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Patients discharged from medium secure forensic psychiatry services: reconvictions and risk factors

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Background Treatment within medium secure forensic psychiatry services is expected to reduce risk to the public.

Aims To measure the period prevalence and incidence of offending following discharge and identify associated risk factors.

Method Follow-up of patients from 7 of 14 regional services in England and Wales who spent time at risk (n=1344) for a mean of 6.2 years. Outcome was obtained from offenders index, hospital case-files and the central register of deaths.

Results One in 8 men and 1 in 16 women were convicted of grave offences. Incidence rates indicated low density and most patients were not subsequently convicted. Offence predictors included gender, younger age, early-onset offending, previous convictions and a comorbid or primary diagnosis of personality disorder. Longer in-patient stay and restriction on discharge were protective.

Conclusions Risks of reoffending remain for a subgroup of discharged patients. Future research should aim to improve their identification and risk management following discharge.

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Concern over public safety has resulted in proposals for new services and new mental health legislation for high-risk psychiatric patients (Home Office, 1999; Department of Health & Home Office, 2001; National Institute for Mental Health in England, 2003; Department of Health, 2004), with the requirement that health services work with the criminal justice system to reduce reoffending (Home Office, 1998). Services for offender patients in the UK are the outcome of earlier recommendations (Butler Committee, 1975) for a network of regional secure units at a medium level of security between ordinary psychiatric hospitals and the special (maximum security) hospitals. Although subsequent service development has been uneven (Coid *et al*, 2001), all health regions have now provided these services, in which treatments are expected to reduce dangerousness of patients. It has been argued that criminal recidivism is of greater importance when assessing clinical effectiveness than clinical relapse (MacCulloch & Bailey, 1991), although this emphasis has been disputed (Robertson, 1989; Friendship *et al*, 1999).

Previous follow-up studies of forensic patients in the UK have limitations. Reports on those discharged from special hospitals to psychiatric hospitals or the community include samples discharged more than 20 years ago (Tong & Mackay, 1959; Gathercole *et al*, 1968; Acres, 1975; Black, 1982; Tennent & Way, 1984; Bailey & MacCulloch, 1992; Buchanan, 1998; Jamieson & Taylor, 2004). Most now undergo rehabilitation and gradual community leave through the medium secure services (Coid & Kahtan, 2000). Furthermore, apparent improvement in rates of reoffending over time (Buchanan, 1998) may result from changing populations, specifically a decline in admissions of those with a primary diagnosis of personality disorder (Coid *et al*, 1999), rather than improved after-care. Follow-up studies of patients discharged from medium secure services have been limited by small numbers and unrepresentative samples (McMurran *et al*, 1998; Baxter *et al*, 1999; Falla *et al*, 2000): selection of patients with a single diagnosis (Baxter *et al*, 1999; Halstead *et al*, 2001); restriction to a single unit or small geographical area (Baxter *et al*, 1999; Friendship *et al*, 1999; Maden *et al*, 1999; Castro *et al*, 2002; Edwards *et al*, 2002); or follow-up over a 2-year period (Maden *et al*, 2004). None has used directly comparable outcome measures of reoffending, or controlled for time at risk.

Large studies are needed which include all subgroups of patients and have sufficient statistical power to quantify the long-term risks of reoffending following psychiatric treatment in medium secure services, and identify those posing the highest risk to public safety. We followed a large, nationally representative sample of patients discharged from medium secure units to the community to examine the incidence of reoffending, to identify risk factors for reoffending and to explore the implications for future risk management.

METHOD

Patients

Patients were included who had been admitted to medium secure forensic psychiatry services in 7 of the 14 (prior to reorganisation) regional health authorities between 1989 and 1993. These form a representative range of geographical areas, including large urban, small town and rural areas, characterised by different levels of socio-economic deprivation. This was an original admission cohort from the North West Thames, North East Thames, South Western, West Midlands, Merseyside, North Western and East Anglian Regional Health Authority catchment areas and is described in previous publications (Coid & Kahtan, 2000). Patients admitted to these services during the study period, but placed in private sector or other National Health Service (NHS) secure units as extra-contractual referrals, were included so as not to underrepresent the catchment areas.

