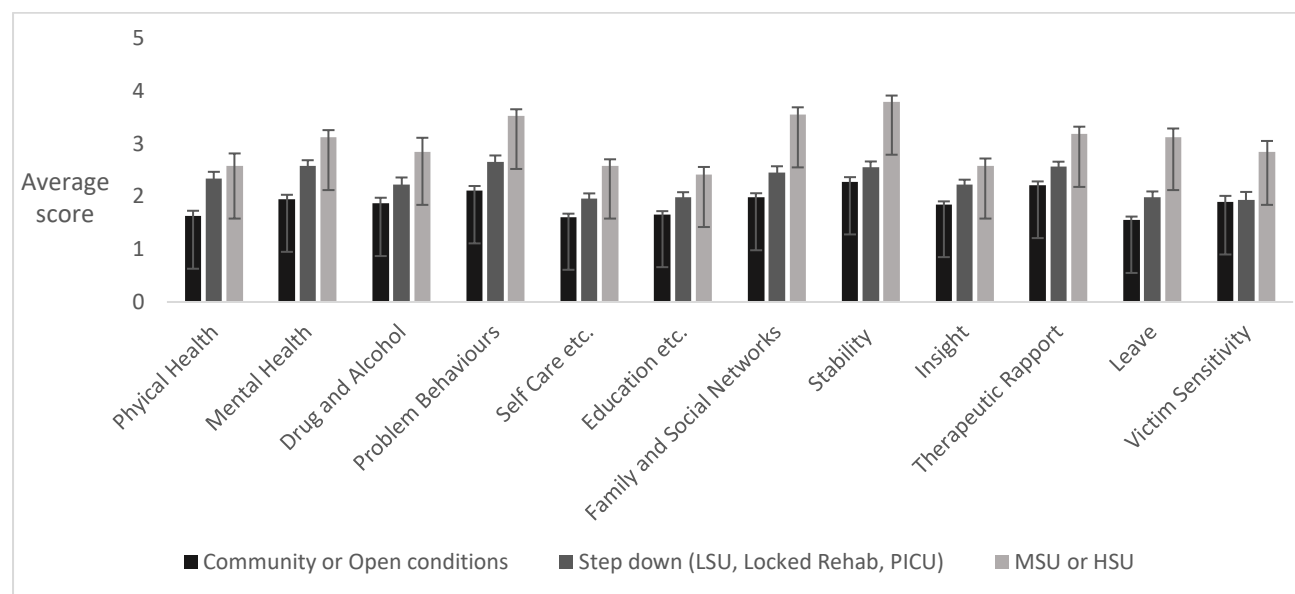


**Figure 4.2** Average scores on the programme completion and recovery scales between the three discharge routes. Error bars represent 95.0% confidence intervals.

#### *Individual items and discharge pathways*

Figure 4.3 presents the average scores for each item of the programme completion and recovery scales between the three discharge pathways. The escalation in the average

score for each item mapped onto the increased level of security of the discharge pathway; excluding the ‘victim sensitivity’ item on the recovery scale. Those discharged directly to the community or open conditions showed similar scores to those who stepped down to less secure services for this item; victim sensitivity, but substantially lower scores than those who either stayed in medium secure care or who were transferred to high security.



**Figure 4.3** Average scores on each item of the DUNDRUM programme completion and recovery scales between the three discharge routes. Error bars represent 95.0% confidence intervals.

A series of Kruskal-Wallis tests were used to compare differences in scores between the three discharge pathways for all items. Table 4.3 shows that the distribution of average scores across all items significantly differed between the three discharge pathways. Post-hoc tests (Mann Whitney U) showed that all items significantly differed between those discharged directly to the community or open conditions relative to those unsuccessful at stepping down from medium security. This was consistent when comparing those unsuccessful at stepping down from medium security with those who stepped down to less secure services, although the ‘physical health’ item was comparable between these two groups of patients. Those discharged to the community or open conditions significantly

differed across all items relative to those who stepped down to less secure conditions; with the exception of ‘victim sensitivities’, ‘stability’ and ‘drug and alcohol work’.

**Table 4.3** Kruskal-Wallis and post-hoc analyses comparing average scores across the individual items of DUNDRUM Programme Completion and Recovery scales between the three discharge routes.

Item	H / P-value	U / P-value		
		Pathway 1 vs Pathway 2	Pathway 1 vs Pathway 3	Pathway 2 vs Pathway 3
Physical Health	27.80/0.001**	2983.00/0.001**	1179.00/0.001**	1069.50/0.203
Mental Health	44.02/0.001**	3128.00/.0.001**	746.00/0.001**	862.50/0.004**
Drug and Alcohol	16.77/0.001**	4078.00/0.035*	1118.00/0.001**	813.50/0.006**
Problem Behaviours	44.24/0.001**	3576.00/0.001**	613.50/0.001**	724.50/0.001**
Self-Care etc.	36.87/0.001**	3772.50/0.003**	769.50/0.001**	750.00/0.001**
Education etc.	25.33/0.001**	3776.50/0.004**	1025.00/0.001**	902.50/0.007**
Family and Social Networks	51.98/0.001**	3689.00/0.002**	505.50/0.001**	557.50/0.001**
Stability	49.00/0.001**	4200.50/0.044*	642.50/0.001**	518.50/0.001**
Insight	30.93/0.001**	3627.00/0.001**	1057.00/0.001**	972.00/0.019**
Therapeutic Rapport	30.43/0.001**	3864.50/0.007**	899.50/0.001**	789.50/0.001**
Leave Status	58.09/0.001**	3471.00/0.001**	517.00/0.001**	531.50/0.001**
Victim Sensitivities	16.13/0.001**	4675.50/0.721	1141.00/0.001**	730.50/0.001**

\* p<.05; \*\* significant following alpha adjustment; pathway 1= community or open conditions; pathway 2=lower secure services; pathway

3= medium or high security.

### *Items that predict the discharge pathway for patients*

A multinomial logistic regression was used to identify the specific items that predicted the discharge pathway for forensic patients to indicate what influenced this decision process. All programme completion and recovery items were added to the model, as each

item significantly differentiated between the three discharge pathways based on the Kruskal-Wallis test (see table 4.3). The resulting model was a significant predictor of the discharge pathway ( $X^2=173.95$ ,  $df=24$ ,  $p<0.001$ ). The deviance goodness of fit test was non-significant ( $p>0.050$ ) that suggests a good fit for the data. Odds ratios for each item are presented in table 4.4. Only 'leave status' significantly predicted the discharge pathway for forensic patients, where freedom whilst on leave from medium security was a protective factor for successful discharge from medium secure conditions. Greater contact with family and social networks and better engagement in self-care and activities of daily living became non-significant protective factors to successfully discharge from medium security following alpha adjustment.

The analysis was repeated to examine how much variance in the discharge pathway outcome explained by the programme completion and recovery scales was accounted for by only these three items; 'leave status', 'family and social networks' and 'self-care and activities of daily living'. This simpler model significantly predicted the discharge pathway for forensic patients ( $X^2=149.00$ ,  $df=6$ ,  $p<0.001$ ), and the deviance goodness of fit test was non-significant that suggests a good model fit ( $p>0.050$ ) and that leave status, social resources, and self-care were key factors that guided discharge decision-making.

Table 4.4 presents the odds ratios for each item in the simpler model. Poorer engagement in self-care and activities of daily living and with family and social networks, along with a more stringent leave status were significant hazards of unsuccessful discharge to conditions of medium security or higher relative to those who successfully discharged directly to the community or open conditions. Whilst only a stringent leave status was a hazard for remaining in medium security or higher at discharge compared with those who stepped down to less secure conditions.

ROC curves showed that the three items as a model were able to discriminate those who failed to step down from medium secure conditions (AUC=0.910, 95% CI [0.860-0.960],  $p<0.001$ ), with no significant improvement with the addition of all other programme completion and recovery items (AUC= 0.890, 95% CI [0.840-0.940],  $p<0.001$ ).

**Table 4.4** Odds ratios for the DUNDRUM programme completion and recovery items between patients across different discharge pathways (reference category: those unsuccessful at stepping down from medium security).

Item	Pathway 1		Pathway 2	
	Wald/P-value	Odds ratio (95% CI)	Wald/P-value	Odds ratio (95% CI)
Physical Health	3.09/0.079	0.68 (0.44-1.05)	0.16/0.687	1.09 (0.72-1.66)
Mental Health	2.93/0.087	0.52 (0.24-1.10)	0.13/0.721	0.88 (0.42-1.82)
Drug and Alcohol	0.22/0.638	1.10 (0.74-1.63)	0.12/0.730	1.07 (0.74-1.54)
Problem Behaviours	1.03/0.310	1.49 (0.69-3.20)	1.27/0.260	1.54 (0.73-3.29)
Self-Care etc.	4.03/0.045*	0.47 (0.23-0.98)	3.84/0.050*	0.50 (0.25-1.00)
Education etc.	2.65/0.104	1.99 (0.87-4.56)	2.87/0.091	1.93 (0.90-4.13)
Family and Social Networks	4.42/0.036*	0.51 (0.27-0.96)	1.04/0.308	0.73 (0.40-1.34)
Stability	0.35/0.555	0.85 (0.50-1.46)	3.18/0.075	0.62 (0.37-1.05)
Insight	0.86/0.354	0.67 (0.29-1.56)	0.01/0.956	1.02 (0.47-2.22)
Therapeutic Rapport	0.06/0.811	1.10 (0.49-2.48)	0.07/0.791	0.90 (0.41-1.97)
Leave Status	36.12/0.001**	0.16 (0.09-0.30)	26.59/0.001**	0.23 (0.13-0.40)
Victim Sensitivities	0.16/0.686	1.10 (0.69-1.76)	0.65/0.422	0.84 (0.54-1.30)

\* p<.05; \*\* significant following alpha adjustment; pathway 1= community or open conditions; pathway 2=lower secure services; pathway

3= medium or high security.

**Table 4.5** Odds ratios for each item of simpler model between patients across different discharge pathway (reference category: those unsuccessful at stepping down from medium security).

Item	Pathway 1	Pathway 2
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	Wald/ P-value	Odds ratio (95% CI)	Wald/ P-value	Odds ratio (95% CI)
Self-Care etc.	8.26/0.004**	0.46 (0.27-0.78)	2.87/0.090	0.65 (0.39-1.07)
Family and Social Networks	7.67/0.006**	0.53 (0.34-0.83)	1.80/0.180	0.75 (0.49-1.15)
Leave Status	48.02/0.001**	0.19 (0.12-0.31)	33.68/0.001**	0.28 (0.18-0.43)

\*  $p < .05$ ; \*\* significant following alpha adjustment; pathway 1= community or open conditions; pathway 2=lower secure services; pathway

3= medium or high security.

### *Static patient factors*

An additional multinomial logistic regression was completed to identify patients at greatest risk of undesirable discharge pathways (medium security or higher and prison) by determining the predictive static risk-factors. Table 4.6 outlines all patient factors included as a model in the regression analysis and reports the odds ratios for each factor.

The model was a significant predictor of the discharge pathway for patients ( $X^2 = 41.03$ ,  $df = 22$ ,  $p < 0.008$ ) and the deviance goodness of fit test was non-significant ( $p > 0.084$ ).

The odds ratios showed that a diagnosis of a psychotic related disorder and more skilled employment histories were protective factors to ensure patients were directly discharged to the community or open conditions, although these became non-significant with alpha adjustment. Similarly, a diagnosis of a psychotic related disorder was a protective factor to step down to less secure services, but became non-significant with alpha adjustment. These two patient factors were inputted into a separate model to determine how well they predicted the discharge pathway for patients. The model maintained significance when only the two variables were included ( $X^2 = 27.69$ ,  $df = 4$ ,  $p < 0.001$ ) and was a good fit (deviance:  $p > 0.050$ ).

The two patient factors were inputted into another model with the three DUNDRUM items shown to predict the discharge pathway for patients (see table 4.5). The model was a significant predictor of the discharge pathway for patients ( $X^2 = 162.47$ ,  $df = 10$ ,  $p < 0.001$ ) and the deviance goodness of fit test was non-significant ( $p > 0.050$ ). Table 4.7 presents the odds

ratios for each predictor in the model and showed that only the three items of the DUNDRUM significantly predicted those who directly discharged to the community. Whereas, only leave status and a diagnosis of a psychotic related disorder significantly predicted those who stepped down to less secure services. ROC curves showed no significant improvement in the discriminative power of the three DUNDRUM items with the addition of both static factors to predict those who failed to step down from medium secure conditions (AUC= 0.906, 95% CI [0.860-0.951],  $p<0.001$ ).



**Table 4.6** Odds ratios of patient factors associated with the discharge route (reference category: those unsuccessful at stepping down from medium security).

Variable	Percentage of patients			Pathway 1		Pathway 2	
	Pathway 1	Pathway 2	Pathway 3	Wald/ P-value	Odds ratio (95% CI)	Wald/ P-value	Odds ratio (95% CI)
Age at admission: mean (SD)	34.00 (10.11)	35.12 (11.50)	35.66 (13.35)	0.83/0.363	0.98 (0.95-1.02)	0.78/0.377	1.02 (0.98-1.06)
Sex: male	77.0%	93.4%	81.3%	1.99/0.158	0.48 (0.18-1.33)	2.47/0.116	3.09 (0.76-12.60)
Ethnicity: white British	88.1%	89.7%	92.2%	0.84/0.360	0.56 (0.16-1.94)	0.01/0.911	1.08 (0.28-4.22)
Restriction order	61.9%	67.9%	64.1%	0.21/0.646	0.83 (0.36-1.87)	0.10/0.751	1.16 (0.46-2.93)
<i>Criminogenic</i>							
Severity of index offence				0.28/0.599	1.07 (0.83-1.39)	0.35/0.556	0.92 (0.70-1.21)
Serious violence	69.0%	57.7%	65.6%				
Less serious violence	20.6%	20.5%	12.5%				
Non-violent	2.4%	9.0%	15.6%				
No index offence	7.9%	12.8%	6.3%				
<i>Social</i>							
ACEs	2.96 (2.32)	3.57 (2.16)	3.30 (2.01)	0.24/0.628	0.95 (0.78-1.16)	2.03/0.154	1.17 (0.94-1.45)
Institutionalised care	20.2%	33.3%	25.4%	0.01/0.984	0.99 (0.38-2.57)	0.81/0.369	1.57 (0.59-4.17)

Employment				5.24/0.022*	2.08 (1.11-3.89)	0.12/0.732	1.13 (0.57-2.24)
No employment	26.2%	41.0%	42.2%				
Unskilled	52.4%	44.9%	42.2%				
Skilled	16.7%	11.5%	10.9%				
Professional	2.4%	1.3%	3.1%				
Education				0.10/0.747	0.91 (0.53-1.57)	0.03/0.870	1.05 (0.58-1.90)
No education achievement	48.4%	60.3%	59.4%				
GCSE etc.	32.5%	28.2%	29.7%				
A-level etc.	7.9%	2.6%	3.1%				
Degree or higher	3.2%	2.6%	4.7%				
Drug related problems	65.6%	76.9%	65.1%	0.26/0.612	0.79 (0.32-1.95)	0.01/0.907	1.06 (0.38-3.02)
Alcohol related problems	56.8%	67.9%	60.3%	0.05/0.831	1.09 (0.51-2.31)	0.08/0.780	1.13 (0.49-2.62)
<i>Clinical</i>							
Psychotic related disorder	75.4%	85.9%	51.6%	7.21/0.007*	3.10 (1.36-7.09)	10.01/0.002*	4.74 (1.81-12.41)
Personality disorder	32.5%	35.9%	37.5%	0.01/0.932	1.04 (0.47-2.29)	0.16/0.689	1.19 (0.50-2.83)
Number of previous admissions	3.19 (4.48)	3.10 (3.70)	1.60 (2.53)	2.63/0.105	1.11 (0.98-1.27)	3.40/0.065	1.14 (0.99-1.31)

\* p<.05; \*\* significant following alpha adjustment; pathway 1= community or open conditions; pathway 2=lower secure services; pathway 3= medium or high security.

**Table 4.7** Odds ratios of DUNDRUM items and static factors associated with the discharge pathway (reference category: those unsuccessful at stepping down from medium security).

