

Thesis for doctoral degree (Ph.D.)
2007

MEASURES IN FORENSIC PSYCHIATRY

RISK MONITORING AND STRUCTURED
OUTCOME ASSESSMENT

While the individual man is an insoluble puzzle, in the aggregate he becomes a mathematical certainty. You can, for example, never foretell what any one man will do, but you can say with precision what an average number will be up to.

Sherlock Holmes in "The Sign of Four"
Sir Arthur Conan Doyle

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OUTCOME ASSESSMENT**

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ABSTRACT

Background: Violent offenders suffering from a major mental disorder (MMD) are sometimes publicly portrayed as particularly dangerous. In reality however, only a small fraction of those inflicted with a MMD do commit any violent offence. The present thesis focuses on means to monitor risk of violence and to some extent measure the content and outcome of forensic psychiatric care. The overall aim of this thesis was to investigate forensic psychiatric risk assessments from a broad perspective, covering outcomes not only as violent recidivism or not.

Method: Part of the work presented in this thesis (papers I and II) deals with an instrument for structured outcome measurement and community risk monitoring (SORM) used for a prospective follow-up of patients discharged from forensic psychiatric care into the community. It describes the development and testing of the SORM (paper I). By using the SORM, clinicians' perceptions of which factors increase or decrease the risk of violence among out-patients is explored (paper II). Paper III explores how available patient time is used in forensic psychiatry. Paper IV describes the development of a local quality register at a forensic clinic.

Results: The inter-rater reliability of the factors in SORM as measured by calculating Cohen's kappa was on average = 0.88. The SORM was also used to study clinicians' perception on which factors increased or decreased the risk of violence among former forensic psychiatric patients. Most emphasis was put on: lack of insight, lack of treatment motivation, psychiatric institutional treatment, professional support contacts, and substance misuse. Least weight was given to physical healthcare, children, occupational training and employment services, partner, and impaired daily functioning. In paper III results showed that 122 different activities occurred in a forensic psychiatric clinic. The activities were grouped into 5 categories, sleep and rest, unstructured activities, daily routines, structured activities, and treatment. Average time use in the different categories was 9.07 hours of sleep and rest, 8.60 hours of unstructured activities, 4.42 hours of daily routines, 1.60 hours of structured activities, and 0.31 hours (18.6 minutes) of treatment. No significant differences in time use on treatment between subgroups of individuals characterised by diagnoses of substance use, psychotic disorders, personality disorder, or assessed as high or low violence risk were found. Paper IV reports on the development of and findings from a local quality register in forensic psychiatry. Findings from the quality register are that about 70 percent of the patients rate their quality of life as high. Also, close to 90 percent of the patients rate their health as 50 or higher on VAS-scale ranging from zero to one hundred. A further finding is that the administration of atypical anti-psychotic medication is associated with a higher BMI.

Conclusions: The use of structured models for risk assessment, risk monitoring and also for measuring outcome is called for. An increase in transparency regarding measures used in forensic psychiatry with regards to both risk assessment and risk monitoring and the actual contents of the care provided is much needed to provide a basis for the furthering of research on risk factors as well as research on forensic psychiatric treatment. To widen and deepening our understanding of the process of violent recidivism, and ultimately treating major mental disorder, more data has to be gathered and analysed. Quality registers, which are called for on other grounds, could easily form a base for gathering more data and knowledge to inform risk assessment research.

Keywords: forensic psychiatry, violence risk, recidivism, risk management, risk monitoring, risk assessment, time use, and quality register

LIST OF PUBLICATIONS

- I. Grann, M., **Sturidsson, K.**, Haggård-Grann, U., Hiscoke, U. L., Alm, P-O., Dernevik, M., Gumpert, C., Hallqvist, J., Hallquist, T., Kullgren, G., Långström, N., Lotterberg, M., Nordström, K., Ståhle, B., Woodhouse, A. (2005). Methodological Development: Structured Outcome Assessment and Community Risk Monitoring (SORM). *International Journal of Law and Psychiatry*, 28, 442-456.
- II. **Sturidsson, K.**, Haggård-Grann, U., Lotterberg, M., Dernevik, M., & Grann, M. (2004). Clinicians' perception of which factors increase or decrease the risk of violence among forensic out-patients. *International Journal of Forensic Mental Health*, 3, 23-36.
- III. **Sturidsson, K.**, Turtell, I., Tengström, A., Lekander, M., & Levander, M. (2007). Time use in forensic psychiatry – an exploratory study of patients' time use at a Swedish forensic psychiatric clinic, *International Journal of Forensic Mental Health*, 6, 79-86.
- IV. **Sturidsson, K.**, Turtell, I., Gershater, S., Lekander, M., Runeson, B., & Tengström, A. (2007). *Measuring Quality in Forensic Psychiatry – implementation of a local quality register*. Manuscript submitted for publication.