The follow-up period was calculated from date of discharge to the end of the study period (31 December 1998), or date of death or leaving the country, whichever occurred first. Time at risk of reconviction was defined as any time spent in the community during the follow-up period. The

original admission cohort consisted of 2085 patients over the 5-year period. A total of 472 (23%) were excluded from follow-up because hospital case-files were unavailable or there was insufficient information to complete coding schedules. Subsequent comparison revealed no statistically significant differences between this group and those included according to demography, previous convictions, previous hospitalisation for psychiatric illness and age at admission to medium secure services. However, significantly more excluded patients were admitted because of non-criminalised behaviour and detention under a civil order of the Mental Health Act 1983, and were admitted from a psychiatric hospital or directly from the community. A further 269 patients (13%) were excluded as they did not enter the community during the follow-up period, and therefore did not enter a period of 'time at risk' of reconviction in the community.

Patients initially transferred from medium secure services to a local psychiatric hospital were only considered to enter 'time at risk' once they had been discharged to the community. Those who died during the follow-up period but who had spent some time at risk were included.

The project was approved by the East London and City Health Authority Ethics Committee.

Data sources

Data for each patient were obtained from a range of sources and different sites. Medical records files from the medium secure units were examined in the medical records office at each location. These included pre-admission psychiatric reports, case conference reports, social histories, general correspondence and discharge summaries. The Mental Health Unit at the Home Office, which is responsible for monitoring the progress of patients subject to restriction orders under sections 41 and 49 of the Mental Health Act 1983, also gave access to their files. Discharge under restrictions (section 37/41) was included as a risk factor in our analysis. The medical records departments in all relevant general psychiatric hospitals, including out-patient departments, and special hospitals were also contacted for information on any in-patient and out-patient contacts after discharge from medium secure services.

Lifetime diagnostic data on categories of mental illness were included and assessed from case notes by a trained psychiatrist (N.K.) using ICD–10 criteria (World Health Organization, 1992). Personality disorder was also included but subcategories were considered to be infrequently and inaccurately specified in case notes, therefore the researcher made a diagnostic decision based on available information using DSM–III–R Axis II criteria (American Psychiatric Association, 1987). Comorbid diagnoses of lifetime alcoholism and alcohol misuse, drug dependence and drug misuse, and sexual deviation were obtained from case notes. Categories of mental disorder included in the analysis described the primary psychopathology and included mutually exclusive categories of schizophrenia or schizoaffective disorder, delusional disorder, personality disorder, mania or hypomania, depression and organic brain syndrome. Comorbid categories included alcoholism/alcohol misuse and drug dependence/drug misuse. Antisocial personality disorder could be a primary diagnosis within the category of personality disorder or a comorbid diagnosis with other conditions.

Outcome data

The Offenders Index at the Home Office provided outcome data on convictions for standard list offences in England and Wales up to the end of the study period (31 December 1998). For the purposes of analysis, outcome measures included offences of violence against the person; sexual offences; arson; acquisitive offences of burglary, theft, fraud and deception, and robbery; and any conviction for 'grave' offences. The Home Office defines 'grave' offences as homicide, serious wounding, rape, buggery, arson, robbery and aggravated burglary. The NHS Central Register, which is administered by the Office for National Statistics was searched to determine whether any people who had not been traced at the end of the follow-up period had died.

Statistical analysis

Prevalence of conviction by offence category over the follow-up period was calculated using descriptive statistics. Incidence rates, based on the number of reconvictions and total person-years of time at risk, were also calculated. Confidence intervals of incidence rates and incidence rate ratios between men and women were estimated using Stata version 7 for Windows based on Poisson distribution. Offence-specific incidence rates and their confidence intervals were calculated to show the degree of risk for specific offences. Survival curves plotted for first reconviction for each offence type and based on time at risk were estimated using SPSS version 11 for Windows. Cox regression models for each type of offence were fitted separately to estimate the hazard rates for associated risk factors.

RESULTS

The follow-up period was a mean of 6.2 years (s.d.=2.1) with a range of less than a month to 9.9 years. Of the 1613 patients in the original admission cohort, 1344 (83.3%) spent some time at risk and were therefore included in the subsequent analyses. Most were men, a large proportion were Black or from minority ethnic groups, were not born in the UK, had a diagnosis of psychotic illness with a comorbid lifetime history of substance misuse or dependence, and 1 in 5 had antisocial personality disorder (Table 1). Most were detained under the legal category 'mental illness' of the Mental Health Act 1983. A large subgroup had no previous convictions.