Item	Pathway 1		Pathway 2	
	Wald/P-value	Odds ratio (95% CI)	Wald/P-value	Odds ratio (95% CI)
DUNDRUM items				
Self-Care etc.	7.83/0.005**	0.46 (0.27-0.79)	2.65/0.103	0.65 (0.38-1.09)
Family and Social Networks	7.27/0.007**	0.53 (0.34-0.84)	1.57/0.210	0.75 (0.48-1.17)
Leave Status	44.39/0.001**	0.19 (0.12-0.31)	30.18/0.001**	0.27 (0.17-0.43)
Static factors				
Psychotic related disorder	2.57/0.109	2.21 (0.84-5.79)	8.79/0.003**	4.38 (1.65-11.64)
Employment	3.82/0.051	1.86 (0.10-3.48)	0.63/0.427	1.29 (0.69-2.40)

## 4.4 Discussion

This chapter provides novel insight into factors that governed the clinical decision-making of the discharge pathways for forensic patients from a Welsh medium secure hospital. The DUNDRUM programme completion and recovery scales provided a ‘best practice framework’ to evaluate decisions made by clinicians in the Welsh medium secure hospital, by identifying the specific aspects of patient progress that influenced decisions of discharge pathways. Static patient factors previously showed mixed results to influence the discharge pathway for forensic patients (Taylor *et al*, 1999; Dibben, Wong & Hunt, 2005; Davoren *et al*, 2013), and therefore this chapter adds to the current literature base to conclude the patient risk factors of undesirable pathways. This chapter also reports whether the DUNDRUM quartet is applicable in medium secure hospitals across the UK.

### *Factors that predict the discharge pathway*

The results suggested that self-care and activities of daily living, family and social networks, and leave status were predictive factors of the discharge pathway from the Welsh medium secure hospital. All other items of the DUNDRUM programme completion and recovery scales were redundant, as they did not improve the ability of the three items to predict the discharge pathway for forensic patients. Greater liberty whilst on leaves indicated that a patient was ready to step down from conditions of medium security to any setting, whereas those who also showed more engagement in self-care, daily activities and with social networks or family were more likely to directly discharge to the community or open conditions. The Good Lives Model highlights the importance of living by values, achieving goals, and social engagement to improve recovery and reduce risk of violence in offender populations (Ward & Brown, 2004). Obstacles in these areas to help promote a fulfilling life have been perceived as causes of risk behaviours; maladaptive approaches to help achieve the basic needs of a ‘good life’. Therefore, the findings come as no surprise that improved self-care and engagement with daily activities and social networks in the medium secure hospital predicted discharge to the community, as they may have indicated rehabilitation that helped promote a fulfilling life and reduced risk towards others (Ward & Brown, 2004).

The DUNDRUM programme completion and recovery scales were used as a ‘best practice framework’ to evaluate unstructured clinical judgements on the pathway for patients

from medium security. The disproportionate variance explained by only three DUNDRUM items in the discharge pathway outcome implied that clinicians may not have referred to all important areas of treatment and recovery to develop sound judgements about the readiness for discharge. Whether patient progress reflected by the three DUNDRUM items also led to more successful long-term outcomes compared with other areas of engagement and recovery; including prevention of readmission and risk behaviours (Ward & Brown, 2004), would be useful to explore and justify why they were prioritised to inform clinical judgement.

All items of the programme completion and recovery scales were previously shown to predict discharge to the community from an Irish forensic hospital with both medium and high secure beds (Davoren *et al*, 2013), which conflicts with the findings of the Welsh cohort in this chapter. The DUNDRUM quartet was developed at the Irish forensic hospital, and therefore clinicians based at this hospital may have been aware and sensitive to all items of the DUNDRUM programme completion and recovery when making their recommendations about the discharge pathway for patients. This may explain the discrepancy between both studies. Therefore, clinicians based in the Welsh medium secure hospital may benefit from DUNDRUM training to ensure clinical judgement maps onto all items of the programme completion and recovery scales to promote ‘best practice’.

When determining what static patient factors informed clinician judgements of the discharge pathways for patients, only a diagnosis of a psychotic related disorder and skilled employment histories of patients were close to significance as protective factors for successful discharge from medium security. Both factors collectively predicted the discharge pathway for patients, but were redundant as predictors of patients directly discharged to the community or open conditions when considered in conjunction with the three predictive items of the DUNDRUM programme completion and recovery scales. This partially agrees with previous literature that suggested no link between a psychotic related diagnosis and conditional discharge to the community (Mohan *et al*, 1998; Davoren *et al*, 2013), although it is unclear why this diagnosis appeared as a protective factor for stepping down to less secure services.

The findings challenge previous literature that reported sex differences, the imposition of restriction orders, and a diagnosis of personality disorder to influence discharge decision-making from forensic secure settings (Taylor *et al*, 1999; Hilten & Simmons, 2001; Aziz,

2009; Jewell *et al*, 2017), and improved confidence in the assumption that neither ethnicity or age influenced clinician decisions about discharge pathways (Taylor *et al*, 1999). This chapter also contributes novel findings as to whether social and criminogenic factors influenced this decision process. The General Personality and Cognitive Social Learning (GPCSL) theory argues the importance of these factors to predict reconviction (Bonta, Blais & Wilson, 2013; although chapter one disproves the need for social factors in this prediction). Therefore, clinicians may have relied on such factors to determine the discharge pathways for forensic patients, although this is not suggested based on the findings in this chapter.

Davoren *et al* (2013) reassured any concern that security need on admission acted as a confounding variable to influence decisions of whether patients were ready to discharge to the community from forensic secure care, as opposed to the treatment engagement and recovery of patients. DUNDRUM triage security scores were equivalent for all patients; whether they successfully discharged or remained in the forensic secure hospital was irrelevant. Although it would be useful to test this directly on the Welsh cohort to confidently assume this played no role in judgements about the discharge pathway for patients.

#### *Applicability of the DUNDRUM quartet in the UK*

The results showed that both the programme completion and recovery scales were able to differentiate between those who stepped down to the community or open conditions, those who stepped down to less security and those who transferred to either medium or high secure hospitals. Both scales also showed strong discriminative properties to identify those with undesirable discharge pathways to medium or high secure conditions. The findings are consistent with previous literature that demonstrated both the DUNDRUM programme completion and recovery scales were able to map onto different discharge pathways across the continuum of security levels, or able to distinguish between those who successfully discharged from or remained in forensic secure care (O'Dwyer *et al*, 2011; Davoren *et al*, 2015). The discriminative validity of both scales was also confirmed in previous literature to identify those who stepped-down, stepped-up, and conditionally discharged from secure services (Davoren *et al*, 2013; 2015). This chapter therefore extends the external validity of the DUNDRUM quartet to apply in the UK and aid clinical decisions about the discharge pathway for patients.

Most individual items of both the programme completion and recovery scales were able to differentiate patients who transferred to medium or high secure hospitals relative to both other discharge pathways; further supporting the applicability of the DUNDRUM quartet in the UK. Although, some items were less sensitive to compare those discharged to the community or open conditions against patients who stepped down to less secure services, as both groups of patients showed equivalent progress in few areas of treatment engagement and recovery (e.g. victim sensitivities, stability and drug and alcohol work). Therefore, the programme completion and recovery scales may need to be fully completed to help clinicians decide on the most appropriate discharge location between both pathways.

## Limitations

Several limitations were present in this study. Recommendations and decisions made in forensic practice about the discharge pathway for forensic patients were likely influenced by hierarchical factors out of the control of clinicians and irrelevant to patient progress; including commissioning, bureaucratic, and resource pressures that were not captured by the DUNDRUM quartet or independently in this study. These external pressures likely varied between different NHS providers across the UK to cause distinct policies and unique discharge pathways between medium secure hospitals. Regional distinctions hinder the generalisability of studies that only investigate a single medium secure hospital to represent the UK, but may also limit the applicability of widespread tools at regional level (Lawrence *et al*, 2018; Wharewera-Mika *et al*, 2020). Although the DUNDRUM quartet has begun to emerge as a useful tool universally, in-house SPJs developed to account for the distinct pressures and factors important at regional-level may be better suited to aid decision-making. However, this may risk the literature becoming saturated with lots of SPJs with no robustly confirmed validity (Shinkfield & Ogloff, 2014).

Many forensic patients discharged from the Welsh medium secure hospital were detained under section 41 of the Mental Health Act (MHA, 1983 as amended in 2007) and therefore an independent review board (Mental Health Review Tribunals; MHRTs) ultimately governed the decision-making of the discharge pathway for most patients included in this study. Decisions made through MHRTs have been shown to follow the clinical team recommendations outlined in MHRT reports (Hallett, 2016). The author used these reports to

retrospectively score the DUNDRUM programme completion and recovery scales and this helped assure that the study captured the factors that influenced the clinician and MHRT decisions of the discharge pathways for patients. However, it cannot be ruled out that alternative factors not reported in the MHRT reports, or considerations discussed in the MHRT review meeting may have influenced the decision of where to discharge forensic patients that were unknown to the author. The indirect approach of the author retrospectively scoring the DUNDRUM scales based on healthcare records was also prone to subjective bias, as the healthcare records may have been interpreted incorrectly. A prospective study may be a more meaningful approach to capture the factors that influence clinician judgements in forensic practice, along with ensuring accuracy when completing the DUNDRUM scales (Davoren *et al*, 2013).

A large proportion of variance was missing to explain the discharge pathway for forensic patients, and therefore a holistic understanding about what governs unstructured clinician judgement remains unclear. Dynamic risk has been shown to influence the discharge pathway for patients (Davoren *et al*, 2013; 2015; Jewell *et al*, 2017). Many patients in the Welsh cohort had unavailable healthcare records that prevented the collection of dynamic risk. This may have accounted for the missing variance to explain the discharge pathway for patients. Dynamic risk measured through the HCR-20 was shown to be a stronger predictor of discharge to less secure services compared to the DUNDRUM programme completion scale, but not when predicting conditional discharge to the community (Davoren *et al*, 2013). Therefore, further research is needed to discover the extent to which dynamic risk predicted the discharge pathway for patients and influenced clinical judgement in the Welsh medium secure hospital.

The DUNDRUM recovery scale incorporates dynamic risk as an item, but 90 patients in the Welsh cohort had missing data to enable this item to be scored. The item was therefore omitted when exploring the DUNDRUM programme completion and recovery scales as predictors of the discharge pathway for forensic patients. Previous literature confirmed preserved validity of the recovery scale when this item was omitted to predict those conditionally discharged from hospital (Davoren *et al*, 2013). However, the predictive validity of the recovery scale with this omission appeared sensitive when scores were adjusted with other SPJs (e.g. HCR-20; O'Dwyer *et al*, 2011; Davoren *et al*, 2012; 2013).



Therefore, inclusion of this item is crucial to help inform the importance of dynamic risk in predicting the discharge pathway of patients.

The author did not receive specialised training to use the DUNDRUM quartet and solely scored all DUNDRUM scales for each of the 268 patients. This limited confidence in the inter-rater reliability of the study, although other strategies were implemented to counterbalance these challenges. The author underwent HCR-20 V3 training prior to data collection to ensure systematic completion of SPJs that conform to the manual. Scores on the DUNDRUM triage security scale completed for this thesis also show good inter-rater reliability with triage security scores reported for the same patients in a previous study (Lawrence *et al*, 2018).

## Conclusions

The chapter identifies that only few items of the programme completion and recovery scales explained the discharge pathway for forensic patients and predicted those unsuccessful at stepping down from medium security. This may reveal the specific factors that influenced clinical judgement in the Welsh medium secure hospital to determine the appropriate pathway for patients; including progress related to self-care, social engagement and leave status. Whether the same items predict long-term outcomes of medium secure care would be informative to justify the priority of these factors to guide decisions of discharge locations, and would inform services of the most successful areas of care and treatment to prevent undesirable patient outcomes.

The chapter also supports the application of the DUNDRUM quartet in forensic secure services in the UK to help ensure transparent and consistent clinical decisions. This may help prevent risk of errors and bias associated with unstructured judgement, although further research is needed.

## **CHAPTER 5**

### **Readmission following medium secure care.**

#### **Abstract**

#### **Objectives**

This chapter reports a study that explored how readmission following medium secure care had changed over the last two decades and what predicted readmission in general, and specifically recall to hospital. Both patient risk factors and service provision; including lengths of admission, programme completion and recovery and the imposition of restriction orders were investigated to deduce patients at greatest risk of readmission; and how this risk was reduced through medium secure care.

#### **Method**

Readmission data was collected for 215 forensic patients who successfully stepped down from medium secure conditions. This data was compared between forensic patients discharged across three time periods; between 1999 and 2006, between 2007 and 2011, and from 2012 onwards. Demographic, social and clinical factors of patients were collected to identify what predicted readmission within two years following discharge. Lengths of admission, the imposition of restriction orders and patient progress through programme completion and recovery were also collected and evaluated as predictors of readmission.

#### **Results**

No significant association between the percentage of patients readmitted to hospital and the time period that patients were discharged from medium security was identified. Only the number of previous psychiatric admissions significantly predicted readmission in general, and recall to hospital; where an extensive inpatient history was a significant hazard of readmission. This predictive ability did not improve with the addition of other patient factors. No area of service provision significantly predicted readmission in general, or recall to hospital.

#### **Conclusions and implications**

The Welsh medium secure hospital faced the challenge of ‘revolving door patients’. Readmission has remained steady over the last two decades, despite an increase in restrictive measures over time. It remains unclear why the Welsh medium secure hospital became more restrictive over time, despite that such stringent measures showed no impact on readmission in general, or recall to hospital. Further research investigating other long-term outcomes is needed, as well as identify why some patients fall into the vicious cycle of being regularly readmitted to hospital.

## **5.1 Introduction**

Medium secure hospitals were first introduced in 1980 to provide a graded step-down pathway for forensic patients from specialist high secure hospitals to their community (Department of Health and Social Services, 1974; Home Office & DHSS, 1975). They received commissioning to develop across the UK to meet this purpose, along with providing security for those in crisis from general psychiatric hospitals and to divert individuals away from the criminal justice system (Department of Health and Home Office, 1992). Medium secure hospitals became a large provider of forensic secure beds accounting for 3192 beds by 2015 (NHS England, 2015a). They are abbreviated as ‘high-cost low-volume’ where each medium secure bed equates to £172,000 annually and secure services accumulate 18.9% of the NHS mental health budget (Centre for Mental Health, 2011). Therefore, they have received some criticism for their limited impact in public health terms where they only support 0.2% of the offender population in the UK (Wilson, James & Forrester, 2011). Proposals have been made to divert commissioning to other initiatives with greater impact in public health terms (Joint Commissioning Panel for Mental Health, 2013). However, medium secure hospitals continue to receive commissioning, as they meet their ultimate objective to provide public protection through risk management and reducing risk of future offending (Home Office, 2003; James, 2010; Fazel, Fimińska, Cocks & Coid, 2016; Igoumenou *et al*, 2019). The prevalence ratio of reoffending by released prisoners ranged from 1.4 to 7.7 relative to discharged forensic patients across England and Wales (Fazel *et al*, 2016).

Whether medium secure hospitals remain successful is ambiguous, as most research is outdated that disproportionately focused on reconviction to gauge the success of medium security, overlooking other important factors including mental health recovery. Reconviction has been critiqued to under-report the level of re-offending following discharge (Maden *et al*,

2006a; Davies *et al*, 2007). Discharged patients are likely to be dealt with through mental health services as opposed to the criminal justice system if risk behaviour re-emerges (Gray *et al*, 2004), especially following the expansion of diversion and liaison schemes across the UK to divert such individuals as early as possible from the criminal justice system (Davies *et al*, 2007; Bradley, 2009; Durcan, Saunders, Gadsby & Hazard, 2014; NHS England, 2016b). This became a challenge when relying on reconviction as a proxy-measure to capture risk behaviour following discharge in recent years (Duggan *et al*, 2007; McCarthy & Duggan, 2007; Tully *et al*, 2019). Readmission may be a more suited proxy measure of risk behaviour following discharge to evaluate the success of medium secure hospitals, as well as providing scope to evaluate other important objectives; including mental health relapse. Yet, the literature base is limited to understand readmission following medium secure care.

Of the literature available, readmission was often reported as a secondary, submissive outcome measure of medium secure care where reconviction was the primary outcome explored (Baxter *et al*, 1999; Falla *et al*, 2000; Edward *et al*, 2002; Maden *et al*, 2006a; Davies *et al*, 2007). Readmission rates ranged from 1.8% to 89.0% across different follow up periods between one and an average of 9.5 years for those admitted and discharged across 1983 to 2003. This highlights the challenge of collating all findings to reach a general conclusion about readmission from medium secure care across the UK, and the caution needed when accepting the external validity of studies based on a single medium secure hospital. The variation in the readmission rate between studies is likely due to different sample sizes, different time periods of service provision, different follow up periods after discharge, heterogeneity between samples, regional differences between single medium secure hospitals, and whether readmission was calculated only for those discharged to the community or the entire sample. The readmission rate of a national cohort of forensic patients discharged between 1997/98 across the UK was 28.2%, which may be the most valid result to evaluate the success of medium secure hospitals in the UK (Maden *et al*, 2006a). However, this may be outdated to interpret the current provision of medium secure hospitals.