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LIST OF ABBREVIATIONS

COMET	Contextual factors that mediate violence risk
FPC	Forensic Psychiatric Centre (in Säter)
HCR-20	Historical, Clinical, and Risk Management
HSL	Hälsa- och sjukvårdslag (1982:763) [Health and Medical Services Act]
LPT	Lag (1991:1128) om psykiatrisk tvångsvård [Compulsory Psychiatric Care Act]
LRV	Lag (1991:1129) om rättspsykiatrisk vård [Forensic Psychiatric Care Act]
MMD	Major Mental Disorder
ROC-AUC	Receiver Operating Characteristic – Area Under the Curve
SBU	Statens beredning för medicinsk utvärdering [The Swedish Council on Technology Assessment in Health Care]
SORM	Structured Outcome Assessment and Community Risk Monitoring
SPJ	Structured Professional Judgement
SOU	Statens offentliga utredningar [Swedish Government Official Report]
RMV	Rättsmedicinalverket [The National Board of Forensic Medicine]
VRAG	Violence Risk Appraisal Guide

1 BACKGROUND

Crime in general, and violent crime in particular, is often a focus of interest in the media and in public discourse. Individual acts of violence of a more spectacular nature attract a great deal of interest, and in such cases attention is remarkably often drawn to the connection between mental disorder and violence. People with mental disorders are sometimes portrayed in public discourse as a particularly dangerous category of people with a tendency to violence. The assumption that people with mental disorders are more dangerous than others is, however, not without controversy.

Firstly, the term “mentally ill” is used in the public consciousness in such a broad sense that it is rendered almost meaningless. Anyone with any type of psychiatric diagnosis is categorised as “mentally ill”, which is a gross simplification of the numerous different conditions that exist among the people described. “Mentally ill” is a label used in the media for more or less any condition from mental disorder in the form of psychotic conditions to personality disorders and learning difficulties.

Secondly, it is undoubtedly the case that there is a certain over-representation of some kinds of mental disorders among the perpetrators of the most serious violent crimes, such as murder and manslaughter (Fazel & Grann, 2004; Fazel & Grann, 2006). In addition there is evidence to support the theory that major mental disorder (MMD) lead to an increased risk of violent crime (Lindqvist & Allebeck, 1990; Monahan & Steadman, 1994; Link & Steuve, 1995; Eronen, Hakola, & Tiihonen, 1996; Cote & Hodgins, 1996; Belfrage, 1998; Moran et al., 2003).¹ Also, recent studies is starting to point at specific symptoms of MMD, such as a combination of high positive symptoms and low negative symptoms of psychosis, as indicative of an increased risk of violence (Swanson et al., 2006; Lamberti, 2007).

It is, however, important to point out that even if we are talking about a risk that is two to nine times greater, it is nonetheless a minority of people who suffer from MMD who also become violent criminals. It has also been shown that the increased risk of violence may be linked to other factors, such as alcohol abuse (Steadman et al., 1998; Räsänen et al., 1998), psychopathic personality traits (Rice & Harris, 1995; Tengström, Grann, Långström, & Kullgren, 2000; Hare, Clark, Grann, & Thornton, 2000; Walters, 2003) and intellectual disability (Hodgins, 1992), more than to the mental disorder itself. It is, therefore, important to remember that the majority of people with mental disorders do not commit violent crimes (Fazel & Grann, 2006; Kullgren, 2003). Of all violent crimes in Sweden during 1988 and 2000, the proportion committed by individuals with mental disorders is only about 5 percent (Fazel & Grann, 2006).

However, the small proportion of cases where people who are diagnosed as having a mental disorder also commit crimes deserve some attention, especially in those cases where, presumably, a direct link has been identified between the mental disorder and the criminal act. Furthermore, if it is possible to determine an increased risk of violent crime in connection with certain types of psychiatric diagnoses, this should also lead to preventative measures (Grann & Fazel, 2004).