More than a third of men and nearly 1 in 7 women were convicted of a criminal offence during the follow-up period, more than 1 in 6 men, but only 1 in 20 women, for violence against the person (Table 2). Nearly 1 in 8 men and 1 in 16 women were convicted of a grave offence. Few people were subsequently convicted of sexual offences or arson. However, the true risk of any conviction following release was 46.8 and 16.3 offences per 100 patients discharged per year among men and women respectively (Table 2). Hazard rates were much lower for violent and grave offences, with very low risks for sexual and arson offending. Table 2 shows that incidence rates of subsequent conviction were significantly higher among men for all offence categories except arson. However, incidence rate ratios demonstrated that men were no more likely than women to be convicted of grave offences, and women were significantly more likely to be convicted of arson.

The subgroup of 250 patients admitted as a result of non-criminalised behavioural disorder had much lower rates of conviction than those admitted following criminal behaviour, with a prevalence of 20.8% and an incidence rate of 16.9 (95% CI

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Table 1 Characteristics of the follow-up sample (n=1344)[1]

Demographic variables, *n*, (%)		
Men	1167	(86.6)
White	1033	(76.9)
African–Caribbean	218	(16.2)
South-Asian	33	(2.5)
Other	60	(4.5)
Born outside UK	192	(14.3)
Primary diagnosis, *n* (%)		
Schizophrenia/schizoaffective	761	(59.5)
Delusional disorder	72	(5.6)
Mania/hypomania	104	(8.1)
Depression	92	(7.2)
Organic brain syndrome	63	(4.9)
Personality disorder	188	(14.0)
Comorbid diagnosis, *n* (%)		
Alcoholism/alcohol misuse	325	(24.3)
Drug dependence/misuse	378	(28.3)
Antisocial personality disorder	302	(22.6)
Sexual deviation	34	(2.5)
Category under Mental Health Act 1983, *n* (%)		
Mental illness	957	(71.2)
Psychopathic disorder	74	(5.5)
Mental illness and psychopathy	14	(1.0)
Mental impairment	9	(0.6)
Other	121	(9.0)
Not applicable	164	(12.2)
Admission		
Age, years: mean (s.d.) range	31.6 (10.1)	16–81
Previous convictions, *n*: mean (s.d.) range	8 (11)	1–114
No previous conviction, *n* (%)	397	(29.5)
Non-crime admission, *n* (%)	250	(18.6)
Stay in medium secure unit, years: mean (s.d.) range	0.8 (1.1)	0.01–9.6

1. Mean follow-up 6.2 years (s.d.=2.1), range 1 month to 9.9 years.

14.7–19.0) for any offending; 11.6%, 3.7 (2.7–4.7) for violence; 1.6%, 0.5 (0.1–0.9) for sexual offences; 9.6%, 4.1 (3.0–5.1) for acquisitive offences; 0.4%, 0.07 (0.0–0.2) for arson; 7.2%, 1.9 (1.2–2.7) for grave offences; and 15.6%, 8.6 (7.0–10.0) for other offences. For those admitted following non-criminalised violent behaviour, the prevalence for a subsequent conviction for violence was 13.2%, incidence rate 4.3% (95% CI 3.0–5.6). There were no subsequent convictions for sexual offences or arson following admission for non-criminalised sexual behaviour and arson.

Probability of conviction and reconviction

Figure 1 shows the cumulative probability of a subsequent conviction following discharge according to category of offence. Each graph compares subsequent conviction probabilities for all patients following discharge, those with an index offence of the same category, and those with pre-admission convictions for the same offence. The cumulative probability of receiving violent convictions increased linearly over the first 9 years following discharge for 'all patients'. The finding that the year-on-year probability of a violent reconviction was the same for 'all patients' and those with an index offence of violence indicates that patients admitted to medium secure units following a non-violent index offence were at the same level of risk for a subsequent conviction for violence during the follow-up period. However, patients with pre-admission convictions for violence were at highest risk of violent reconviction. Furthermore, their cumulative risk of reoffending increased over time. Similar patterns were demonstrated for grave offending. A further increase in risk of grave reoffending emerged at 8 years post-discharge from medium secure servcies among those originally admitted for a grave offence.

Admission to medium secure services following either an index offence or previous convictions for sexual or acquisitive offences also substantially increased the probability of reconviction for similar offences. The risks were greatest for those with the same index offence. However, the probability of subsequent convictions for sexual offences or arson remained relatively low for each of the three groups.