Unlike reconviction (Friendship *et al*, 1999; Baxter *et al*, 1999; Coid *et al*, 2007; Sahota *et al*, 2010; Gibbon *et al*, 2013), there has been sparse attempt to identify what predicts readmission to hospital. This restricts insight into areas of service provision that are successful to prevent readmission, and patient groups at greatest risk of readmission. Of the research available, only an inpatient history in psychiatric care has been confirmed

consistently as a risk factor for readmission following discharge from medium security (Maden *et al*, 1999; Clarke *et al*, 2013). This supported the notion of ‘revolving door patients’ that reflect a cycle of hospitalisation, stabilisation, relapse, and re-hospitalisation (Langdon, Yagüez, Brown & Hope, 2001). ‘Revolving door patients’ have received attention across general mental health literature, but less so in forensic secure services. Many other patient factors; including sex, ethnicity, and criminal, clinical and social histories have shown no significant association with readmission, and add to the challenge of understanding the typical profile of ‘revolving door patients’ in forensic secure care (Maden *et al*, 1999; Clarke *et al*, 2013). However, only one study tested these patient factors as predictors of readmission in a single medium secure hospital (Clarke *et al*, 2013), and therefore further research is necessary to determine whether the findings extend to other medium secure hospitals in the UK.

Only length of stay and the imposition of restriction orders were investigated to deduce how medium secure provision influenced readmission, and both were non-significant predictors (Maden *et al*, 1999; Clarke *et al*, 2013). This prevents a holistic evaluation of medium secure hospitals and their impact on long-term outcomes, as neither patient progress or recovery within medium security have been explored as predictors of readmission. Moreover, service provision has changed over the last two decades and whether the previous findings are still relevant to understand outcomes of recent provision is difficult to deduce.

Medium secure provision has likely adapted with legislation and infrastructure reform. Forensic patients became more closely monitored over time following discharge from medium secure conditions with the greater use of restriction orders (Gibbon *et al*, 2013; Ministry of Justice, 2019) and community treatment orders following amendments to the Mental Health Act (2007), along with the expansion of forensic community outreach services (Judge *et al*, 2004). Each of these measures likely improved the supervision and support available that were tailored to each patient’s criminogenic and mental health needs, and therefore helped prevent future offending behaviour to lead to recall, or relapse to lead to readmission. Recall represents a breach of a conditional discharge (section 41) where the Ministry of Justice authorises the return of a patient to a secure hospital (MHA, 1983 as amended in 2007), whereas readmission refers to a patient returning to hospital for any other reason (e.g. civil section or for respite). The findings for the national cohort outlined in chapter two show that such measures were only relevant for those deemed high risk of

reconviction, and therefore it would be useful to determine how such measures are associated with readmission to deduce how well services balanced public protection with patient liberty.

How the readmission rate has changed over the last two decades in light of these milestones in the forensic care pathway is unclear. Recent reports on forensic secure care between 2007 and 2014 showed that 26.0% of female patients were readmitted and 44.5% of conditionally discharged patients were recalled to hospital (Jewell *et al*, 2017; Tully *et al*, 2019). The length of admission and the imposition of restriction orders were also investigated and neither showed any influence on risk of readmission. Patients from non-white ethnicities and who experienced childhood maltreatment were at greatest risk of recall to hospital, whilst age at discharge and the psychiatric and criminogenic history of patients showed no risk of recall to hospital, and previous substance misuse showed no risk of either recall or rehospitalisation. Most forensic patients detained in medium secure hospital across the UK are male, and over half are not restricted (Maden *et al*, 2006a; see chapter two), which limits the applicability of these recent findings to represent those at greatest risk of readmission, and the actual readmission rate across the UK.

The purpose of this chapter is to provide novel insight into how readmission has changed over the last two decades to evaluate medium secure provision; taking into account shifts in the forensic care pathway. Demographic, clinical and social factors were explored to identify which patients were at greatest risk of readmission, along with the different areas of service provision; including programme completion and recovery to deduce how patient progress predicted readmission. The chapter has scope to highlight the patient groups who require more stringent risk management to prevent relapse following discharge and to ensure public protection. This may help ensure prudent practice with both humanitarian and economic implications. The specific objectives of the study outlined in this chapter were:

- (1) to identify whether readmission has reduced over time with the increase in use of supervision and monitoring of patients following discharge from medium security;
- (2) to identify which patients were at greatest risk of readmission to hospital; and
- (3) to evaluate how service provision and patient progress through medium security predicted readmission to hospital.

## **5.2 Method**

## Sample

A total of 285 forensic patients were discharged between July 1999 and November 2017 from a Welsh medium secure hospital. Only those discharged to less secure services or the community ( $n=218$ ) were included in this study to evaluate patient outcomes for those who successfully stepped down the forensic care pathway. Three patients had missing readmission data, leaving the final sample size to be 215 patients. This cohort included 176 (81.9%) males and 36 (16.7%) females. A total of 88.8% of patients were white British, and 11.2% were from Black, Asian and Minority Ethnicities (BAME). The average age on admission was 34.3 years ( $SD=10.49$ ) and the average age at discharge was 37.0 years ( $SD=10.72$ ). The average length of admission was 1034 days ( $SD=679$  days). Of those who were repeatedly detained in the Welsh medium secure hospital, only the first admission was recorded to prevent error of repeated sampling.

Approximately 63.3% of the 215 discharged patients were subject to hospital orders. Whereas 15.9% were detained as transferred prisoners and 18.6% were detained under civil sections or were informally admitted. The majority of patients had a primary diagnosis of psychotic related disorder (74.5%) followed by a mood disorder (12.1%) and personality disorder (4.7%), and few had no diagnosis (1.0%) or a missing diagnosis (3.3%).

## Ethics

Details of the process in gaining ethical approval from Health Care Research Wales, the Health Research Authority (to gain section 251 approval under the NHS Act, 2006), and Cardiff Metropolitan University's Research Ethics Committee are outlined in section 3.2 of chapter three. Approval was also granted from multiple Research and Development (R&D) sites across six Welsh health boards.

The single medium secure hospital provides specialist mental healthcare for the Welsh population based in South, West and Mid Wales, and therefore is integrated with a variety of different Welsh health boards. The forensic patients included in this study were therefore dispersed across different Welsh health boards following discharge from the medium secure hospital. Therefore, approval was granted from the R&D departments of each Welsh health

board to enable the author to collect follow up data at the discharge sites. The health boards involved in the study included:

- Aneurin Bevan University Health Board;
- Betsi Cadwaladr University Health Board;
- Cardiff and Vale University Health Board;
- Cwm Taf Morgannwg University Health Board;
- Hywel Dda University Health Board;
- and Bro Morgannwg University Health Board (superseded by Swansea Bay University Health Board).

The R&D department of Powys Teaching Health Board underwent reconfiguration whilst the author collected data, and therefore the health board was unable to support the study.

## **Design and Procedure**

A retrospective, longitudinal case note analysis was completed using healthcare records from the single medium secure hospital and affiliated step-down services from each Welsh health board. The author analysed healthcare records for all 215 patients for the purpose of this study. In order to compare changes in readmission over time, the cohort was separated into three groups based on the time period of discharge; 1999 to 2006, 2007 to 2011 and 2012 onwards. Table 3.1 included in chapter three outlines how the discharge date was sourced to separate the patients.

The table presented in Appendix C provides detail of each of the patient risk factors investigated as predictors or associated with readmission across previous literature. Few variables were unavailable (e.g. criminal history) to further examine in this study. A number of variables have been shown persistently not to predict readmission in general or recall to hospital; including the sex of the patient, the severity of the index offence and a history of substance misuse, and therefore were not included in this study. Demographic (ethnicity and age on admission), clinical (diagnosis of a personality disorder or psychotic related disorder and number of previous psychiatric admissions) and social factors (number of ACEs; Adverse Childhood Experiences, childhood institutionalisation, and employment and education history) were included in the study as mixed findings have been reported as to whether they predicted readmission (see Appendix C). Table 3.1 in chapter three outlines



how each of these variables were coded and where data was sourced from the healthcare records of the 215 discharged patients. Details of the ACEs scale are provided in the materials section of chapter three.

The imposition of restriction orders and the length of stay in the Welsh medium secure hospital were collected to determine how service provision influenced readmission. Average scores on both the DUNDRUM programme completion and recovery scales were also collected to evaluate service provision in terms of the care, treatment and recovery of patients. The coding of all four variables that represent service provision and where information was sourced are also outlined in table 3.1 of chapter three. The materials section of chapter four provides a detailed outline of both the DUNDRUM programme completion and recovery measures (Kennedy *et al*, 2013).

The discharge pathway was coded as a binary variable depending on whether forensic patients were discharged to step down services; low security, locked rehabilitation and Psychiatric Intensive Care Units (PICUs), or whether they were discharged to open services and the community (see table 3.1 of third chapter for details of coding and where data was sourced). This enabled the author to analyse predictive factors of readmission for all patients, and for only those discharged to the community with greater liberty and less supervision, monitoring and support.

Readmission was coded as a binary variable (yes/no) across three time periods; zero to two years, zero to four years, and zero to six years. This enabled cumulative percentages to be calculated. Readmission included admissions to hospital for respite, informal admissions or under civil sections, and recalls to hospital under section 41 of the MHA (1983 as amended in 2007). Recall to hospital was also coded as a separate binary variable (yes/no) for only those discharged under restriction orders (section 41 of the MHA, 1983 as amended in 2007) using the same three cumulative follow up periods. This enabled the author to analyse predictive factors of readmission in general, and of recall only that may be due to different factors (see figure 5.1).

The author received approval to access the Welsh Demographic Service (WDS) to identify where forensic patients were located between zero to six years following discharge from the medium secure hospital. This enabled the author to locate the location and security

level of patients across the six-year follow up period. This was cross-validated with aftercare reports from the medium secure hospital and healthcare records located in step-down and community forensic mental health services across all Welsh health boards, excluding Powys Teaching Health Board. The author visited three of the six Welsh health boards affiliated with the study to collect the readmission data of each forensic patient. Each health board had unique procedures and systems for reporting and storing healthcare records. Therefore, a variety of documents were used to track the movement of forensic patients from the date of discharge from the medium secure hospital up to six years. Local Collaborators provided readmission data of those discharged to Aneurin Bevan University Health Board, Betsi Cadwaladr University Health Board, and Cwm Taf Morgannwg University Health Board. Of those discharged to the independent sector, the National Collaborative Commissioning Unit provided information of where forensic patients were located across six years following discharge from the medium secure hospital to enable collection of readmission data.

**Table 5.1** Percentage of missing data for each variable.

Variable	Total missing (%)
<i>Demographic</i>	
Ethnicity	0.0%
Age on admission	0.0%
<i>Clinical</i>	
Psychotic related disorder	0.0%
Personality disorder	0.0%
Number of previous psychiatric admissions	7.3%
<i>Social</i>	
Adverse childhood experiences	6.0%
Childhood institutionalisation	2.3%
Education	8.3%
Employment	3.2%

<i>Service provision and patient progress</i>	
Length of stay	0.0%
Restriction orders (N=140)	0.0%
DUNDRUM programme completion	6.4%
DUNDRUM recovery	6.9%
<i>Follow up</i>	
Readmission (including recall)	
Two years	0.0%
Four years	3.3% (5.1% discharged for less than four years)
Six years	4.7% (16.7% discharged for less than six years)

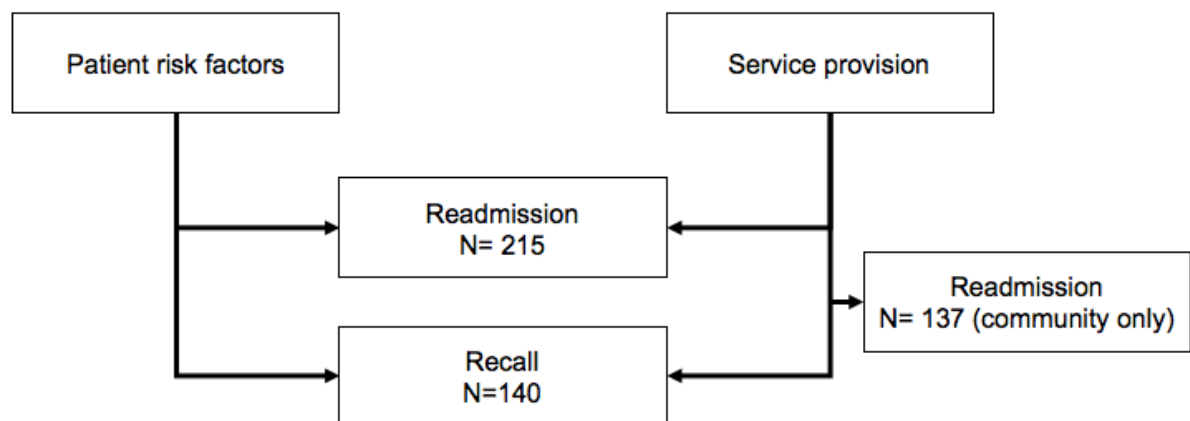
## Data analysis

The author analysed the data using SPSS Version 25.0. The Holm Bonferroni procedure was used to manage alpha inflation for the multiple statistical tests (Holm, 1979). Descriptive statistics and frequency data are presented to (1) show how the percentage of patients readmitted to hospital changed across the three time periods, and (2) to show how patient risk factors, service provision and patient progress varied between those readmitted to hospital and those not. Chi-square tests were used to identify significant associations between the percentage of patients readmitted to hospital across two to six years with the time period that patients were discharged from medium security; 1999 to 2006, 2007 to 2011, and 2012 onwards.

Binary logistic regression analyses were used to identify what significantly predicted readmission within two years of discharge from the medium secure hospital. The regression analyses were completed to deduce patient risk factors and areas of medium secure provision predictive of readmission for all patients who stepped down from conditions of medium security. Further regression analyses were completed to determine whether the same factors predicted recall for only those conditionally discharged under section 41 of the MHA (1983;

as amended in 2007), and readmission for only those directly discharged to the community (see figure 5.1).

The Omnibus tests of model coefficients was used to determine how well each model predicted readmission in general, and recall to hospital compared to predictions with no variables included in the model. The Hosmer and Lemeshow test also reported how well the model fitted with the data; a significant value from this test indicated a poor fit.



**Figure 5.1** Sample size for different regression analyses.

#### Model one: *patient risk factors*

Variables were entered into a forward stepwise regression analysis in blocks that were referred to as individual models (Dugard, Todman & Staines, 2010; Jewell *et al*, 2017). The patient factors were added into each of the different blocks based on previous literature (see Appendix C). Block 1 included only the number of previous psychiatric admissions, as this variable has been confirmed to predict readmission in previous literature. Block 2 added demographic variables (age on admission and ethnicity) to determine how well they improved the model, as they show mixed predictive ability across previous literature. Block 3 included clinical (diagnosis of a personality disorder and a psychotic related disorder) and social factors (ACEs, childhood institutionalisation, and education and employment history) to determine whether they improved the overall model to predict readmission in general, and recall. Some social and clinical factors included in block 3 have been close to significance to predict readmission in previous literature, some were measured differently across previous literature relative to this study, and some have not been investigated previously.

The Box-Tidwell procedure was used to test the assumption of linearity (Box & Tidwell, 1962; Hilbe, 2016); a significant value produced by this procedure suggests a non-linear relationship, and therefore a violation of this assumption. Each ordinal and scaled variable (number of previous psychiatric admissions, number of ACEs, education and employment history) showed a linear relationship ( $p>0.050$ ) with the logit transformation of both readmission in general, and recall as an outcome. The data showed no violation to indicate multicollinearity, as the lowest tolerance value was 0.60 and the Variance Inflation Factors (VIFs) ranged between 1.07 and 1.66 across the patient risk factors investigated. Therefore, each assumption was met to enable a binary logistic regression.

#### Model two: *factors of service provision and patient progress*

Sparse previous literature is available to show how each of the variables reflective of service provision predicted readmission or recall to hospital, and therefore all four variables of service provision (restriction orders, length of stay, DUNDRUM programme completion and recovery) were inputted into the logistic regression analysis together.

Each ordinal variable (length of stay and average scores on the DUNDRUM programme completion and recovery scales) showed a linear relationship ( $p>0.050$ ) with the logit transformation of both readmission in general and recall as an outcome. The lowest tolerance value was 0.51 and the VIFs varied between 1.15 and 2.14 across the variables; suggestive of no issues of multicollinearity between the data. Therefore, each assumption was met to enable a binary logistic regression.

Receiver Operating Characteristic (ROC) analysis determined the accuracy of predictive factors to discriminate between those readmitted to hospital and those not readmitted in two years following discharge from medium security (Rice & Harris, 2005). An Area Under the Curve (AUC) value was produced that varied between zero and one, with a value above 0.5 indicating a discriminative ability better than chance and a value above 0.7 suggesting strong discriminative ability (Mossman, 1994; Rice & Harris, 2005)

Table 5.1 presents some missing data for most candidate predictive factors of readmission, and loss of data over the six-year follow up period. However, patients with missing data for the candidate predictors ( $X^2 = 1.53$ ,  $p>0.316$  for sex, ethnicity, diagnosis,

legal status and referral source;  $t(216) = 0.53, p > 0.594$  for age on admission) or with missing readmission data ( $X^2 = 6.66, p > 0.155$  for sex, ethnicity, diagnosis, legal status and referral source;  $t(216) = 2.26, p > 0.025$  for age on admission; non-significant with alpha adjustment) did not significantly differ with patients who had data included in the study in terms of demographics.