¹ Major mental disorder in this context refers to schizophrenia, schizo-affective disorder, bipolar disorder, major depression and nontoxic psychosis (e.g. Hodgins et al., 2007).

For many years and in a wide range of cultures, individuals who have been deemed to be incapable of taking responsibility for their actions have been treated differently under the penal system (Börjesson, 1994). The currently prevailing approach is that if a person is found guilty of a criminal act but cannot be held responsible for that act on the basis of their incapacity to take responsibility for their actions, they should be pardoned. However, the individual is then committed to treatment and society takes appropriate measures to prevent reoffending on the part of the same individual (Blaauw, Hoeve, van Marle, & Sheridan, 2002).

In Sweden, individuals who have been found guilty of a violent crime can not be sentenced to imprisonment if they are judged to have been suffering from a “serious mental disturbance” at the time of the offence.² However, such an individual will in most cases be diverted to forensic psychiatric care under the conditions for submission to forensic psychiatric care.³ This applies to around 300 people every year. In addition to this, approximately the same numbers of individuals convicted of violent crimes are found to suffer from mental disorders of a less serious nature, not defined as “serious mental disturbance” according to the Swedish Penal Code, and as such these individuals are sentenced to serve time in prison. The current legislation is under review at the moment and is expected to be replaced by new legislation (SOU, 2002).

Regardless of whether the people concerned are committed to correctional treatment or forensic psychiatric care, they have specific needs and are, in some cases, more likely to reoffend than other groups of offenders (Rice & Harris, 1995; Steadman et al., 1998; Tengström et al., 2000; Walters, 2003; Webster & Hucker, 2003). There is therefore good reason to investigate what preventative measures to reduce the risk of violent reoffending that can be carried out when individuals diagnosed with MMD and also convicted of violent crimes are to be reintroduced into society.

The Swedish National Board of Health and Welfare recently completed an inventory and initiated a supervision process concerning how risk assessments are handled in psychiatric care (Socialstyrelsen, 2004). In addition to this, the Swedish Council on Technology Assessment in Health Care (SBU) completed a systematic literature review on psychiatric risk assessments methods, with the intention to develop an overview of skills and knowledge in the area of risk assessment (SBU, 2005). The inventory and

² A person who commits a crime under the influence of a serious mental disturbance may not be sentenced to imprisonment. If, in such a case the court also considers that no other sanction should be imposed, the accused shall go free from sanction. (Law 1991:1138) (Swedish Penal Code, Chapter 30, Section 6).

³ If a person who has committed a crime for which the sanction cannot be limited to a fine, suffers from a serious mental disturbance, the court may commit him for forensic psychiatric care if, having regard to his mental condition and personal circumstances, admission to an institution for psychiatric care combined with deprivation of liberty and other coercive measures, is called for.

If the crime has been committed under the influence of a serious mental disturbance, the court may decide that a special release inquiry under the Act on Forensic Psychiatric Care (1991:1129) shall be conducted during the time in care if there is risk for relapse into serious criminality of a serious kind by reason of the mental disturbance.

The court may, in conjunction with a committal to forensic psychiatric care impose another sanction, but not imprisonment or committal for other special care, if this is called for having regard to the previous criminality of the accused or for other special reasons. (Swedish Penal Code, Chapter 31, Section 3).

anything else that arises as part of the supervision process together with the systematic literature review is then to form the basis for a compilation of guidelines for practical management of risk assessments (Socialstyrelsen, 2003). These guidelines have not yet been published. However, examples of guidelines on risk assessment is starting to appear elsewhere (e.g. Risk management authority, 2007)

Most existing models for risk assessment are built on the assumption that a risk assessment is something that is carried out on a one-off basis, possibly followed by a further assessment should it be judged necessary. Clinical experience, in contrast to empirical research, suggests that the factors which are important and significant in carrying out valid risk assessments are dynamic (in the sense that they change over time) and in some cases change within relatively short periods of time (Douglas & Skeem, 2005; Grann et al., 2005).

Risk assessments must also be linked to models of risk management (Heilbrun, 1997; Douglas, Webster, Hart, Eaves, & Ogloff, 2001; Kennedy, 2001; Hart, 2002.). This means strategies for monitoring risks, risk supervision, and models that help the caregiver to ensure that the risk of recidivism is kept to a minimum through support and treatment, and implement immediate and targeted interventions in the event that the risk increases.