Risk factors

Table 3 shows the independent risk factors for the range of convictions following discharge. The risk of conviction for violence against the person was increased among

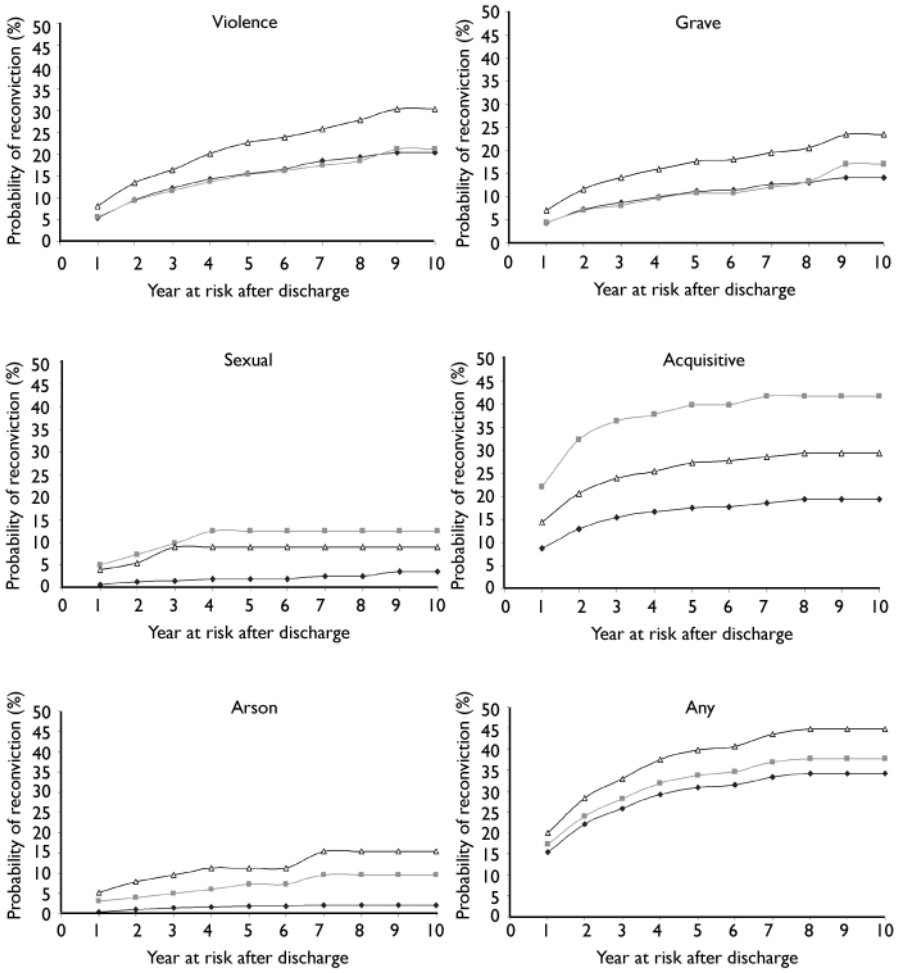

Fig. 1 Cumulative probability of conviction post-discharge according to offence. Sexual offence is for men only. —◆—, All patients; —□—, index offence of same category; —△—, pre-admission convictions for the same offence.

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Table 2 Gender difference in incidence of reconviction according to type of offence

Type of offence	Men (n=1167)[1]					Women (n=177)[2]					Incidence rate ratio (95% CI)
	Patients convicted, n	Prevalence, %	Offences, n	Mean[3] (s.d.)	Incidence,[4] %	Patients convicted	Prevalence, %	Offences, n	Mean[3] (s.d.)	Incidence,[4] %	
Violence[5]	211	18.1	437	2.1 (1.8)	7.4	9	5.1	23	2.6 (1.9)	2.5	3.0 (2.0–4.7)
Acquisitive[6]	232	19.9	1347	5.8 (7.1)	22.8	12	6.8	68	5.7 (7.0)	7.4	3.1 (2.4–4.0)
Grave[7]	142	12.2	248	1.7 (1.1)	4.2	11	6.2	28	2.5 (2.5)	3.0	1.4 (0.94–2.1)
Sexual	27	2.3	44	1.6 (0.9)	0.7	–	–	–	–	–	–
Arson	15	1.3	17	1.1 (0.5)	0.3	8	4.5	21	2.6 (2.3)	2.3	0.13 (0.06–0.25)
Other[8]	251	21.5	918	3.6 (6.4)	15.6	16	9.0	39	2.4 (2.3)	4.2	3.7 (2.7 – 5.2)
Any	400	34.3	2764	6.9 (10.3)	46.8	27	15.3	151	5.6 (8.4)	16.3	2.9 (2.4–3.4)