### 5.3 Results

A total of 137 patients were discharged to the community and 78 stepped down to less secure settings. Of those directly discharged to the community, 43 (31.4%) were readmitted to inpatient services in two years following discharge. This grew to 53 (38.7%) in four years and 57 (41.6%) in six years. Twenty-three (16.8%) patients were recalled to secure services within two years. The number of recalls increased over time to 29 (21.2%) in four years and 33 (24.1%) in six years. Approximately 61.4% of the readmissions were to medium secure conditions, 7.0% were to low secure or locked rehabilitation conditions, and 8.8% were to Psychiatric Intensive Care Units (PICUs).

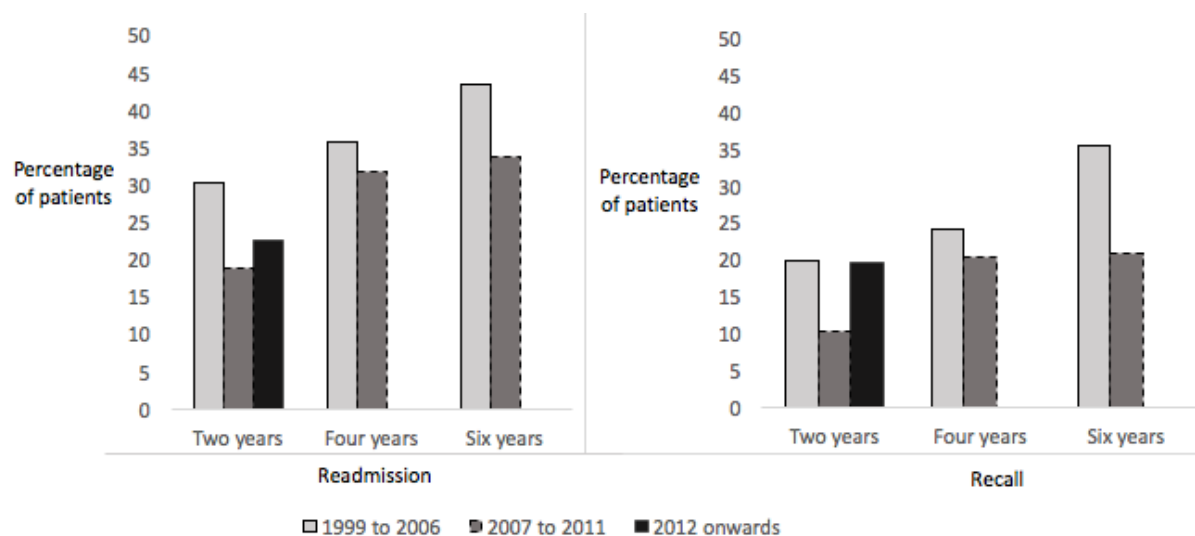
A total of 53 out of the 78 patients who stepped down to less secure services were later discharged to the community. Of all 78 discharged patients, 8 (10.3%) were either readmitted from the community or moved back up the secure pathway within two years. This escalated to 17 (21.8%) in four years and 20 (25.6%) in six years. The percentage of recalls increased over time from 6.4% in two years to 11.5% in six years. The majority of patients were readmitted to medium secure conditions (45.0%). A total of 40.0% were readmitted to low security and 15.0% were readmitted to a PICU.

*How readmission changed over the last two decades.*

A total of 59 patients (67.8%) successfully discharged to the community from the Welsh medium secure hospital between 1999 and 2006. Thirty-nine patients (39.8%) successfully discharged to the community between 2007 and 2011, and 39 (39.0%) successfully discharged to the community from 2012 onwards. Seven patients (8.0%) stepped down to less secure services from the Welsh medium secure hospital between 1999 and 2006. Whereas 35 patients (35.7%) stepped down to less secure services between 2007 and 2011, and 37 (37.0%) stepped down to less secure services from 2012 onwards.

Figure 5.2 presents the percentage of patients readmitted in general, or specifically recalled to hospital following discharge from the Welsh medium secure hospital across the three different time periods; 1999 to 2006, 2007 to 2011, and 2012 onwards. A series of chi-square analyses were used to determine the association between the time period that patients were discharged with readmission and recall across two to six years. Patients discharged between 2014 and 2017 were only living in the community or step-down services for less than six years whilst follow-up data was collected, and therefore very few patients discharged from 2012 onwards had available data to enable comparisons across four and six years. Only those discharged from 1999 to 2006 and 2007 to 2011 were compared when exploring readmissions across four and six years following discharge, whilst all three discharge cohorts were compared at two years following discharge.

Non-significant associations were identified between the three time periods that patients were discharged with both readmission in general ( $X^2 = 2.57$ ,  $df=2$ ,  $p>0.050$ ), and recall to hospital in two years ( $X^2 = 1.44$ ,  $df=2$ ,  $p>0.050$ ). These non-significant associations were consistent at four and six years when only comparing those discharged across the two earlier time periods ( $X^2 = 1.30$ ,  $df=1$ ,  $p>0.050$ ).



**Figure 5.2** Percentage of patients readmitted and recalled to hospital across two to six years post discharge between the three different time periods.

*Risk factors of readmission in general, and recall to hospital.*

Table 5.2 outlines the patient factors that were investigated to determine those at greatest risk of readmission. A binary logistic regression was used to identify the specific factors that significantly predicted readmission in two years. The first step of the model only included the number of previous psychiatric admissions and was shown to be a statistically significant predictor ( $X^2 = 8.51$ ,  $df = 1$ ,  $p < 0.004$ ) and a good fit ( $p > 0.050$ ) to explain readmission to hospital. The second step added demographic variables; ethnicity and age on admission. The model significantly predicted ( $X^2 = 12.19$ ,  $df = 3$ ,  $p < 0.007$ ) readmission and was a good fit ( $p > 0.050$ ). The model became a non-significant predictor ( $X^2 = 13.55$ ,  $df = 1$ ,  $p > 0.139$ ) of readmission with the addition of clinical (diagnosis of personality disorder and psychotic related disorder) and social factors (ACEs, childhood institution, and education and employment history).

An increase in the number of previous psychiatric admissions remained a significant hazard of readmission in two years across all steps of the model (see table 5.2). All other variables were non-significant hazards of readmission. The number of previous psychiatric admissions was sufficient to discriminate those readmitted in two years alone (AUC= 0.612, 95% CI [0.514-0.710],  $p < 0.019$ ) with no significant improvement with the addition of the demographic variables (AUC=0.656, 95% CI [0.562-0.750],  $p < 0.001$ ), as there was considerable overlap between the confidence intervals of the two models.

Those recalled to hospital under restriction orders may have differed with those readmitted under civil sections, informally, or for respite; as recalls tend to be linked with a breach of conditional discharge and risk behaviour. A further binary logistic regression was conducted to test which patient factors were predictive of recall to hospital in two years (see table 5.3 for list of variables added to the regression).

The first step of the model was a significant predictor of recall to hospital when only the number of previous psychiatric admissions was included ( $X^2 = 5.00$ ,  $df = 1$ ,  $p < 0.025$ ). The model became a non-significant predictor when demographic variables were added in the second step ( $X^2 = 5.11$ ,  $df = 1$ ,  $p > 0.164$ ), and when social and clinical factors were added in the third step ( $X^2 = 14.76$ ,  $df = 1$ ,  $p > 0.098$ ). Table 5.3 shows that a greater number of



previous psychiatric admissions was a significant hazard in the first step of the model, but became non-significant following alpha adjustment across the two latter steps when other patient factors were added. All other patient factors were non-significant hazards of recall to hospital in two years; a diagnosis of a psychotic related disorder became a non-significant hazard of recall following alpha adjustment.

**Table 5.2** Logistic regression examining patient factors predicting readmission two years post discharge.

Variable	Percentage of patients readmitted (%)		Model 1		Model 2		Model 3	
	No	Yes	Wald/ P-value	Odds ratio (95% CI)	Wald/ P-value	Odds ratio (95% CI)	Wald/ P-value	Odds ratio (95% CI)
<i>Demographic</i>								
Ethnicity					2.96/0.085	2.51 (0.88-7.16)	3.05/0.081	2.66 (0.89-7.97)
White British	78.0%	22.0%						
BAME	62.5%	37.5%						
Age at admission	34.60 (10.87)	33.53 (9.21)			0.79/0.375	1.08 (0.91-1.27)	0.91/0.341	0.98 (0.94-1.02)
<i>Social</i>								
Adverse Childhood Experiences: mean (SD)	3.05 (2.21)	3.60 (2.43)					0.58/0.446	1.08 (0.89-1.31)
Child institutionalisation	72.2%	27.8%					0.01/0.961	0.98 (0.38-2.54)
Employment							0.23/0.629	1.17 (0.62-2.21)
No Employment	76.5%	23.5%						
Unskilled	76.0%	24.0%						
Skilled	83.3%	16.7%						
Profession	66.7%	33.3%						
Education							0.03/0.875	0.96 (0.54-1.69)
None <sup>a</sup>	77.5%	22.5%						

GCSE etc	74.6%	25.4%			
A-level	84.6%	15.4%			
Degree or higher	83.3%	16.7%			
<i>Clinical</i>					
Psychotic related disorder	78.8%	74.5%			0.53/0.469 1.38 (0.58-3.30)
Personality disorder	32.1%	39.2%			0.01/0.960 0.98 (0.43-2.23)
Number of previous admissions: mean (SD)	2.65 (3.57)	4.94 (5.46)	8.44/0.004** 1.12 (1.04-1.22)	9.06/0.003** 1.13 (1.04-1.23)	7.97/0.005** 1.13 (1.04-1.23)

\* p<.05; \*\* significant with alpha adjustment; CI (confidence Intervals); a= no educational achievement.

**Table 5.3** Logistic regression examining patient factors predicting recall two years post discharge.

Variable	Percentage of patients recalled (%)		Model 1		Model 2		Model 3	
	No	Yes	Wald/ P-value	Odds ratio (95% CI)	Wald/ P-value	Odds ratio (95% CI)	Wald/ P-value	Odds ratio (95% CI)
<i>Demographic</i>								
Ethnicity					0.01/0.947	1.06 (0.21-5.38)	0.03/0.869	0.86 (0.14-5.28)
White British	84.4%	15.6%						
BAME	78.0%	22.0%						
Age at admission: mean (SD)	35.20 (10.63)	35.09 (9.67)			0.10/0.756	0.99 (0.94-1.05)	1.62/0.204	0.96 (0.90-1.02)
<i>Social</i>								
Adverse Childhood Experiences: mean (SD)	3.14 (2.36)	3.76 (2.47)					0.42/0.518	1.10 (0.82-1.47)
Child institutionalisation	79.4%	20.6%					0.01/0.952	1.05 (0.23-4.80)
Employment							1.11/0.291	1.69 (0.64-4.45)
No Employment	90.0%	10.0%						
Unskilled	79.2%	20.8%						
Skilled	87.5%	12.5%						
Profession	100.0%	0.0%						
Education							1.42/0.234	0.56 (0.21-1.46)

None <sup>a</sup>	84.7%	15.3%			
GCSE etc	83.0%	17.0%			
A-level	87.5%	12.5%			
Degree or higher	100.0%	0.0%			
<i>Clinical</i>					
Psychotic related disorder	87.9%	12.5%			6.70/0.010* 6.14 (1.55-24.26)
Personality disorder	84.8%	15.2%			2.05/0.152 2.88 (0.68-12.24)
Number of previous admissions: mean (SD)	2.30 (3.26)	4.05 (5.65)	5.33/0.021** 1.15 (1.02-1.30)	5.36/0.021* 1.15 (1.02-1.30)	4.52/0.034* 1.17 (1.01-1.35)

\* p<.05; \*\* significant with alpha adjustment; CI (confidence Intervals)

### *How service provision influenced readmission and recall to hospital*

Service provision was also investigated to evaluate how the Welsh medium secure hospital was successful to prevent readmission. A binary logistic regression was used to identify the areas of service provision that predicted readmission to hospital in two years; including length of stay, restriction orders, treatment engagement (DUNDRUM-3) and patient recovery in the medium secure hospital (DUNDRUM-4).

Table 5.4 presents all variables of service provision added to the regression analysis, and the model was a non-significant predictor ( $X^2 = 3.54$ ,  $df = 4$ ,  $p > 0.050$ ) and poor fit ( $p < 0.050$ ) to explain readmission in two years following discharge. Each variable was a non-significant hazard of readmission in two years.

The previous chapter highlights differences in patient progress between those who stepped down to less secure services and those directly discharged to the community. Therefore, whether service provision affected patients differently between both discharge locations was explored. Consistent findings were reported when only those discharged to the community were investigated, where the model that included all four variables of service provision was a non-significant predictor of readmission in two years ( $X^2 = 2.96$ ,  $df = 4$ ,  $p > 0.050$ ), and no individual variables were significant hazards of readmission ( $p > 0.428$ ). This was also demonstrated when only investigating those conditionally discharged from medium security (section 41 of the MHA, 1983 as amended in 2007). All variables inputted into the model, excluding restriction orders, showed no significant prediction of recall to hospital in two years ( $X^2 = 1.97$ ,  $df = 3$ ,  $p > 0.050$ ), and each variable was a non-significant hazard of recall ( $p > 0.248$ ).

**Table 5.4** Logistic regression examining areas of service provision predicting readmission two years post discharge.

Variable	Readmission Mean (SD)		Odds Ratio (95% CI)	P-value
	No	Yes		
Length of stay	1069 (692)	919 (628)	1.00 (0.99-1.00)	0.566

Restriction order			0.68 (0.32-1.43)	0.304
Yes (% patients)	81.0%	19.0%		
No (% patients)				
Dundrum				
Programme Completion	2.01 (0.67)	2.01 (0.57)	0.66 (0.31-1.42)	0.289
Recovery	2.05 (0.67)	2.13 (0.73)	1.42 (0.68-3.00)	0.354

\* p<.05; \*\* significant with alpha adjustment; CI (confidence intervals).

## 5.4 Discussion

The purpose of this chapter is to identify how readmission changed over the last two decades, and to evaluate the success of medium secure hospitals by using readmission as a proxy-measure of relapse and risk behaviour. Limited research is available that identified patient risk factors of readmission following discharge from medium secure care across the UK (Maden *et al*, 1999; Clarke *et al*, 2013; Jewell *et al*, 2017; Tully *et al*, 2019). Therefore, a range of historical patient factors were explored to identify those at greatest risk of readmission in two years. Only length of stay and restriction orders have been investigated previously to show how service provision influenced readmission (Maden *et al*, 1999; Clarke *et al*, 2013; Tully *et al*, 2019). This chapter moves beyond the current literature base by determining whether patient progress through medium security predicted readmission.

### *Changes in readmission over time*

The percentage of patients readmitted, including those recalled to hospital, increased from 23.4% to 35.3% across two to six years following discharge. This increasing trend across the six-year follow up period was consistent for all patients discharged across the three time periods; 1999 to 2006, 2007 to 2011 and 2012 onwards. The time period that patients were discharged was not associated with readmission in general, or recall to hospital, and therefore readmission as a proxy-measure of risk behaviour and mental health relapse did not appear to change over the last two decades in light of amendments in legislation and provisional changes (Judge *et al*, 2004; Gibbon *et al*, 2013; Ministry of Justice, 2019). This indicates steady success of the Welsh medium secure hospital over time, although

readmission would need to be further tested in different medium secure hospitals to deduce whether the findings apply across the UK.

The growing use of stringent measures following discharge from medium secure hospital; including more impositions of restriction orders and the introduction of community treatment orders (see chapter three; Gibbon *et al*, 2013; Ministry of Justice, 2019), along with the greater use of step down secure services (see chapter three) would have been expected to reduce the patients' risk of readmission in general or recall to hospital across the past two decades. Although it may be that continued monitoring and supervision following discharge from medium security ensured that patients from the Welsh cohort were more likely dealt with through mental health services (via readmission and recall to hospital) as opposed to re-sentencing through the criminal justice system if relapse or risk re-emerged.

### *Predictors of readmission*

Only the number of previous psychiatric admissions was a significant predictor of readmission to hospital in two years following discharge from medium security. Ethnicity, age on admission, diagnosis, experiences of childhood adversity or institutionalisation, and education or employment history were each non-significant hazards of readmission and were redundant when added to the number of previous psychiatric admissions to predict readmission.