This thesis focuses on aspects relating to the measurements of forensic psychiatry such as a model for outcome assessment and supervision of the risk of violent recidivism. It also seeks to measure what the actual components are that sum up to what we call forensic psychiatric care. Finally, this thesis focus on how to measure quality in the forensic psychiatric care provided. In the last decade we have come a long way to establish empirically driven models for violence risk assessment. On the other hand we are merely starting to measure what society is offering to alleviate the risk posed by the same individuals. It seems that the possibility of collating information from individual case registers, hospital activity data, and the criminal justice system is used in a suboptimal way (Glover, 2000; Lelliot, 2003). To better inform clinicians, decision makers, policy makers, and researchers active in the context of forensic psychiatry the ongoing development of measurements, both regarding individuals (i.e. risk assessments) and institutions (i.e. quality measurements) is essential.

1.1 RISK ASSESSMENTS

Research and development in the area of forensic risk assessments is usually divided into a first and second generation (e.g., Dolan & Doyle, 2000; see also Gottfredsson & Moriarty, 2006, for a similar historical description within the criminal justice systems). Below, these two generations of research and development are summarized.

1.2 FIRST GENERATION RESEARCH AND DEVELOPMENT

First generation research in forensic risk assessment usually refers to the follow-up of patients that was carried out in connection with two US court cases that received a lot of attention. One of the cases was a test case in the US Supreme Court (*Baxtrom v.*

Herold, 1966) that led to almost 1000 patients at maximum security hospitals in New York State being released or transferred to lower security institutions (Steadman & Cocozza, 1974). A few years later there was a similar case in the state of Illinois (*Dixon v. Attorney General of the Commonwealth of Pennsylvania*, 1971), which also resulted in the release of more than five hundred patients who had been judged to be dangerous and prone to recidivism (Thornberry & Jacoby, 1979). The follow-up studies carried out showed that only about 20% of over 1500 patients released reoffended. In addition, the majority of these crimes were not violent crimes. If the initial assessments of whether the patients were or were not dangerous had been anywhere near correct, the frequency of recidivism would, naturally, have been much higher.

These rather disheartening results led to conclusions along the lines of “flipping coins in the courtroom”, which was the sub-heading of an article questioning the expert role that psychiatrists and psychologists took upon themselves in making these assessments of the danger posed by individuals (Ennis & Litwack, 1974). In terms of tangible consequences, these results also led to recommendations to clinicians to “retire from the prediction business” (Menzies, Webster, & Sepejak, 1985, p. 50).

An investigation of these follow-up studies (Monahan, 1984) showed that at best, the clinicians made a correct assessment in one in three cases. The cost, counted in terms of how many were wrongly judged to be dangerous, in order to prevent recidivism in those who were correctly judged to be dangerous, was considered much too high (Monahan, 1988). Analysis showed that the least accurate factors for predicting how dangerous an individual would be in the future were clinical psychological assessments, while more simple background factors such as demographic data provided the most accurate prediction (Monahan, 1984).

1.3 SECOND GENERATION RESEARCH AND DEVELOPMENT

Second generation research and development in the area of risk assessments involved abandoning the view that the task was to make a dichotomous assessment of whether an individual should be seen as dangerous or not. Instead, research concluded that such risk assessments should be more of an evaluation of where an individual exists on a sliding scale, where the possible danger posed by an individual is not a static, “either/or” state (Menzies, Webster & Sepejak, 1985).

Over the course of the second generation of research and development, the research began to focus on identifying statistical connections between risk factors (for violent recidivism) and outcomes in the form of violent recidivism. The knowledge that was gained has been put into practice in several ways including *actuarial* risk assessment, where the model known as the Violence Risk Appraisal Guide (VRAG) is the most well-known (Harris, Rice & Quinsey, 1993).⁴

The inherent definition of what an actuarial risk assessment sets out to achieve condensates to establishing the *probability* that a certain individual will relapse in

⁴ From the word *actuary* - one who calculates insurance and annuity premiums, reserves, and dividends.