1. Total person-years at risk=5901.
2. Total person-years at risk=925.
3. Number of offences/number patients convicted.
4. Number of offences/total person-years at risk/100.
5. Includes conviction for homicide, attempted murder, threat/conspiracy to murder, wounding, malicious wounding, assaults and weapon offences.
6. Includes conviction for robbery, burglary, aggravated burglary, theft, fraud and forgery.
7. Includes conviction for homicide, attempted murder, wounding, malicious wounding, robbery, aggravated burglary, rape and arson.
8. Includes conviction for drug offence, criminal damage, absconding, breach, firearms, abduction and other offences.

men, younger patients, Black patients and those from other minority ethnic groups, those younger when first appearing in court and those with a higher number of previous convictions for violence. The risk of violent convictions was also increased among patients with a primary diagnosis of personality disorder, those with a primary or comorbid diagnosis of antisocial personality disorder, and those originally admitted under the legal category 'psychopathic disorder'. Risk of violent conviction was reduced among those who had stayed 2 years or more in medium secure services.

Risk of sexual reoffending was substantially increased among patients with primary diagnoses of affective disorder and those with comorbid diagnoses of sexual deviation. Risks were also increased for those of younger age, who were younger when first in court, and were from 'other' ethnic subgroups. Moreover, risks progressively increased the higher the number of previous sexual convictions. Risks of subsequent convictions for arson were increased among women patients, those with one or more previous arson convictions and those with a history of alcohol dependence/alcohol misuse.

Risk of acquisitive offending was increased among younger patients, among male patients, among those younger when first in court, among those with a primary diagnosis of personality disorder, and among those detained under the legal category 'psychopathic disorder'. Risk of acquisitive convictions progressively increased the higher the number of previous acquisitive convictions, and were reduced among those who had spent 2 years or more in medium secure services. Previous substance misuse, antisocial personality disorder and ethnicity were not predictive of subsequent acquisitive convictions in this sample.

There were no differences between men and women in their risk of convictions for grave offences following discharge. However, younger patients, those younger when first in court, Black patients and those with a primary diagnosis of personality disorder demonstrated increased risks. Risk of grave convictions progressively increased the higher the number of previous convictions for grave offences. Discharge subject to section 37/41 restrictions reduced the risk of subsequent grave offending. There were no independent associations between risk of grave offences following discharge and length of stay in medium secure services, substance misuse or dependence, or antisocial personality disorder.

DISCUSSION

Level of risk

The acceptability of the risk of subsequent offending posed by patients discharged from medium secure services will ultimately be determined by the public and policy makers. Our findings indicate that these patients continued to present risks, with over a third of men receiving subsequent convictions, nearly 1 in 5 for violence. Nevertheless, despite a true risk of 47 offences per year for every 100 male patients discharged, only 7 of these were violent offences, of varying levels of severity, in a population originally admitted for violent and criminal behaviour as a result of mental disorder. Whether a lower hazard rate of 4 serious or 'grave' offences per year for every 100 patients (men and women) discharged is acceptable would also require a consensus view. However, it is important when considering these findings that they are not perceived as a measure of the performance of medium secure services but the criminal careers of patients discharged from these services and their risks of reoffending. Furthermore, it is questionable whether treatment in these services had a bearing on offending several years after discharge.

Our findings indicate that in-patient treatment programmes and subsequent supervision following discharge should be better targeted at preventing similar reoffending by identifying those at highest risk of recidivism. Those with previous convictions for violence, arson and grave offences were clearly at greatest risk of reconviction for these offences post-discharge. However, violent offending appeared for the first time in a subgroup post-discharge, indicating particular difficulties in accurate prediction of future violence among some patients admitted to medium secure services. On the other hand, this subgroup may have demonstrated previous non-criminalised violence that was

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Table 3 Time to first reconviction after discharge according to prognostic risk factors from Cox regression analysis