The study is consistent with previous reports that the psychiatric inpatient history of patients predicted readmission following medium secure care (Maden *et al*, 1999; Clarke *et al*, 2013). This supports the analogy of 'revolving door patients' in mental health practice, although this phenomenon has been reported predominantly in general psychiatric research (Langdon *et al*, 2001; Webb, Yáguez & Langdon, 2007), whereas this analogy typically refers to those who have been sentenced repeatedly to prison when based on forensic psychiatric populations (Birmingham, 1999; Somers, Rezansoff, Moniruzzaman & Zabarauckas, 2015). Why some patients fall into the vicious cycle of rehospitalisation has only been explored from the position of identifying the characteristics of patients at greatest risk (Webb *et al*, 2007). Little is known about the dynamic nature of readmission to hospital; including the presentation of patients following discharge and the environmental context. This may inform clinicians of the measures needed to help maintain recovery following



discharge; whether they may be measures that target mental health, dynamic risk, or social wellbeing.

Similar to previous literature, the number of previous psychiatric admissions was a significant predictor of recall to hospital alone, but became non-significant when considered with other patient factors (Jewell *et al*, 2017). Recall to hospital is perceived to be associated with risk behaviour or breaches of conditional discharge (Davies, 2002). The author was unable to validly identify reasons for each recall to hospital, although some recalls were noted to be linked with engagement with dynamic risk factors of violence. The findings are partially consistent with the ‘revolving door’ analogy of risk behaviour leading to resentencing (Somers, Rezansoff, Moniruzzaman & Zabarauckas, 2015), although patients from the Welsh cohort were dealt with through forensic mental health services as opposed to the criminal justice system.

Unlike previous literature, this study failed to find an association between ethnicity and experiences of childhood adversity as predictive factors of recall to hospital (Jewell *et al*, 2017). Instead, a diagnosis of a psychotic related disorder was close to significance as a hazard of recall to hospital (Clarke *et al*, 2013). Given the nature of recalls to hospital to be linked with risk behaviours, criminogenic factors may have predicted recall to hospital, although this study was unable to explore the criminogenic history of the Welsh cohort (Clarke *et al*, 2013; Jewell *et al*, 2017). Moreover, some discharged patients may have been dealt with through the criminal justice system, and therefore this study may not have captured all risk behaviours following discharge. Few studies have collected both readmission and reconviction data to ensure all risk behaviours following discharge from medium security were captured (Davies *et al*, 2007; Sahota *et al*, 2010; Clarke *et al*, 2013).

Length of stay, restriction orders, programme completion and recovery did not predict readmission in general, or recall to hospital for all forensic patients who stepped down from conditions of medium security. This suggested that service provision and patient progress through medium security had no significant impact on readmission or recall. Therefore, it remains unclear of what actually takes place in medium secure hospitals to promote successful patient outcomes related to mental health and reduced risk. The lack of association between length of stay and the imposition of restriction orders with readmission questions why a growing number of patients received prolonged deprivation of liberty through the use

of these restrictive measures over time (Maden *et al*, 1999; Clarke *et al*, 2013; Tully *et al*, 2019; see chapter three), as they showed no impact on patient relapse or public protection when measured using readmission and recall. Whether such measures reduced the risk of reconviction of those discharged from medium security over time would need to be explored to establish whether prolonging the patients' deprivation of liberty is justified for the purpose of public protection.

The dynamic nature of the DUNDRUM programme completion and recovery scales may explain why they failed to predict readmission, as they referred to the presentation of patients from the Welsh cohort prior to discharge. Both scales likely became irrelevant with the changing environmental context and care and treatment available following discharge. This has been reported previously as a challenge for dynamic risk assessments to predict reconviction following discharge from secure services (Gray *et al*, 2004). Routine administration of both DUNDRUM scales following discharge may help capture which specific areas of treatment engagement and recovery break down to lead to readmission.

### *Limitations*

The study was beset by several limitations, including the reliance of readmission as a proxy-measure for mental health relapse and risk behaviour, and therefore could only be considered a 'best estimate' of the outcomes of interest (Conlin & Braham, 2017). Some forensic patients from the Welsh cohort may have relapsed or presented with risk behaviours that did not require readmission to hospital, particularly in more recent years where community specialised services have expanded that are equipped to support complex, forensic patients (Judge *et al*, 2004). Therefore, it may be useful to use more direct measures of mental health and risk behaviour following discharge, including risk assessment and outcome measures completed at the discharge location (Davoren *et al*, 2012; Alexander, Morrissey, Hobson, Faulkner & James, 2015). Specific risk behaviours may have led to reconviction through the criminal justice system as opposed to recall, this has been shown to be a particular issue for those diagnosed with a personality disorder who are more likely to be refused readmission (Coid *et al*, 2015). Both readmission and reconviction should be collected in conjunction to improve the likelihood of capturing risk behaviours following discharge from medium security (Davies *et al*, 2007; Sahota *et al*, 2010; Clarke *et al*, 2013).

The available readmission data at four and six years following discharge were low compared with the data available at two years post-discharge. Many forensic patients were discharged for less than four years whilst the author collected follow up data. This prevented the study from analysing changes in the readmission rate up to 2017 using longer follow up periods post-discharge, or to evaluate the robustness of predictive factors of readmission across longer follow up periods. Given the static nature of the patient risk factors shown to predict readmission, preservation of this predictive power is expected (Gray *et al*, 2004; Clarke *et al*, 2013).

Whether distinct legislation and resource or social pressures in Wales led to unique patient outcomes following discharge from the Welsh medium secure hospital is unknown. This limits the applicability of this chapter as a platform to interpret the success of medium secure hospitals across the UK. A greater prevalence of individuals living in rural areas in Wales relative to England may suggest less support available following direct discharge to rural communities (Welsh Government, 2009). This has been an ongoing challenge for Public Health Wales and has led to the development of the ‘rural health plan’ that aims to provide adequate healthcare for those living in rural areas. Moreover, the unique demographics of the Welsh forensic mental health population may suggest different predictive factors and trends in readmission (Clarke *et al*, 2013; Bellis *et al*, 2016; Jewell *et al*, 2017); for example, the ethnicity of the Welsh cohort in this study was disproportionately white British relative to other medium secure hospitals across the UK (Maden, Friendship, MCclintock & Rutter, 1999; Clarke *et al*, 2013). This may explain why the study reached a conflicting conclusion that ethnicity was not linked with recall to hospital relative to previous literature (Jewell *et al*, 2017).

Most literature; including this study failed to explore the social resources and support available for patients following discharge beyond simply reporting whether they were subject to restriction orders (see table 1.9 presented in chapter one). From a patient and carer perspective, social support and resources following discharge are critical markers to ensure successful transition from forensic secure care to the community (Gustafsson, Holm & Flensner, 2012). Such factors have become embedded in robust theories as fundamental to ensure patient recovery; including the Good Lives Model that indicates the need for a fulfilling life enriched with purpose and social relatedness to prosper (Ward & Brown, 2004). Therefore, it may be useful to focus on the environment surrounding patients following

discharge to evaluate the opportunity for patients to achieve basic social and fulfilling needs that may explain possible relapse and re-emergence of risk behaviours (Ward & Brown, 2004; Blonta, Blais & Wilson, 2013). Acknowledgement of the significance of social support and basic human needs on both patient wellbeing and public protection may also help the literature move away from solely focusing on reconviction and readmission as proxy-measures to evaluate the success of medium security, but instead focusing on other important outcomes; including quality of life, economic and employment opportunities, and interrelationships. This may inform NHS providers to proportionately commission services and resources in the community alongside high-cost low-volume secure services.

Social deprivation is more prevalent across Wales relative to most of the UK (Gartner, Gibbon & Riley, 2007; Welsh Government, 2009; Bellis *et al*, 2016), and therefore the extent at which the social environment at discharge following medium security affected readmission may explain possible regional differences in readmission rates reported by different studies. This further highlights the need to investigate factors following discharge from medium security to understand patient outcomes.

### *Conclusions*

Consistent with previous literature, ‘revolving door patients’ may be a challenge for medium secure hospitals, as inpatient history was shown to predict readmission in general, and recall to hospital in this study. The next step would be to identify reasons for relapse or re-emergence of risk behaviours following discharge for this specific sub-group of patients to help inform what and where additional preventative measures are needed to promote the success of medium secure hospitals and maintain desirable patient outcomes.

Prolonged deprivation of patient liberty through the imposition of restriction orders and greater lengths of stay did not reduce risk of readmission in general, and recall to hospital. The percentage of patients readmitted to the Welsh medium secure hospital remained steady over the last two decades, despite the increasing use of these restrictive measures over time. This suggests the development of a possible imbalance towards public protection at the expense of patient liberty over the last two decades, although whether the increasing use of restrictive practice is justified through reduced reoffending and contact with the criminal justice system would need to be investigated.

## **CHAPTER 6**

### **Discussion**

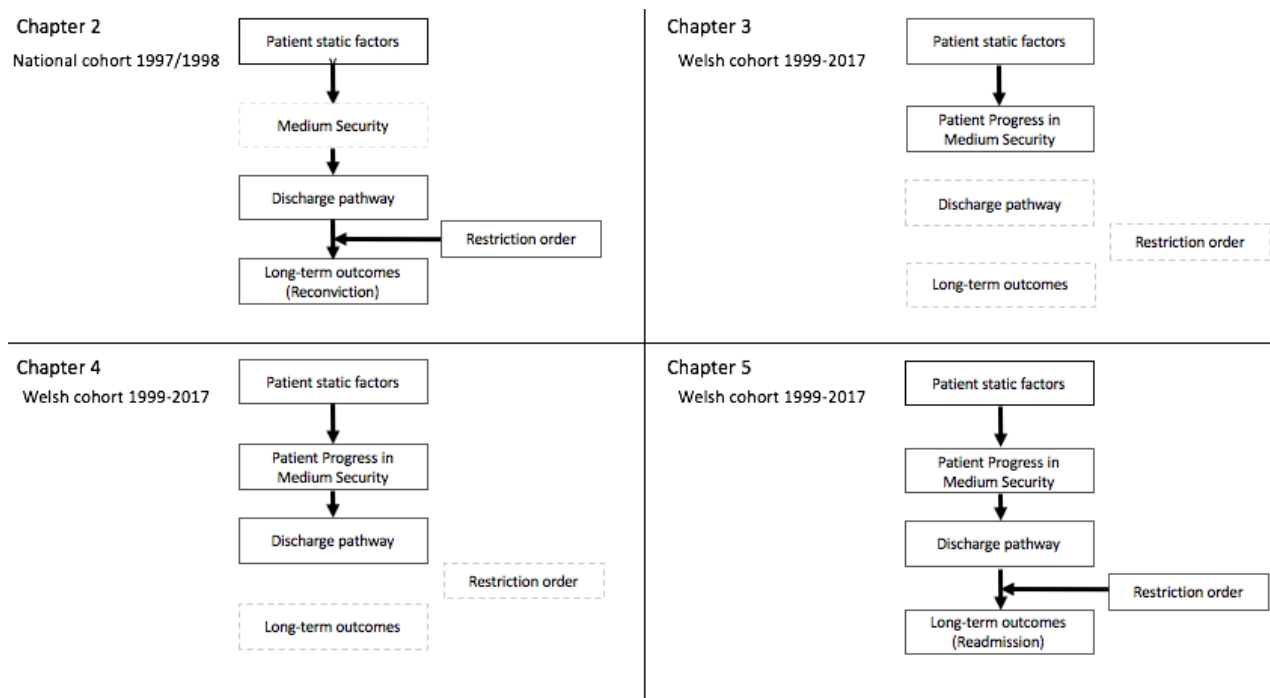
This discussion integrates the findings of each empirical chapter to conceptualise an understanding of medium secure hospitals and how this thesis compares with the current literature base that has investigated the same phenomenon. Both the theoretical and practical implications of this thesis are discussed, along with the strengths and limitations. Concluding comments and future directions are highlighted at the end of this chapter to suggest how insight into medium secure provision could further progress.

#### **6.0 Aim of the thesis**

The purpose of the thesis is to evaluate how medium secure hospitals have changed over the last two decades. Medium secure hospitals and the entire forensic mental health system are a large expense to public health despite only affecting a small number of patients. The overall cost equates to an excess of £579 million per year based on annual costing reports from 2014/2015 (Department of Health, 2016). These high-cost low-volume services receive ongoing commissioning due to the implications for public protection that are in the interest of clinicians, the National Health Service (NHS), the criminal justice service, the government and the general public. Medium secure hospitals also aim to alleviate mental health difficulties and improve quality of life with humanitarian implications in the interest of both the patient and clinicians, but also have economic implications by reducing relapse and preventing readmission to burden the NHS. Extensive governance and evaluation is expected to justify the continued expenditure and growing reliance on medium security across the UK (Home Office & DHSS, 1975). However, there is a surprising lack of evidence that has evaluated medium secure provision against these parameters; public protection and improved mental health. Regular monitoring of the impact of medium secure provision should be a priority given the fiscal position of the UK and the delicate climate of the NHS.

The thesis is structured where each chapter provides a building block to integrate all phases of the forensic care pathway and establish a holistic evaluation of medium secure hospitals, as shown in figure 6.1. This moves beyond previous literature by exploring what actually takes place in medium secure hospitals and the risk factors of unsuccessful progress

across the forensic care pathway and undesirable outcomes. Chapter two captures medium secure provision across the UK between 1997/98 that provides a national baseline for later chapters. The next chapter shows how medium secure hospitals changed over the last two decades and provides novel insight into risk factors preventing patient progress. The fourth chapter expands on this by investigating how patient progress predicted the discharge pathway for patients. The final empirical chapter evaluates the success of medium secure hospitals by exploring changes in readmission over the last two decades, along with identifying what predicted this undesirable outcome.



**Figure 6.1** The phases of the forensic care pathway explored in each chapter.

## 6.1 Changes over the last two decades

The typical profile of patients admitted to medium security became more complex over the last two decades with a growing number of patients with more impoverished social histories. Exposure to adverse childhood experiences became a more prevalent feature of forensic patients over time. Forensic patients with four or more adverse childhood experiences increased from 26.4% (1999-2006) to 58.0% (2012 onwards). Four or more adverse childhood experiences are associated with poor life prospects; including offending, self-damaging behaviours, and mental health difficulties (Bellis *et al*, 2014; 2016). Over half

of all forensic patients from the Welsh cohort experienced parental separation under the age of eighteen, and over half of the patients discharged from 2012 onwards further experienced physical abuse and verbal abuse. Alpha adjustment corrected for many adverse childhood experiences showing a significant increase in prevalence across the Welsh cohort over time. Although, comparisons with the national cohort of forensic patients discharged from medium security between 1997/98 supported the concept that experiences of physical and sexual abuse became more prevalent over time (Maden *et al*, 2006a). Approximately 20.0% and 10.0% of forensic patients discharged from medium security between 1997/98 experienced physical and sexual abuse as a child, respectively. Whereas, 60.0% and 40.0% of patients recently discharged from the Welsh medium secure hospital (from 2012 onwards) were exposed to physical and sexual abuse as a child, respectively.

The idea that social deprivation has become more prominent for those admitted to medium security over time was further supported by the sparse employment histories of patients from the Welsh cohort. Unemployment levels increased from 29.5% between 1999 and 2006 to 44.0% from 2012 onwards. However, the employment history of forensic patients discharged from 2012 in this thesis were comparable with the national sample of forensic patients discharged between 1997/98. The landscape of unemployment across Wales may not adequately explain the worse employment opportunities over time for patients from the Welsh cohort. The unemployment rate across Wales has fallen since the early 1990s (10.7% in 1992 compared with 4.4% in 2017; Office of National Statistics, 2020). This may suggest a specific issue of the opportunity for employment for the forensic psychiatric population, as opposed to being reflective of wider societal problems of unemployment for the general population. Although not investigated in this thesis, reforms in social welfare and benefits (The Welfare Reform Act 2012) across Wales likely added to the challenge of social deprivation for forensic patients admitted to medium security more recently and would be useful to explore (Welsh Government, 2019).

There is consensus that medium secure hospitals have admitted more high-risk patients over time (Gibbon *et al*, 2013), and this is supported through the findings of this thesis. The historical items of the Historical Clinical and Risk Management 20 (HCR-20) measure were scored higher for those discharged from 2012 onwards relative to those discharged between 2007 and 2011. The historical scale of the HCR-20 has confirmed validity as a good predictor of reoffending following discharge from medium security (Gray

*et al*, 2004), as well as being associated with physical aggression, verbal aggression and violence to property (Gray *et al*, 2003; 2004), that reflect the HCR-20 indicates the risk of violence of patients. The increasing risk of patients in medium secure care over time may demonstrate the changing landscape of forensic mental health services over the last two decades. Patients who otherwise would have been detained in high security were more likely to be admitted to medium security in recent years due to the decommissioning of high secure beds (NHS England, 2015a). Therefore, thresholds of risk that match different levels of security may have shifted to account for the changing landscape (Kennedy, 2002). Additionally, the increased risk of forensic patients may be a by-product of the increasing exposure to adverse childhood experiences over time (Bellis *et al*, 2016). It has been suggested previously that risk assessment tools are likely proxy-measures of underlying social factors (Copas & Marshall, 1998), and therefore greater childhood trauma likely reflects growing risk.