(violent) crime. An actuarial assessment is based on using well-defined material to calculate correlation coefficients between risk factors and recidivism, in order to use these coefficients to construct an algorithm that can be used to state the likelihood of violent recidivism in an individual equivalent to the individuals in the “well-defined material”. This model does not allow any space at all for clinical assessments. The fact is that advocates of the actuarial model claim that the sole role of the clinician in the risk assessment process is to gather any historical data that is relevant to the risk assessment, as well as to carefully score this data according to the instructions for the instrument (algorithm) to be used (Harris, Rice & Cormier, 2002).

Criticism of this form of risk assessment was relatively quick in appearing, primarily because it was thought that this actuarial, mechanical way of operating did not accurately describe the individual circumstances that were sometimes judged to be of greater importance than the factors featured in any actuarial model. Of course, there are laudable aspects of the actuarial approach, including the fact that it dealt with what was seen as clinical arbitrariness under the guise of clinical experience (Grove & Meehl, 1996). However, criticism of the shortcomings of the actuarial method remains in terms of assessing the risk of possible acts of violence. Such acts must still be seen as complex social, psychological and biological phenomena. To my mind, the actuarial model is a brave but naive attempt of forecasting the future of an individual using a handful of variables that has been found to correlate to violent recidivism. The causal mechanisms of violent recidivism is likely very complex and we can expect that it involves risk factors that are not only individual but contextual and “working together” (Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001).

The clinical guides now known as *structured professional judgment* (SPJ) could be said to be the result of the aforementioned criticism of actuarial models. The most well-known guide in this genre is probably the HCR-20 (Webster, Douglas, Eaves & Hart, 1997). The HCR-20 is a clinical checklist with 20 items, 10 of which relate to historical factors (H), 5 to clinical items (C), and 5 to risk management items (R). According to this model, when assessing the risk of recidivism, one should take into account certain risk factors that are established by empirical research, and evaluate the significance of the occurrence of these factors. The idea is that an inventory of risk factors for an individual created according to a checklist should, along with the clinical experience of the assessor, give a clearly structured basis for decision-making so that those whose responsibility it is to make decisions are able to understand and evaluate this basis of information.

In this context, risk assessments have been defined as:

[T]he process of evaluating individuals to (1) characterize the risk that they will commit violence in the future and (2) develop interventions to manage or reduce that risk (Boer, Hart, Kropp, & Webster, 1997; p. 1, emphasis in original)

With this definition of risk assessment, we can say that developments in this area have shifted from a probability paradigm to a process-oriented paradigm. In other words, this entails a move from seeing dangerousness as a quality present in certain individuals and focusing on correctly identifying it, to starting to take stock of the complex context in

which we find the phenomenon of acts of violence. The former approach sought to identify dangerousness entirely within the individual concerned. The latter approach aims to see the conditions that can affect the risk of acts of violence not only within the individual concerned, but also in the context in which the individual finds him or herself. As a result, at least three (in the domain of Risk Management; Plans Lack Feasibility, Lack of Personal Support, and Stress) of the twenty items in HCR-20 (Webster et al., 1997) seek to glean information on the circumstances surrounding the individual rather than particular characteristics present in that individual.

1.4 THE DEBATE REGARDING ACTUARIAL V. SPJ MODELS

In the scientific discourse surrounding risk assessments, it is relatively clear that the field is split in two in terms of the approach to be used (see for example Dawes, Faust & Meehl, 1989; Litwack, 2001; Webster & Hucker, 2007). This debate is not present in a clinical context in Sweden, however. Here, the debate is more concerned with misgivings of an ethical nature. However, the principal body for assessment in forensic psychiatry in this country, the National Board of Forensic Medicine (RMV), stipulates that it is not a question of *whether* to carry out assessments of the risk of recidivism, but of *how* these assessments should be done (Rättsmedicinalverket, 2000; see also Maden, 2005). However, the question of which model to use – whether to make use of the actuarial approach or lean towards SPJ – is left to the professionals carrying out the assessments to determine.