Prognostic factor	*n*	Hazard rate (95% CI)					
		Violence	Sexual offence	Acquisitive offence	Arson	Grave offence	Any
Men	1167	3.8 (1.6–8.7)	NA	2.6 (1.3–5.2)	0.22 (0.07–0.70)	1.3 (0.63–2.5)	2.3 (1.4–3.7)
Age		0.96 (0.93–0.99)	0.94 (0.87–1.0)	0.94 (0.92–0.97)	0.98 (0.90–1.1)	0.95 (0.92–0.99)	0.96 (0.94–0.98)
Born in UK	1152	1.3 (0.70–2.3)	2.1 (0.25–18.2)	1.1 (0.56–1.8)	0.0 (0.0)	1.0 (0.51–2.1)	1.1 (0.72–1.6)
Ethnicity *v.* White	1033						
African–Caribbean	218	1.5 (0.94–2.3)	1.8 (0.48–7.0)	0.96 (0.60–1.5)	2.6 (0.49–13.5)	1.7 (1.0–2.9)	1.4 (0.99–1.9)
South-Asian	31	0.45 (0.05–3.4)	0.0 (0.0)	0.41 (0.06–3.1)	0.0 (0.0)	0.66 (0.09–5.0)	0.50 (0.12–2.1)
Others	60	1.8 (0.95–3.3)	5.9 (1.4–25.8)	0.74 (0.34–1.6)	4.5 (0.80–24.9)	1.9 (0.87–4.0)	1.5 (0.92–2.5)
Never married	745	0.81 (0.57–1.1)	1.5 (0.52–4.2)	1.0 (0.72–1.4)	1.3 (0.44–4.0)	0.89 (0.59–1.4)	0.83 (0.65–1.1)
Age at first court appearance		0.97 (0.94–0.99)	0.89 (0.79–0.99)	0.94 (0.90–0.98)	1.0 (0.94–1.1)	0.98 (0.95–1.0)	0.96 (0.94–0.99)
Months of stay in medium secure unit *v.* <6 months	804						
6–12	215	1.1 (0.76–1.7)	0.83 (0.27–2.5)	0.89 (0.60–1.3)	0.75 (0.23–2.5)	1.1 (0.66–1.7)	1.0 (0.77–1.4)
12–18	106	0.73 (0.39–1.4)	0.0 (0.0)	0.80 (0.44–1.5)	0.55 (0.06–4.6)	0.43 (0.15–1.2)	0.88 (0.57–1.4)
18–24	66	1.0 (0.37–2.7)	0.0 (0.0)	1.1 (0.46–2.7)	0.82 (0.09–7.8)	1.2 (0.41–3.6)	0.94 (0.49–1.8)
>24	153	0.10 (0.01–0.73)	0.0 (0.0)	0.18 (0.04–0.77)	0.72 (0.08–6.4)	0.51 (0.15–1.8)	0.21 (0.08–0.53)
Previous convictions of the same category *v.* none [1]							
1		1.1 (0.69–1.7)	7.2 (2.2–23.9)	0.89 (0.35–2.3)	15.4 (4.5–52.4)	2.2 (1.3–3.6)	2.4 (1.4–3.9)
2–5		1.8 (1.2–2.6)	10.3 (1.9–56.8)	1.9 (1.0–3.6)	6.9 (1.6–29.6)	2.6 (1.6–4.2)	1.5 (0.94–2.4)
⩾6		2.6 (1.6–4.5)	0.0 (0.0)	6.1 (3.6–10.6)	0.0 (0.0)	3.1 (1.4–6.6)	3.1 (2.1–4.6)
Alcohol dependence	551	1.1 (0.76–1.5)	0.59 (0.23–1.6)	1.2 (0.84–1.6)	3.6 (1.2–11.0)	1.3 (0.83–1.9)	1.3 (1.0–1.6)
Drug dependence	712	1.3 (0.91–1.9)	0.71 (0.27–1.8)	1.3 (0.91–1.9)	1.1 (0.36–3.1)	1.4 (0.91–2.3)	1.3 (0.99–1.7)
Primary diagnosis *v.* schizophrenia/schizoaffective disorder	761						
Personality disorder	188	2.4 (1.6–3.6)	3.0 (0.90–10.3)	2.4 (1.7–3.5)	2.0 (0.65–6.2)	1.7 (1.0–2.9)	2.6 (2.0–3.6)
Delusional disorder	72	1.5 (0.83–2.8)	0.0 (0.0)	1.0 (0.53–2.0)	0.0 (0.0)	0.81 (0.32–2.0)	1.3 (0.81–2.1)
Mania/hypomania	104	1.7 (0.99–2.9)	5.5 (1.4–22.6)	1.5 (0.85–2.8)	0.0 (0.0)	1.5 (0.79–2.9)	1.9 (1.3–2.8)
Depression	92	0.68 (0.24–1.9)	8.2 (1.7–39.7)	1.3 (0.63–2.8)	0.0 (0.0)	0.73 (0.22–2.4)	1.3 (0.75–2.4)
Organic brain disorder/other	63	1.4 (0.79–2.7)	0.0 (0.0)	1.6 (0.89–2.7)	0.0 (0.0)	0.95 (0.40–2.2)	1.5 (0.91–2.4)
Restriction order under section 37/41	247	0.52 (0.26–1.07)	1.9 (0.39–9.7)	0.50 (0.24–1.1)	0.11 (0.01–1.3)	0.33 (0.13–0.86)	0.45 (0.28–0.75)
Sexual deviation [2]	34	0.41 (0.1–1.7)	10.5 (2.6–41.9)	1.3 (0.57–3.0)	0.0 (0.0)	0.37 (0.05–2.7)	0.96 (0.49–1.9)
Antisocial personality disorder [2]	302	1.6 (1.1–2.3)	2.0 (0.75–5.4)	1.1 (0.80–1.6)	0.86 (0.27–2.7)	1.2 (0.81–1.9)	1.4 (1.1–1.8)
Admission category *v.* mental illness [2]	957						
Psychopathic disorder	74	2.4 (1.2–4.8)	3.0 (0.70–13.2)	2.6 (1.4–4.8)	2.5 (0.58–10.6)	1.7 (0.74–4.0)	2.6 (1.7–4.1)
Mental impairment	9	0.0 (0.0)	0.0 (0.0)	1.6 (0.21–11.7)	0.0 (0.0)	0.0 (0.0)	0.89 (0.12–6.5)
Mental illness plus psychopathy	14	1.2 (0.27–4.9)	4.2 (0.49–36.2)	0.0 (0.0)	7.6 (0.83–69.4)	2.3 (0.69–7.8)	1.6 (0.60–4.4)
Others	285	1.7 (1.2–2.3)	0.96 (0.32–2.9)	1.4 (0.98–1.9)	1.5 (0.50–4.7)	1.4 (0.91–2.1)	1.4 (1.1–1.8)