The main source of referral to medium security across the UK between 1997/98 was prison. Almost half of the patients admitted to medium security were diverted from the criminal justice system, and very few arrived from high secure hospitals or the general psychiatric pathway. This reflects the growing support for diversion and liaison schemes set up to help deal with the epidemic of mental health illness in the prison system (Department of Health & Home Office, 1992). It is unclear whether the low number of admissions from high security or general psychiatric hospitals were simply due to less demand from these services; as the number of high secure patients had been reducing over time (Watson & Grounds, 1993; NHS England, 2015a), an aversion to admit high-secure patients based on their risk (Reed, 1997), or a growing priority of prison diversion at the expense of the two alternative pathways. Diversion from prison remained the main referral source into medium security across 1999 to 2017, and the number of transfers from other medium secure hospitals also increased. This may be a consequence of the decommissioning of high secure beds where patients with broken down placements in medium security who would otherwise move up to high security were transferred to another medium secure hospital.

Medium secure hospitals across the UK abided by recommendations for the maximum length of stay to not exceed two years between 1997/98 (Home Office & DHSS, 1975). The average length was fourteen months with only 17.3% of patients exceeding the two-year recommendation in a Welsh medium secure hospital between 1999 and 2006. The



average length of stay extended over time where it reached almost three years for those discharged from 2012 onwards with 64.0% of forensic patients exceeding the two-year target. The growing risk and complexity of forensic patients may explain the longer lengths of stay. Although criminogenic factors and risk assessment tools have shown conflicting results regarding their association with the length of admission of patients in forensic hospital (Shah *et al*, 2011; Davoren *et al*, 2015).

Over half of patients from the national cohort and of those discharged between 1999 and 2006 from the Welsh cohort were directly discharged to the community. This discharge pathway reduced over time and instead forensic patients more commonly stepped down to less secure (locked) services, which is representative of changes observed across other medium secure hospitals in the UK over time (Earnshaw *et al*, 2019). This suggests a possible shift in the balance between public protection and patient liberty. The growing risk and complexity of forensic patients may explain this shift, although the social background of forensic patients appeared to play no role in determining those who successfully stepped down from medium secure conditions. Nonetheless, whether criminogenic risk and greater social complexities discriminated between those directly discharged to the community or those who stepped down to less secure (locked) conditions would be useful to explore. These findings may also simply reflect the increased availability of step-down (locked) services across the UK in addition to clinicians taking a more conservative approach in the pathway out of medium security.

Prison remissions remained steady across 1999 to 2017. This conflicts with reports of an increase in prison remissions from hospital across the UK over time (Birmingham *et al*, 2017) and therefore may reflect a regional difference in South Wales compared with the rest of the UK. Previous literature reported mixed findings across different single medium secure hospitals in the UK where some confirmed a stable remission rate over time (Earnshaw *et al*, 2019), whilst other studies showed that remission to prison had doubled over time between 1983 and 2003 (Gibbon *et al*, 2013); highlighting the caution needed when interpreting findings from a single medium secure hospital. The findings of the national cohort discharged between 1997/98 revealed the negative impact of remitting patients to prison on reconviction outcomes. Around one in every ten forensic patients were remitted to prison from the Welsh medium secure hospital, whether such patients showed similar undesirable outcomes on

public protection would be informative and may further highlight that remissions should be avoided (Birmingham *et al*, 2017).

Restriction orders were commonly used across the UK in the 1990s where around half of patients from the national cohort were subject to section 41 of the Mental Health Act (1983 as amended in 2007). Services became more reliant on restriction orders over time where three in every four patients discharged from 2012 onwards from the Welsh medium secure hospital were subject to them. This is consistent with the growing use of restriction orders across the UK from 6682 in 2013 to 7533 in 2018 (Gibbon *et al*, 2013; Ministry of Justice, 2019).

The growing use of locked step-down services and restriction orders and the longer admission periods collaboratively suggest a shift in the culture of forensic services that may be more risk averse. This conflicts with the widespread goal of mental health services to ensure least restrictive practice; including the transforming care initiative and the five-year forward view for mental health (Department of Health, 2012; The Mental Health Taskforce, 2016). This discrepancy between forensic and general mental health services is further shown with the decommissioning of general psychiatric beds compared with the continued expansion of forensic beds across the UK (Duke, Furtado, Guo & Völlm, 2018). Although, evidence suggests that these restrictive measures increased public protection (see chapter two), but only for a sub-sample of patients.

The percentage of forensic patients readmitted across the UK between 1997/98 was 28.2% within one year following discharge to the community. This percentage remained steady over time from 1999 to 2017 where in total 31.4% of patients were readmitted within two years following discharge to the community, and this escalated to 41.6% by six years; over half of which were recalls to hospital. The findings appear consistent with recent reports of readmission from other medium secure hospitals (Clarke *et al*, 2013; Ribeiro *et al*, 2015; Tully *et al*, 2019). The increase in restrictive practice of medium secure hospitals over the last two decades has therefore shown no impact to reduce readmission based on the Welsh cohort. This may challenge the commissioning of prolonged admission periods and increase in use of restriction orders at the expense of patient liberty with no evidence of any benefit. However, whether the increase in use of these restrictive measures reduced the risk of other undesirable outcomes, including reconviction remains unknown.

## **6.2 Predictors of patient progress through medium secure hospital.**

There has been a lack of literature that captures what actually takes place in medium secure hospitals, which has resulted in poor clarity about what changes for patients to justify the high-cost of detainment and loss of liberty. The development of routine outcome measures over the last two decades has helped resolve this challenge with the DUNDRUM programme completion and recovery scales developed to capture the set of treatments and therapeutic activities characterised in forensic mental health services (Kennedy, O'Reilly, Davoren, O'Flynn & Sullivan, 2019). The DUNDRUM quartet previously captured treatment progress in forensic mental health services where a mixture of high and medium secure patients' scores on the programme completion scales significantly improved over time; suggestive of a reduction in security need (Richter *et al*, 2018). The presence of cognitive impairment in forensic patients, the extent of psychopathology, and the security need at baseline were shown to significantly predict this treatment progress. This thesis further investigates what predicted treatment progress by measuring the rate of recovery using the DUNDRUM triage security scale (baseline measure) and the DUNDRUM recovery scale. The triage security scale provided a baseline of the security need of patients at admission and the average score for the Welsh cohort matched medium secure conditions. This security need reduced at discharge where, on average, scores on both the DUNDRUM programme completion and recovery scales suggested readiness to step down from conditions of medium security. Exposure to adverse childhood experiences and low educational achievement collectively predicted the rate of recovery as protective factors.

The sparse evidence base regarding treatment progress through medium security creates difficulty comparing and interpreting the results from the Welsh cohort of forensic patients. Both adverse childhood experiences and poor educational achievement represent social deprivation to some degree. The Welsh medium secure hospital may have removed forensic patients from social impoverished environments and provided a framework to promote values and goals, occupational activities and routine where each promote a sense of purpose and fulfilment (Stewart & Craik, 2007). This is the aetiology of the Good Lives Model that has become encapsulated in forensic mental health and offender rehabilitation internationally (Ward & Brown, 2004). Care and treatment in the Welsh medium secure hospital may have also targeted previous trauma by providing therapy to help forensic

patients overcome the impact of adversity. This has become embedded in psychological formulations to understand mental health difficulties and risk behaviours and to promote recovery (Johnstone & Boyle, 2018).

Unlike previous literature, the sex of the patient, the severity of the index offence, a diagnosis of personality disorder or a psychosis related diagnosis and the presence of substance misuse were all non-significant risk factors of poor progress through medium security (Edward Steed & Murray, 2002; Jacques, Spencer & Gilluley, 2010; Olsson *et al*, 2013; Richter *et al*, 2018). Whether these discrepancies may be a reflection of different measures used between the literature (e.g. length of stay, risk assessment tools or the DUNDRUM to capture patient progress through forensic care), or whether candidate risk factors of progress differs between a Welsh forensic population compared to the rest of the UK requires further investigation.

### **6.3 Predictors of the discharge pathway from medium secure care.**

Despite the investment in medium secure hospitals to treat mental health difficulties and reduce risk of offending behaviour, only around half of the patients admitted to the Welsh medium secure hospital between 1999 and 2017 were successful at directly discharging to the community or open supported living. Higher rates of discharge directly to the community are observed across other medium secure services across the UK (Coid *et al*, 2016), which may suggest regional differences. Regional differences may reflect distinct policies and pathways available for patients, unique biases that govern discharge decision making, or may even be representative of risk factors more prevalent in the Welsh forensic cohort and possible differences in treatment progress through medium security.

The DUNDRUM quartet was created to help resolve the issue of unstructured judgement in discharge decision-making to ensure unbiased and systematic judgement in forensic mental health services (Kennedy *et al*, 2013). Although this tool also provides scope to capture the areas of treatment progress that are linked with more successful discharge pathways, and therefore what is most important to clinicians to justify readiness to step down from conditions of medium security. Average scores on the programme completion and recovery scales of the DUNDRUM quartet mapped onto the discharge pathway for forensic patients as intended, and both scales were able to discriminate patients who remained in

medium secure care or higher following discharge. This confirms the applicability of both scales to inform readiness for discharge and to which level of security (Davoren *et al*, 2012; 2015).

Forensic patients from the Welsh cohort who were able to step down from conditions of medium security showed better progress through all areas of programme completion and recovery, with the exception of physical health. The distinctions between those who simply stepped down to less secure conditions compared with those who successfully discharged to the community were less evident. These two groups of patients were comparable in their stability, their engagement in drug and alcohol work, and showed equivalent victim sensitivity issues. This suggests that specific areas of programme completion and recovery were more influential in the decision-making process about the discharge pathway for patients. Programme completion linked with self-care and activities of daily living, family and social networks, and the leave status of patients predicted the discharge pathway for forensic patients with no meaningful improvement when all other areas of programme completion and recovery were also considered, this supports the suggestion of specific areas of treatment influencing clinical decision making more than others. Although inpatient aggression and acuteness of mental health illness have previously been linked with the discharge pathway of patients (Martin & Martin, 2016; Jewell *et al*, 2017); neither were predictive risk factors for the Welsh forensic population.

An increase in the freedom of patients during their leaves was a strong predictor of discharge to less secure conditions and the community, and this is consistent with previous investigations that show leave status as significantly associated with the discharge route of patients from forensic secure care (Jewell *et al*, 2017). Whereas, greater engagement in self-care and activities of daily living and with family and social networks were only predictive of direct discharge to the community or open supported living. This argues that greater independence and social resources may indicate a patient's ability to cope in the community. Medium secure hospitals have been characterised as services that mainly offer passive leisure and rest activities (Steward & Craik, 2007), and therefore there may have been an availability bias where clinicians based decisions on information more readily available (Murray & Thomson, 2010). Forensic patients with greater engagement in their daily routines have been shown to decline in physical aggression, and therefore there may be a mediating effect with this result (Daffern, Mayer & Martin, 2004). This improvement may have led to the

perception of a reduction in risk to justify discharge to the community (Ward & Brown, 2004), although this requires further investigation.

If the DUNDRUM quartet is perceived as a best practice framework to govern the decision-making process about readiness for discharge (Lawrence *et al*, 2018; Jeandarme, Habets & Kennedy, 2019), this Welsh cohort reveals that clinicians may have based decisions of discharge pathways on too few factors related to progress and recovery. This supports the implementation of structured professional judgement tools to become standardised in forensic practice to ensure adequate decision making about patient pathways (Kennedy *et al*, 2013), and to prevent inappropriate placements at the expense of patient liberty and unnecessary expenditure.

Only half of the variance to explain the discharge pathway for forensic patients was accounted for by the programme completion and recovery scales. Only a diagnosis of a psychotic related disorder and more skilled employment histories were collectively shown to predict successful discharge from medium secure conditions, although these were shown to be redundant factors when considered with predictive items of the programme completion and recovery scales of the DUNDRUM quartet. The clinical profile of forensic patients was close to significance as a protective factor to prevent undesirable discharge pathways. Specifically, forensic patients with a diagnosis of a psychotic related disorder appeared more successful at stepping down from conditions of medium security. This helps resolve the conflicts between previous literature that debate whether a mental health illness, and more specifically a diagnosis of psychosis has no effect, a worsening effect or a positive impact on the anticipated discharge pathway for patients (Saad & Sashidharan, 1992; Taylor, Goldberg, Leese, Butwell & Reed, 1999; Dibben, Wong & Hunt, 2005). This may be a reflection of those with severe mental health difficulties who have committed serious index offences, but otherwise have limited criminal histories, and therefore they may have been perceived as low risk to discharge from medium secure conditions (Coid *et al*, 2015; Conlin & Braham, 2018). Although, this would need to be clarified by collecting criminogenic data. A diagnosis of personality disorder is expected to present an opposite trend; as a risk factor of unsuccessful discharge to support this interpretation, where those with a diagnosis of personality disorder typically have extensive criminal profiles (Duggan & Howard, 2009) and have been shown to get ‘stuck’ in secure care due to perceived risk. However, this was not the case for the Welsh cohort.

A surprising finding is how the presence of a restriction order showed no prediction of whether a patient would be discharged from the Welsh medium secure hospital to the community or supported living (Jewell *et al*, 2017). Reports show a 25.0% reduction in the percentage of restricted patients discharged from inpatient services compared with non-restricted patients (Care Quality Commission, 2020). This leads to query whether the management in the single medium secure hospital or for the entire Welsh forensic population differs compared with the rest of the UK.

#### **6.4 Predictors of reconviction.**

Medium secure hospitals were successful at ensuring public protection between 1997/98 with a total of 28.2% of patients from the national cohort reconvicting within six years following discharge, compared with 52.1% of prisoners who were reconvicted over the same duration following release from prison in 2000 (Ministry of Justice, 2010). This arguably justified the commissioning and expansion of high-cost low-volume forensic mental health services to divert individuals from prison (Department of Health & Home Office, 1992; Bradley report, 2009), despite prison costing only £26,132 annually for each prisoner between 1997/98 (Mills, Silvestri, Grimshaw & Silberhorn-Armantrading, 2010). The reduced reconviction rate may also be a reflection that care and treatment through a health framework, as opposed to a more punitive model in prison may be better suited at rehabilitating patients to reduce risk and ensure public protection (Rutherford & Duggan, 2007).

The extent to which medium secure hospitals are successful at ensuring public protection by reducing risk of reconviction is typically reliant on comparisons with prison samples (Fazel *et al*, 2016). Actuarial risk assessment tools that are static in nature provide scope to estimate the success of medium secure hospitals. These tools provide a valid estimate of the reconviction rate of forensic patients (Gray *et al*, 2004; Snowden *et al*, 2007). The Offender Group Reconviction Scale-2 estimated an average reconviction rate of 39.1% for the national cohort of forensic patients discharged between 1997/98, and therefore the actual reconviction rate of 28.2% by the national cohort may represent treatment effects of the medium secure hospital.

The percentage of reconvictions of those remitted to prison further support the success of forensic secure services where 42.0% of remitted patients from the national cohort discharged between 1997/98 were reconvicted in six years, whereas only 22.4% of those who remained in secure services following discharge were reconvicted. This difference further highlights the benefit of diverting forensic patients to the secure pathway compared with remaining in prison to ensure public protection, and shows the loss of any treatment effect of medium secure hospitals when remitting forensic patients back to prison. This finding is concerning given the growing rate of forensic patients returning to prison across medium secure hospitals in the UK (Gibbon *et al*, 2013; Birmingham *et al*, 2017), despite that this thesis shows steady remission rates from the Welsh medium secure hospital over the last two decades.

We recommend for more caution when deciding whether to remit forensic patients (detained under a hybrid order; section 45A, section 47/49 or section 48/49) to prison on the basis that they no longer benefit from or require treatment, or are not perceived to be suffering with a mental health difficulty (NHS England, 2019). Amendments to the Mental Health Act (1983 as amended in 2007) and guidelines introduced by Vowles and others (2015) have pushed for hybrid orders to be considered first before contemplating the use of other mental health disposals; easing the process of remission to prison. Therefore, the use of hybrid orders has steadily increased across the UK, whilst hospital orders with restrictions have decreased between 2013 and 2017 (Ministry of Justice, 2018). Justification for these measures appear driven by victim sensitivities, costs of forensic services, and pressure on secure beds (Beech, Marshall, Exworthy, Peay & Blackwood, 2019). Our counterargument of such reasons for remission to prison are the loss of treatment effects with implications for public protection and wasted expenditure on high-cost low-volume services, in addition to the extensive evidence-base that shows the success of forensic hospitals on public protection relative to prison (Fazel *et al*, 2016).