From a clinical perspective, the academic debate on whether one should apply a purely *actuarial* assessment (the mechanical approach that seeks to avoid clinical arbitrariness and less well-supported risk assessments c.f. Grove & Meehl, 1996; Grove, Zald, Lebow, Snitz, & Nelson, 2000) or *clinical judgement* (in the form of SPJ where factors such as individual circumstances should be taken into consideration c.f. Litwack, 2001) is of little significance. It is perhaps more important that clinicians and other decision makers have a realistic picture of what can be achieved using the different available models. David Faust (1997) dramatises the academic debate by letting a fictitious clinician say:

You have criticized my use of subjective judgment, but the alternative you suggest does not eliminate the need to depend on the very same methods you decry. Surely you would agree that across all of the domains in which I work, the application of current scientific knowledge will not always produce superior overall results in comparison to reliance on my own decisions. After all, consider all of the ties in the research on clinical and actuarial judgment, the possible subtle disadvantages that at least some of the comparisons may have created for the clinician, and the substantial differences that may exist between settings in which methods are developed and in which I must apply them. Given how often I must make decisions under conditions in which I should have serious concerns about the generalization of research, I require guidance and systematic methods for determining the likelihood or extent of generalization. I know you appreciate this problem, because you warn about the limits of generalization in almost every one of your publications and call for more research. When I press you on this, you

admit that there are no formal methods for predicting the extent of generalization and that we are left in essence to do the very thing that you are [*sic*] criticize, that is, formulate a subjective impression (about generalization). If your advice forces me to do the very thing you tell me not to do, maybe the problem is not mine alone. (Faust, 1997, p. 349)

The use of different statistical models in a research context, in order to review risk and protection factors, seems to be uncomplicated. However, the unquestioning acceptance of an approach that is entirely based on probability in making decisions that infringe the civil liberties of individuals does not seem realistic (e.g., Szmukler, 2003).

1.5 RISK FACTORS

The research group on the MacArthur study (e.g., Monahan, 1997), suggested dividing the risk factors for violent recidivism into four domains:

- *Dispositional variables* such as age, gender, ethnicity, aggressivity, impulse control.
- *Historical variables* such as family history, educational history and employment history, as well as possible criminal background and previous episodes of psychiatric inpatient care.
- *Contextual variables* that describe the individual's surroundings in terms of social network and support, stress factors, and critical factors such as access to weapons.
- *Clinical variables* including any possible current symptoms of mental illness, personality disorders and drug or alcohol abuse.

Another typology of risk factors is suggested by Hanson (1998). This typology proposes a categorisation system based on the relationship between *static* and *dynamic* risk factors. Static risk factors are factors which do *not* change over time. These include what have been described as historical factors. Dynamic risk factors, on the other hand, are factors which can change with time. Hanson further divides dynamic risk factors into *stable* factors (which usually change slowly) and *acute* risk factors (which change quickly).

Also, Douglas and Skeem (2005) introduced the concept of *risk status* vs. *risk state* in which risk status refers to the inter-individual risk level depending largely on static risk factors and where risk state refers to the intra-individual risk level depending on dynamic risk factors.

An important point however, is that in spite of all the efforts of “second generation” research on risk factors that is supposed to be strongly and reliably associated with violence, no such factor has been identified.⁵ Nevertheless, a few factors have shown consistent ability to relate to subsequent violence; psychopathy, antisocial personality disorder, a history of violence, schizophrenia with a concurrent diagnosis of substance abuse, and early childhood factors (Webster & Hucker, 2007). However, in relation to

⁵ Of historical interest are Hellman and Blackman's (1966) triad of fire setting, enuresis, and cruelty to animals that was supposed to have predictive power concerning violence in adulthood.

MMD, as noted by Andrews and colleagues “the predictive validity of mental disorders most likely reflects antisocial cognition, antisocial personality patterns, and substance abuse” (Andrews, Bonta, & Wormith, 2006, p. 10; see also Mueser et al., 2006).

1.6 PREDICTIVE ACCURACY

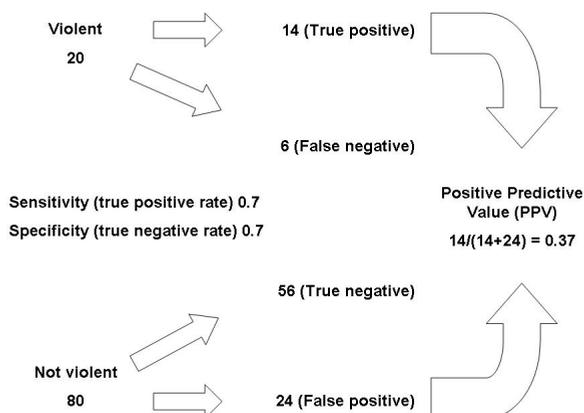


Figure 1. Probability tree for determining the predictive ability of a risk assessment model. The rate of violence in the population is 20 % (adapted from Szmukler, 2001).