1. Number of cases varies according to the type of offences.
2. Each of these was a substitution for primary diagnosis with all the above covariates adjusted.

not measured in this study and which should be included in future studies. The modus operandi of the index offence leading to admission may also have been important in the prediction of reconviction in this sample, but could not be identified from this study.

Compared with our sample of patients discharged from medium secure services, reoffending was two and a half times more prevalent, and violent reoffending five times more prevalent, among a cohort of released prisoners (National Offender Management Service, 2004). However, our findings cannot be directly compared with criminal recidivism among released prisoners. The criminal careers of our patients, most of whom had psychotic illness, differed and their mean age was greater. Before it can be concluded that factors such as the presence of mental

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disorder, the effects of treatment interventions, or subsequent after-care, are associated with reduced offending, it will be necessary to match samples of patients and prisoner controls. However, our findings can be compared with those of previous follow-up studies from medium secure services and high-security hospitals. Taking length of follow-up into account, where patients progressively accrue further convictions over time, our findings in Fig. 1 appear to be broadly similar to previous reports. Studies with follow-up periods ranging from 1 to 5 years have demonstrated prevalence rates for 'all offending' of 11–16% (Falla *et al*, 2000; Edwards *et al*, 2002; Maden *et al*, 2004), rising to 30% for those with a mean follow-up of 6 years (Friendship *et al*, 1999). The more recent special hospital cohorts demonstrated higher prevalence rates (e.g. 34–38% (Buchanan, 1998; Jamieson & Taylor, 2004)) for longer follow-up periods (9–10.5 years), but these included larger proportions of high-risk patients, including more with personality disorder.

Methodological considerations

In the present study, the follow-up period was longer, and the sample larger than previous studies of patients discharged from medium secure services. However, the study was subject to the same limitations of the Offenders Index. This has a small source of error among patients with long follow-up periods, but more serious limitations for recent discharges. The time lag in the criminal justice system between charges and conviction in some cases can be over 2 years. This means that the true cut-off point is earlier in some cases. Criminal convictions are recorded using an offender's name and some offenders change their names frequently. An estimate of missing data is that 9% of criminal records will be missing from the Offenders Index (Buchanan, 1998). Searching of multiple sources was not carried out. These limitations therefore indicate that rates of offending by this cohort are likely to be higher than we have reported.