Little is known about what may be effective in forensic secure care to explain the reduced risk of reconviction. The thesis presents a study that relied on a secondary analysis of a national cohort from previous literature (Maden *et al*, 2004; 2006b), and therefore the author was restricted when investigating what was successful in secure services. The benefit of restriction orders helped ensure public protection, although this was only effective for those with high criminogenic risk based on the OGRS-2. Many low-risk forensic patients



discharged from medium security across England and Wales between 1997/98 were unnecessarily subject to restriction orders. The number of forensic patients entering the Welsh medium secure hospital under restriction orders grew over the last two decades. However, patient risk also escalated over time that may justify this increasing reliance of restriction orders in the Welsh medium secure hospital. Whether inappropriate loss of liberty persisted over time with the redundant enforcement of restriction orders is unknown, and could be deduced by exploring reconviction outcomes of the Welsh cohort.

Criminogenic risk was the strongest predictor of reconviction compared with mental health and social histories of forensic patients from the national cohort discharged between 1997/98, and showed no improvement when mental health and social history were also considered. This is consistent with previous literature that argued that those with more extensive criminal histories are at greatest risk of offending (Maden *et al*, 2004; Coid *et al*, 2007), and suggests that services may only need to focus on criminogenic behaviour to predict risk. However, medium secure hospitals across the UK between 1997/98 did not appear to rely on this risk factor to inform risk management strategies to prevent reconviction. Therefore, we recommend the use of the OGRS-2 in forensic mental health services and in the criminal justice system to capture the criminogenic risk of patients to inform staff decisions of (1) whether to impose a restriction order at the cost of patient liberty and (2) to select the most appropriate discharge pathway. This may be informative for forensic mental health services to more prudently apply restrictive measures for only those who require them, and therefore may help shift the balance between public protection with patient liberty more fairly.

Previous literature has moved away from comparing different risk assessment tools to identify the ‘gold-standard’ that predicts the likelihood of reconviction by forensic patients, and has reached a consensus of a possible ‘ceiling effect’ across both actuarial measures and structured professional judgement (SPJ) tools (Coid *et al*, 2011; Kennedy *et al*, 2019). Both types of risk measures are considered to have their place in forensic practice, where actuarial measures provide an estimate of the likelihood of reconviction and SPJ tools formulate risk to help understand the typical context where it may emerge (Gray *et al*, 2004). The thesis does not attempt to further address this, but supports and recommends the use of the OGRS-2 as an adequate tool to not only estimate the likelihood of future reconviction (violent and general), but also to provide a baseline to capture the success of secure services and to aid decision

making of whether to implement restrictive measures based on levels of risk. Whether risk factors and the prevalence of reconviction have changed over the last two decades remain unknown. The author was unable to collect offending data of patients from the Welsh cohort to investigate this, which highlights the need for further research.

## **6.5 Predictors of readmission.**

In total, three quarters of forensic patients stepped down from the Welsh medium secure hospital, with 23.4% moving back up the forensic care pathway or being readmitted to hospital in two years; over half of the readmissions were due to recall. Those with more extensive psychiatric histories were at greatest risk of readmission in general, and recall to hospital. This risk factor predicted readmission with no improvement with the addition of other patient historical information; including demographic information, diagnosis and social history. The thesis supports the notion that the inpatient history of patients is an important feature to collect by mental health practitioners to give insight into the risk of relapse and readmission, which may inform clinical judgement about prioritising cases who require greater care and treatment on admission and following discharge (Maden *et al*, 1999; Clarke *et al*, 2013; Jewell *et al*, 2017), and therefore we recommend this to be routinely collected by mental health practitioners. This has scope to more efficiently target treatment and security measures for only those who require them, and may help de-burden the NHS by helping prevent the need to re-admit patients. These findings are consistent with the concept of ‘revolving door patients’ (Langdon *et al*, 2001) and show that this is a challenge for forensic services as well as general mental health settings.

Factors associated with service provision were not predictive of readmission in general, or recall to hospital following detainment in a Welsh medium secure hospital; and these included the length of admission, the imposition of restriction orders and patient progress through programme completion and recovery. Therefore, the growing use of restriction orders and longer admission periods over time may represent unjustified restrictive practice that have no impact on improving long-term patient outcomes; including relapse or risk behaviour. More scrutiny may be needed to ensure forensic mental health services are adhering to ‘least restrictive practice’ whilst ensuring public protection. Forensic mental health services could introduce routine audits that flag up patients who are about to exceed/or have exceeded the recommended target of a two-years in medium security. This could trigger

an MDT review with commissioners that requires evidence-based justification for continued detainment in this level of security/care (e.g. patient progress on the DUNDRUM programme completion and recovery scales). Moreover, evidence-based justification should be needed in criminal proceedings when sectioning patients with restriction orders (MHA, 1983 as amended in 2007); and we recommend the OGRS-2 be implemented as part of policy to guide such decisions by identifying high risk patients who would benefit from a restriction order.

The DUNDRUM programme completion and recovery scales may have become less relevant as time passed whilst patients were discharged from the Welsh medium secure hospital due to their dynamic nature. The relevance of scores on both scales were likely sensitive to environmental changes with shifts in the supervision and support available for patients over the follow up period that led to changing presentations. This has been reported as a challenge when using the dynamic scales of the HCR-20 to predict outcomes over long follow up periods (Gray *et al*, 2004). It remains unclear what takes place in medium secure hospitals to reduce risk and treat mental health difficulties that prevent readmission in general, or recall to hospital. It may be useful to explore the extent of support and compliance with care and treatment following discharge from medium security.

As part of the methodological planning of the thesis, the author ran a number of focus groups with service users both within the Welsh medium secure hospital and following discharge. A common concern observed by the author included the dramatic shift in care and support available once patients are discharged from hospital conditions, and a lack of support, poor social and employment opportunities and challenges towards a quality of life have been suggested to be linked with relapse, risk behaviour, and undesirable patient outcomes (Ward & Brown, 2004). Although un-empirically grounded, this is consistent with qualitative reports that have concluded similar themes (Gustafsson, Holm & Flensner, 2012). Further research would be useful to identify the adequacy and success of aftercare services available following discharge.

## **6.6 Theoretical and practical implications**

The relevance of social factors is often overlooked in explaining patients' presenting difficulties in forensic mental health services, with greater focus on criminogenic and mental health features. This thesis contributes to the growing literature about the significance of social factors for forensic patients, including the impact of Adverse Childhood Experiences (ACEs) on an individual's life trajectory. Evidence shows the effects of ACEs at adapting brain development and triggering mental health difficulties, and the normalisation of abusive and violent behaviours that lead to criminal activity as an adult (Felitti *et al*, 1998; Renner & Slack, 2006). This is reflected in the findings of this thesis where adverse childhood experiences were highly prevalent in patients from the Welsh cohort; who have been characterised by their offending behaviour and detained under criminal sections of the Mental Health Act (1983 as amended 2007; Anda *et al*, 2006; Dregan & Gulliford, 2012). Whereas the prevalence of four or more ACEs is 14.0% across the general population of Wales (Bellis *et al*, 2016), this prevalence is 40.9% amongst patients from the Welsh medium secure hospital. This is likely an underestimation of the true prevalence for this patient population due to the reliance of retrospective healthcare records (Widom & Morris, 1997).

There has been increasing concern about the prevalence of ACEs in Wales, especially as those victim of ACEs as a child are more likely to expose their own children to ACEs; known as the 'cycle of violence' (Renner & Slack, 2006; Sethi *et al*, 2013). Public Health Wales have implemented a number of initiatives, including the 'Early Years and Childcare Plan 2013-2023' (Welsh Government, 2013) and the 'Health Child Wales Programme' (Flaherty *et al*, 2006) to ensure adequate resources are available for parents and children to avoid ACEs, build the parent-child bond, and improve parenting skills. Based on the findings of this thesis, we recommend for forensic mental health services to consider the evidence-based recommendations of preventing ACEs with scope of implementing them in practice (Welsh Government, 2013). This may help spread awareness of the impact of ACEs, as well as helping patients who are primary caregivers developing parenting skills to prevent ACEs.

There are criticisms of the ACEs model, in so far as ACEs are disproportionately associated with social deprivation and adversity (Kelly-Irving & Delpierre, 2019). There is an emphasis in the ACEs work on parental behaviours and they don't take account of the social context of people's lives (Flaherty *et al*, 2006). Strategies for improving parenting skills in order to reduce the risk of ACEs for example, may do little to tackle poverty, unemployment and effects of prejudice and discrimination which contribute to lack of material resources,

low social capital and increased parental stress which lie at the root of ACEs. This is not to say that ACEs have no use in public health terms, as the ACEs questionnaire provides a tool to inform the prevalence of health inequalities amongst populations that can guide policy-making. However, the ACEs model may not be informative to help clinicians formulate person-centred inequalities and guide treatment. Instead, the Power Threat Meaning Framework may be more applicable, as it is person-centred and also takes into account the significance of ACEs (Johnstone & Boyle, 2018).

The Power Threat Meaning framework is a novel approach in mental health services that acknowledges the significance of trauma and child adversity, where mental health difficulties are perceived as maladaptive coping mechanisms that deal with such trauma (Johnstone & Boyle, 2018). The thesis recommends the use of the Power Threat Meaning Framework in forensic mental health practice to formulate a patient's presenting difficulties and risk of violence based on social inequalities and ACEs experienced, particularly given the growing prevalence of childhood trauma as a common feature of forensic patients. This does not disregard the medical and diagnostic approach in forensic mental health services, but simply argues that both approaches can be used in conjunction to better understand a patient and to inform the most appropriate treatment options.

Trauma focused work is considered as an important treatment intervention to help patients come to terms with their previous adverse experiences and to improve mental health outcomes (Dolan & Whitworth, 2013), that moves away from the medical approach and the associated stigmatization (Johnstone & Boyle, 2018). We recommend for the ACEs questionnaire to become part of standard practice to identify those who may benefit from trauma-focused work whilst detained in forensic mental health services. Forensic inpatient services likely have more readily available resources to provide more intensive therapeutic treatment that meet the demands of targeting trauma, relative to what resources may be available in aftercare services and in community mental health teams.

It is not surprising that the lack of educational and employment opportunities is prominent amongst forensic patients in medium security, as greater exposure to adverse childhood experiences likely led to poor outcomes in these areas (Hillis *et al*, 2004; Bellis *et al*, 2014). Moreover, problems in education and employment are confirmed to be linked with criminal behaviour (Bonta, Blais & Wilson, 2013). The prevalence of no educational

achievement are five times greater, and unemployment are four times greater in forensic patients discharged from the Welsh medium secure hospital relative to the general Welsh population (Office of National Statistics, 2019; 2020). Social deprivation is a common challenge for forensic patients admitted to medium security, and social features are likely intertwined with mental health and criminogenic factors to explain a patient's presenting difficulties; supporting the biopsychosocial approach to understand and alleviate such difficulties (Paris, 1993; Barker, Gumley, Schwannauer & Lawrie, 2015). The forensic mental health literature has typically focused on only criminogenic and mental health outcomes of patients. Social outcomes; including quality of life and economic opportunities are equally as important (Ward & Brown, 2004), although there is less literature available to show whether forensic services target these outcomes, and how these outcomes following discharge may link with possible relapse and reconviction.

Patient engagement in their daily routine and with social networks were shown to be key factors for patients to successfully discharge to the community from the Welsh medium secure hospital. These areas of patient progress may be what governed the decision making of clinicians to deduce a patient's readiness for discharge, but these factors also coordinate with the Good Lives Model (GLM; Ward & Brown, 2004). An individual's wellbeing is reliant on achieving goals and basic needs to live a fulfilling and purposeful life, any obstacles to achieve these is perceived to be linked with risk behaviour; a maladaptive response in attempt to achieve such needs. Adversity and deprivation have been shown to be prevalent amongst the forensic psychiatric population relative to the general population (Welsh Government, 2009; Bellis *et al*, 2014; 2016), that reflect the likely inability to achieve fulfilment, and therefore engagement and treatment that targets achieving goals and basic needs may also improve wellbeing and indirectly reduce patient risk. This may justify why clinicians rely on these areas of patient progress to decide on the discharge pathway of patients, although patient engagement did not link with patient outcomes; including relapse and risk behaviour measured through readmission in general, and recall.

Unstructured clinical judgement has proven to be a challenge in forensic practice with the risk of inappropriate placement and over-restrictive practice (Stredny *et al*, 2012; Acklin *et al*, 2015). The DUNDRUM quartet is reflected as useful to implement in forensic practice as a routine outcome measure to capture patient progress, but also to help ensure clinicians make systematic decisions about the discharge pathway of patients that are informed by

evidence-based factors. The DUNDRUM quartet is in the early days of being tested on forensic populations in the UK, and therefore we recommend continued investment in validity testing to develop an evidence-base that supports the DUNDRUM quartet being placed on a statutory footing in forensic secure care in Wales, and to become part of the All Wales Mental Health and Learning Disabilities Core Data Set Project (Public Health Wales). We also recommend for the commissioning of DUNDRUM quartet training for professionals working in forensic mental health services to help ensure valid completion of the different scales, and to inform staff of the appropriate factors to consider when developing MHRT reports or when deciding on gatekeeping/discharge pathways.

True estimates of the cost of forensic mental health services have been a challenge to determine. The annual cost of forensic secure beds across the UK has been reported previously, along with the average length of stay of forensic patients in secure services (Centre for Mental Health, 2011). However, most literature has only focused on lengths of stay in a single secure hospital, yet many patients move between different levels of security following the index offence. This thesis estimates the cost of the total duration in forensic secure care for all patients from the Welsh cohort since the index offence/first admission up to the discharge date from the single medium secure hospital. The overall estimated cost is in excess of £234 million for 284 patients discharged from the Welsh single medium secure hospital between 1999 and 2017 (see table 6.1). Time spent in prison prior to admission to the Welsh medium secure hospital and detainment in further secure care or prison following discharge from the Welsh medium secure hospital are not included in this estimate. Therefore, the estimated cost does not account for the entire expenditure of the 284 forensic patients. This reflects the high expense of low-volume forensic secure services and although this thesis adds to the sparse literature base to confirm the benefits of medium security, further research is necessary to continue to justify their commissioning.

**Table 6.1** Average lengths of stay (and estimated cost per patient) based on different pathways through forensic secure care up to the date of discharge from a Welsh medium secure hospital.

Pathway	Average length of stay (estimated cost) prior to admission.	Average length of stay (estimated cost) in Welsh medium secure hospital.
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Stepped up from less secure services (22 patients).	3.56 years (Est £541,120 per patient)	1.94 years (Est £341,440 per patient)
Stepped down from high secure hospital (50 patients).	6.74 years (Est £1,840,020 per patient)	3.02 years (Est £531,520 per patient)
Transferred from other medium secure hospitals (35 patients).	2.07 years (Est £364,320 per patient)	2.20 years (Est £387,200 per patient)
Direct transfer from prison (167 patients).	n/a	2.38 years (Est £418,880 per patient)
Total	Est £116,656,840 (all patients)	Est 117,592,640 (all patients)

Est: estimated cost; time in prison not included in length of stay.

The thesis fails to justify the benefit of extending lengths of stay in medium security and the growing use of restriction orders over the last two decades, as these did not appear to improve the readmission rate of forensic patients from the Welsh cohort. The growing use of these restrictive measures also conflicts with the wider aim of mental health services at ensuring least restrictive practice and promoting humanitarian implications (The Mental Health Taskforce, 2016), but also the aim of prudent healthcare that ensures cost-effectiveness in an economically sensitive climate (Bradley *et al*, 2014). The findings suggest unnecessary loss of liberty with the risk of institutionalisation (Salize, Schanda & Dressing, 2008), although further investigation is necessary to determine whether the growing restrictive practice over time had any benefit for other long-term patient outcomes that are not considered in this thesis.

## 6.7 Strengths and Limitations

Clinical governance and ethical considerations became increasingly stringent over time where a variety of parameters have been set up that researchers need to meet in order for their research to take place in the National Health Service (NHS). Historically, most large-



scale studies investigating medium secure hospitals were able to collect data without patient consent and without approval from independent review boards (Friendship *et al*, 1999; Maden *et al*, 1999). This ended following the introduction of Section 60 of the Health and Social Care Act 2001 (succeeded by section 251 of the NHS Act, 2006) that enforced a bureaucratic procedure where research ideas are scrutinised based on whether they should take place without the consent of patients. Since this act was introduced, few studies have investigated outcomes of medium secure hospitals that has led to a gap in the literature to understand medium secure provision (Davies *et al*, 2007; Coid *et al*, 2007; Duggan *et al*, 2007). Prospective studies in particular are difficult to implement, as the rights of patients to refuse consent likely supersedes the limitations of low attrition rates (Castro, Cockerton & Birke, 2002). This thesis has been granted approval under section 251 of the NHS Act, 2006, and therefore provides novel insight into medium secure care over recent years, but also helps capture changes between 1999 and 2017. This approval allows the thesis to overcome the challenge of attrition, which is a reported issue when attempting to collect data from a forensic psychiatric population (Shah *et al*, 2011).