This study included more outcome categories of offending than previous studies, and has avoided the difficulties posed for future replication by the use of different permutations of offence categories. Future studies should include measures of specific categories of reoffending in addition to rates of subsequent offending for entire samples. These are more representative of the effectiveness of interventions and do not obscure the specific risks of small groups such as sex offenders. An additional strength was inclusion of data on time at risk of reoffending. However, time at risk did not include offending while in secure services.

Some hospital case files were unavailable or access was denied. We were also unable to ensure for all patients that readmission to a hospital setting had not occurred at some time during the follow-up period when estimating time at risk. Finally, findings may differ among more recent cohorts of discharged patients. For example, patients now spend longer in medium secure services than during the years of our study and few have diagnoses of personality disorder (Maden *et al*, 2004).

Risk factors and risk management

Our findings correspond to a meta-analysis of previous studies of risk factors for offending by mentally disordered offenders (Bonta *et al*, 1998) which demonstrated that major predictors of recidivism are the same as those for non-disordered offenders. Criminal history and actuarial measures were the best predictors, whereas clinical variables showed the smallest effect sizes. A history of previous convictions for the same offence was among the largest and most consistent predictors in our study. Primary diagnoses of personality disorder and previous detention under the legal category 'psychopathic disorder' have been consistently associated with a greater risk of reoffending in previous UK follow-up studies, except that of Phillips *et al* (2005). However, increased risks for patients with mania/hypomania have not previously been reported, suggesting that this subgroup has specific characteristics which require further study to improve their clinical management. Patients with depressive disorder were no less likely than those with schizophrenia to offend and their risks were greatly increased for sexual offending. Male gender, younger age when first appearing in court and being younger when discharged from medium secure services have also previously been demonstrated to increase risks of reoffending. However, lifetime history of comorbid substance misuse or dependence, being born outside the UK and never having married had little effect in this study. The most powerful protective factors were Home Office restrictions requiring patients to accept supervision and treatment following discharge, and longer detention in medium secure services.

Different categories of offending behaviour had different profiles of risk factors. Our findings can be used to identify patients who are at especially high risk of reoffending. Those with two or more previous violent convictions, a primary diagnosis of personality disorder, or a comorbid diagnosis of antisocial personality disorder are at increased risk of future violent offending. These risks are further increased among Black and other minority ethnic groups, and those younger when first appearing in court. However, risk management to prevent future violence must include a long-term perspective, as the cumulative probability of future violence increases linearly in these patients. Risk of subsequent sex offending was especially high among those with primary diagnoses of affective disorder, those from minority ethnic groups and those previously convicted for sex offences. It was unsurprising that sexual deviation considerably increased risks. This indicates that interventions for, and subsequent monitoring of, deviant sexual propensities should be prioritised over perceived risks from symptomatic conditions such as schizophrenia among sex offenders admitted to these services. Previous studies of sex offenders suggest that their risks are long-term, with some support from our findings on the probability of offending for all patients. However, this study has identified that patients with previous sex offending behaviour require special vigilance in their after-care during the first 3–4 years post-discharge.

Convictions for arson were more common among women, among those with a history of alcohol dependence/misuse and those with previous convictions for arson. Risk management is long-term in this subgroup. Cumulative probability of reconviction increases linearly, with emergence of increased risk at 6 years post-discharge. Similar previous convictions were also the strongest predictor of future acquisitive offending, with increased risks among younger patients, male patients, patients with personality disorder and those who had started their criminal careers earlier.

The variables included in our analysis represent largely historical or 'static' risk factors for different categories of offending. It has been argued that long-term

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recidivism is best predicted by static factors (Hanson & Bussiere, 1998) as these indicate established characteristics of the individual that are readily incorporated into an actuarial measure. However, future reoffending can only be prevented by addressing problems that present in the community following discharge, including criminogenic needs and dynamic risk factors, which can be changed and are amenable to intervention (Bonta, 1996; Andrews & Bonta, 1998). This would include adherence to prescribed medication and after-care. Future research should concentrate on examining the effectiveness of interventions after discharge that are designed to influence changeable factors encountered outside a secure setting. The question also remains whether more prolonged application of restrictions, including enhanced supervision and surveillance, and with compulsion to accept treatment, instead of reliance on the care programme approach, will result in more effective reduction of reoffending in patients who are identified as high risk. Longer periods in security and restrictions on patients' behaviour and lifestyles following discharge were associated with significant reductions in risk of serious reoffending in this sample.

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