The loss of patient data at follow up has been a challenge for researchers investigating patient outcomes over extensive follow up periods (Davies *et al*, 2007; Clarke *et al*, 2013). Over a quarter of patients were lost at follow up when collecting readmission data from the national cohort of forensic patients discharged between 1997/98 (Maden *et al*, 2006a). Only 4.7% of forensic patients discharged from the Welsh medium secure hospital were lost over the six-year follow up period when collecting readmission data. All Welsh health boards affiliated with the thesis across Wales have been very supportive and efficient to help minimise the level of missing data at follow up.

The progress of forensic patients through medium security is a challenge to investigate due to the lack of measures available to capture this retrospectively. Most previous literature has relied on the HCR-20 or HONOS-secure to capture risk and security need of forensic patients in medium security (Gray *et al*, 2003; Doyle & Dolan, 2006; Dickens, Sugarman & Walker, 2007; Liddiard, Morgan, Hill & Simmonds, 2019), and very few papers are published that focused on specific treatment programmes in medium security (McCarthy & Duggan, 2010; Long, Dolley & Hollin, 2011; 2012). Neither the HONOS-secure or HCR-20 measure patient engagement in their care and treatment, and medium secure hospitals provide multiple treatment approaches that are missed when only evaluating

one specific programme. The DUNDRUM quartet was first published in 2010 and although it was originally designed to aid decision making about gatekeeping to and from medium security (Kennedy, O'Neill, Flynn, Gill & Davoren, 2010), it provides scope to capture treatment progress through medium security (Richter *et al*, 2018). The DUNDRUM programme completion and recovery scales were established based on Maslow (Maslow, 1983), recovery (Anderson *et al*, 2003), engagement, and cycle of change (Prochaska & Diclement, 1983) with consultation from various multi-disciplinary professionals to become a robust and useful measure across forensic services. The DUNDRUM quartet enables the thesis to investigate the treatment engagement and recovery of all discharged patients to identify what takes place in medium secure care and what changes for patients.

The thesis had been developed to capture changes in both readmission and reconviction following medium secure care over the last two decades. However, delays in signing off the Data Sharing Agreement between Swansea Bay University Health Board and the Ministry of Justice, and the COVID-19 crisis prevented data sharing of offending information of the Welsh cohort from the Ministry of Justice. Despite this, the thesis is able to provide novel insight into the changes in medium secure care over the last two decades and integrates all phases of medium security from the point of admission up to the long-term outcomes; including treatment progress, discharge pathways, and readmission. The next steps would be to collect reconviction data and expand the study across multiple medium secure hospitals with the aim of increasing the sample size to be able to conduct pathway analysis, and eventually structural equation modelling. This may enable clinicians to predict the pathway for forensic patients through medium secure care based on modelling, and may inform services of the appropriate care and treatment and risk management strategies that improve the likelihood of successful patient outcomes.

The thesis is specifically useful to inform service provision in Wales. There has been a large agenda to understand the prevalence of adverse childhood experiences across Wales to determine the scale of the problem and to develop appropriate strategies to deal with it (Bellis *et al*, 2016). The thesis further confirms the extent to which adverse childhood experiences cause harm by highlighting the impact on criminogenic behaviour and mental health outcomes; justifying the need for continued investment to ensure public protection and mental wellbeing. Moreover, the findings of this thesis contribute to the All Wales Mental Health and Learning Disabilities Core Data Set Project Steering Board by showing possible

routine outcome measures (DUNDRUM quartet; Kennedy *et al*, 2013) that may be useful to standardise in mental health practice. The overall implications of the thesis meet the aims of the Well-being of Future Generations (Wales) Act 2015 by promoting outcomes specifically for patients, but also the wider community. The findings highlight possible improvements in balancing public protection and patient liberty that may have large humanitarian and economic implications. Although, the usefulness of the thesis to help inform welsh service provision is counterbalanced with the cost of generalising the findings to understand medium secure hospitals across the UK.

The challenge of generalising findings due to the likely regional differences between medium secure hospitals is a common issue associated with most previous literature (see table 1.8 in chapter one). However, this issue is particularly prominent for this thesis, as the single medium secure hospital is based in Wales. Wales has been governed under a devolved government since 1998 with distinct legislation and acts, such as the Mental Health (Wales) Measure 2010. The commissioning of forensic secure services also differentiates between Wales and England. Wales receive commissioning from the National Collaborative Commissioning Unit where funding is negotiated with each health board, whereas in England the commissioning of forensic secure services has shifted from contract-based funding to a 'Payment by Results' framework (Goodwin *et al*, 2011); where services receive continued commissioning based on evidence-based practice.

In addition, England and Wales differentiate based on societal and geographical differences. At least one in every three welsh individuals live in rural areas compared with one in five individuals who live in England. Rural deprivation has become a major issue in Wales where education, employment opportunities and access to services are a challenge for those living in rural areas (Gartner, Gibbon & Riley, 2007), and therefore the environments where forensic patients are raised and discharged to differ relative to an English cohort of forensic patients. Distinctions between England and Wales is further demonstrated where base rates of exposure to four or more adverse childhood experiences in the general population is 5.0% greater in Wales compared to England (Bellis *et al*, 2014; 2016). The differences between the national cohort of forensic patients across England and Wales between 1997/98 and the Welsh cohort discharged between 1999 and 2017 further reflect possible regional differences. The Welsh cohort of forensic patients included in this thesis were older on admission, were more likely to be diagnosed with a personality disorder, had a

more severe index offence and showed a greater prevalence of substance misuse issues relative to the national cohort (Maden *et al*, 2004). Therefore, the findings from the Welsh cohort need to be treated with caution if they are interpreted as a representation of medium security across the UK.

The thesis heavily relies on the quality and availability of the healthcare records in the medium secure hospital and across all affiliated Welsh health boards due to its retrospective nature. This has previously been reported as a challenge for forensic literature where a total of 22.6% of patients were excluded from a cross-regional study due to the lack of case-notes available (Coid *et al*, 2007). To the author's knowledge, at least 18 patients were excluded from the Welsh cohort due to this issue. Some data was unavailable to be able to code a number of variables for those discharged between 1999 and 2006, as HCR-20 reports were missing and DUNDRUM triage security and urgency scales could not be completed due to the poor record keeping of historical information prior to admission. This prevented the analysis of changes in patient risk and security need over time from 1999 to 2017; instead only changes from 2007 to 2017 are reported. Moreover, dynamic risk could not be explored as a predictor of patient progress, discharge pathways and readmission due to the extent of missing data.

The retrospective completion of the ACEs questionnaire and the DUNDRUM quartet based on an analysis of available healthcare records was limited. The literature base comparing prospective and retrospective reporting of ACEs reaches conflicting conclusions about which is superior (Widom *et al*, 2004; Gilbert *et al*, 2009). Retrospective reporting is an accepted approach, although there is a strong likelihood of underreporting (Widom & Morris, 1997). The DUNDRUM quartet has been tested mainly as a prospective measure, and little evidence is available to show the validity of this scale when retrospectively completed (Lawrence *et al*, 2018). The author completed both measures based on available healthcare records, and therefore the validity of these completed scales is dependent on the quality of the healthcare records (Luck, Peabody & Dresselhaus, Lee & Glassman, 2000; Castillo, Olfson, Pincus, Vawdrey & Stroup, 2015). Despite the author's best efforts to abide by the DUNDRUM manual (Kennedy *et al*, 2016), the possibility of misinterpreting healthcare records when scoring the DUNDRUM quartet and risk of unconscious bias cannot be ruled out (Murray & Thomson, 2010; Lilienfeld & Lynn, 2014). A prospective methodology may be better suited to validly capture treatment progress to link with long-term outcomes (Davies

*et al*, 2007). Although, prospective studies face the challenge of small sample sizes, as approval under section 251 of the NHS Act, 2001 is likely less feasible due to the ease of requesting patient consent (Castro *et al*, 2002).

Historically, mental health services overlooked the opinions of patients where care and treatment was perceived to be ‘done to’ patients, as opposed to ‘done with’ patients (Lebow, 1982). Societal shifts have helped services move beyond this outdated approach where the importance of the patient perspective has become engraved in policy; including in the Mental Health Act (1983 as amended in 2007) and the Mental Health (Wales) Measure 2010. However, the patient perspective still remains overlooked across the research base when evaluating secure services (Coffey, 2006), including this thesis. Very few attempts have been made to attain forensic patient perspectives of medium security following discharge (Baxter *et al*, 1999; Johnson, Smith, Crowe & Donovan 1993). Issues associated with patient attrition and loss at follow up limits this insight (Völlm *et al*, 2002), and where intrusive measures were taken to locate discharged patients previously in order to gain their perspective; this would be deemed unacceptable in today’s standards of ethical governance (Fleming, 1982).

The growing acceptability of qualitative research over recent years has provided opportunity to interview forensic patients to gain their perspectives, with less concern over sample sizes and attrition rates. Social identity, quality of life, and connectedness are some of the key factors important to forensic patients for recovery, whereas services typically prioritise a reduction in mental health symptoms and risk (Clarke, Lumbard, Sambrook & Kerr, 2016). Services have recently started to consider these factors in forensic practice to inform risk assessment and to plan care and treatment (Ward & Brown, 2004; de Vogel, de Ruiter, Bouman & de Vries Robbé, 2009), as have researchers by collecting patient perspectives of their progress and of forensic secure care (McQueen & Turner, 2012; Skinner, Heasley, Stennett & Braham, 2014), although this literature base is in the early days. All limitations outlined above represent the general issues associated with the thesis. Individual limitations associated with each empirical chapter are outlined in the discussion sections within them.

## **6.8 Conclusions and future directions**

The thesis provides a holistic understanding of changes in medium security over the last two decades. Novel insight into patient progress through medium secure care and how this relates to pathways and patient outcomes are reported. The Welsh medium secure hospital admitted more complex and high-risk patients over time, where traumatic social histories and deprivation became prevalent features of this population. Despite these changes, long-term patient outcomes measured through readmission to hospital remained steady over time.

The Welsh medium secure hospital became more stringent in practice over time with an increase in use of restrictive measures that prolong the patients' loss of liberty. Justification for the increase in use of these stringent measures is not evident when exploring readmission outcomes, although whether such measures are useful for other long-term outcomes; including reconviction is unknown and would be useful to investigate. Medium secure hospitals face the challenge of dealing with 'revolving door patients', and this may help inform services of those who may require aftercare and greater support when discharged from medium secure conditions.

The thesis also highlights that the OGRS-2, the ACEs questionnaire and the DUNDRUM quartet each has its place in forensic secure practice; the former two measures help index patient risk and trauma related needs, whilst the programme completion and recovery scales of the latter can be applied as routine outcome measures to monitor patient progress and navigate patient pathways. The OGRS-2 is not routinely available to medium secure hospitals. There should be greater collaboration between health and the criminal justice system to allow use of this measure in routine practice as part of the decision-making process about restriction orders.

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## **Statutes/Acts**

Criminal Lunatics Act 1800

Criminal Lunatics Bill 1860

Criminal Procedure (Insanity and Unfitness to Plead) Act 1991

Data Protection Act 1998

General Data Protection Regulations 2018

Health and Social Care Act 2001

Idiots Act 1886

Lunacy Act 1845

Lunacy Act 1890

Mental Capacity Act 2010

Mental Deficiency Act 1913

Mental Health Act 1959

Mental Health Act 1983

Mental Health Act 2007

Mental Health (Wales) Measure 2010

Mental Treatment Act 1930

National Health Service Act 1946

NHS Act 2006

Welfare Reforms Act 2012








Well-being of Future Generations (Wales) Act 2015



## APPENDIX A: Adverse Childhood Experiences questionnaire

**Table 1: ACEs included in the study**

All ACE questions were preceded by the statement 'While you were growing up, before the age of 18...' Responses listed are those categorised as an ACE.

ACE	Question	Qualifying response <sup>3</sup>
<b>Sexual abuse</b> 	<p>How often did anyone at least 5 years older than you (including adults) try to make you touch them sexually?</p> <p>How often did anyone at least 5 years older than you (including adults) force you to have any type of sexual intercourse (oral, anal or vaginal)?</p> <p>How often did anyone at least 5 years older than you (including adults) ever touch you sexually?</p>	Once or more than once to any of the three questions
<b>Physical abuse</b> 	How often did a parent or adult in your home ever hit, beat, kick or physically hurt you in any way? This does not include gentle smacking for punishment.	Once or more than once
<b>Verbal abuse</b> 	How often did a parent or adult in your home ever swear at you, insult you, or put you down?	More than once
<b>Domestic violence</b> 	How often did your parents or adults in your home ever slap, hit, kick, punch or beat each other up?	Once or more than once
<b>Parental separation<sup>4</sup></b> 	Were your parents ever separated or divorced?	Yes
<b>Mental illness</b> 	Did you live with anyone who was depressed, mentally ill or suicidal?	Yes
<b>Alcohol abuse</b> 	Did you live with anyone who was a problem drinker or alcoholic?	Yes
<b>Drug abuse</b> 	Did you live with anyone who used illegal street drugs or who abused prescription medications?	Yes
<b>Incarceration</b> 	Did you live with anyone who served time or was sentenced to serve time in a prison or young offender's institution?	Yes

## APPENDIX B: DUNDRUM TS1: Seriousness of violence

DUNDRUM TOOLKIT V1.0.30, 30/05/16

### Coding: TS1. Seriousness of Violence

4	4.1 Homicide <b>or</b> 4.2 Stabbing penetrates body cavity <b>or</b> 4.3 Fractures skull <b>or</b> 4.4 Strangulation judged potentially lethal <b>or</b> 4.5 Any potentially lethal injury <b>or</b> 4.6 Serial serious (e.g. penetrative, indictable) sexual assaults <b>or</b> 4.7 Kidnap <b>or</b> torture <b>or</b> poisoning <b>or</b> intentional maiming to cause permanent loss of function. 4.8 Any offence against a vulnerable person rated '3.1-3.6' below <b>may</b> be scored up to rate '4'
3	3.1 Use of weapons to injure (including weapons or explosives) <b>or</b> 3.2 Arson endangering life (including any fire in a hospital or institution) <b>or</b> 3.3 Assaults causing concussion <b>or</b> 3.4 Fractures to long bones <b>or</b> 3.5 Stalking with threats to kill <b>or</b> 3.6 Single serious sexual assault, (indictable). 3.7 Any offence against a child or vulnerable adult rated '2'.1-2.2' below <b>may</b> be scored up to rate '3'
2	2.1.1 Repetitive assaults causing injury such as bruising <b>and</b> 2.1.2 That cannot be prevented by two-to-one nursing in open conditions <b>or</b> 2.2 Less serious sexual assaults, (summary offence) 2.3 Any offence against a vulnerable person rated 1.1-1.2 <b>may</b> be scored up to rate '2.3'.
1	1.1 Minimal degrees of violence <b>and</b> 1.2 Minimal threat to life. 1.3 See 2.3 above
0	0.1 No previous or current violence, <b>or</b> 0.2 No current mental disorder (mental disorder includes adjustment reaction)

Note: for the purposes of item TS3 and all other definitions in this handbook, a rating of '3' or '4' is 'serious violence' and a rating of '1' or '2' is 'less serious violence'.

Information Quality: 0=no information; 1=staff observation only; 2=interview and staff observation; 3=family informants; 4=medical or police records.

## APPENDIX C: Risk factors of readmission to hospital based on previous research

**Table 1.** Patient factors predictive of readmission to hospital following medium secure care.

Risk factors	Maden <i>et al</i> (1999) <sup>a</sup>	Clarke <i>et al</i> (2013)	Jewell <i>et al</i> (2017)	Tully <i>et al</i> (2019) <sup>b</sup>
Sex	X	X	X	-
Ethnicity	X	X	√	-
Age on admission	X	X <sup>c</sup>	√ <sup>d</sup>	-
Mental illness or diagnosis of a psychotic related disorder	-	X <sup>c</sup>	X	-
Psychopathy or a diagnosis of personality disorder	-	-	X	-
Number of previous psychiatric admissions/previous inpatient care	√	√	√ <sup>d</sup>	-
Index offence	-	X	X	-
Age of first offence/conviction	X	X	√ <sup>d</sup>	-
Number of previous convictions	X	X <sup>c</sup>	X	-
Custodial sentence prior to age 18 years	-	X	-	-
Problematic behaviours at school	-	X	-	-
Contact with child mental health services	-	X	-	-
Known to mental health services	-	-	X	-
Childhood maladjustment/abuse	-	X	√	-
Previous attempted self-harm	-	√	-	-
Previous attempted suicide	-	X	-	-
History of drug and alcohol misuse	-	X	√ <sup>d</sup>	X
Employment problems	-	-	X	-
Relationship instability	-	-	X	-
Prior supervision failure	-	-	X	-

a: only investigated significant differences between those readmitted and those not; b: investigated significant associations only; c: between close to cusp of cut off value for significance; d: non-significant when included in model with other predictive factors.