Szmukler (2001) demonstrated in a pedagogic way how risk assessment fare “in the real clinical world, where prediction leads to action, including restrictions on the liberty of patients regarded as dangerous” (Szmukler, 2001, p. 84). In his example, Szmukler (2001) assumes that a certain risk assessment model has a sensitivity (true positive rate) of 0.7 and a specificity (true negative rate) of 0.7 and that the rate of violence in the population is 20 percent (which perhaps is appropriate in a forensic population). In the example, depicted in figure 1, it can be seen that positive predictive value (PPV) is 0.37 indicating that the prediction of violence is wrong about six times out of ten.⁶

In the “real clinical world” risk assessment models present a trade-off between sensitivity and specificity that is worse than in the hypothetical example above. Mossman (1994) suggests that to find the best trade-off between specificity and sensitivity receiver operating characteristic (ROC) analyses should be used. Mossman, in his 1994 article, also recommends ROC analysis to evaluate and compare risk assessment models, and this has largely been the preferred method of analysis of the accuracy of risk assessment models since then. This method has become somewhat of a “state-of-the-art method for the estimation of predictive validity of a continuous risk measure” (Grann & Långström, 2007, p. 26). Apart from offering guidance on what cut-off score to choose in any given risk assessment model (in order to achieve the best trade-off

⁶ On the other hand this model has a negative predictive value (NPV) of about 0.90 ($56 / (56 + 6)$) indicating that in predicting non-violent individuals the model will perform accurately nine times out of ten.

between sensitivity and specificity) ROC-analyses can also produce measures of predictive accuracy that is not as sensitive to base rates of violence and clinicians' preference for certain outcome as other measures are (Mossman, 1994). An ROC-analysis yields an area under the curve (AUC) which ranges from 0.0 (perfect negative prediction) to 1.0 (perfect positive prediction). When it comes to meaningful interpretation of the values produced by way of a ROC-analysis there is little guidance to find. However, Grann & Långström (2007), referring to an earlier study (Sjöstedt & Grann, 2002), suggests the following conservative interpretation; below 0.60 = low accuracy, 0.60 to 0.70 = marginal accuracy, 0.70 to 0.80 = modest accuracy, 0.80 to 0.90 = moderate accuracy, and greater than 0.90 = high accuracy. Mossman's (1994) conclusion eloquently states the dilemma a clinician is facing when having to come to a dichotomous decision on risk:

Clinicians should not forget that what ROC analysis quantifies – the trade-off between sensitivity and specificity – is a fundamental feature of their inability to anticipate violence. This means that clinicians (and the general public) should realize that a fraction of the decisions based on assessments of potential future violence will inevitably be mistaken. Because clinicians cannot avoid making mistakes, they have to choose what kind of mistakes they prefer to make. When for example, clinicians must decide whether to hospitalize someone involuntarily, the proportion of FP and FN mistakes they make will depend on how they feel about the consequences of wrongfully hospitalizing someone who is not violent and the consequences of releasing someone who is (Mossman, 1994, p. 790).⁷

The fact remains that purely mechanical use of the models currently available, leads to an accuracy rate (ROC-AUC) of around 0.70-0.80 (which has been suggested a modest level of accuracy). This is good enough for a research context and on a group level, but how should this be applied to a risk assessment relating to an individual?

Even if it is impossible to *predict* the actions of individuals, this should not prevent us from taking relevant measures to *prevent* violent recidivism. On the contrary, it is the duty of every clinician to use all means available to prevent recidivism. "All means available" include the various models for risk assessment and risk management that have been developed. Naturally one must take into account the shortcomings and limitations of the model in question, but to *not* use any kind of systematic model in carrying out assessments and supervision relating to the risk of violent recidivism would be to seriously disregard the principle of applying scientific knowledge and proven experience.

1.7 FROM RISK ASSESSMENT TO RISK MANAGEMENT

The title of this section is somewhat misleading, as it is not a matter of abandoning risk assessments in favour of risk management. It is rather the case that risk management builds on the foundation provided by repeated risk assessments. It is worth pointing out that in the case of recurring assessments of risk of violence, repeated assessments of the

⁷ FP and FN refers to "false positive" and "false negative" respectively

static historical factors are mostly an unnecessary waste of time.⁸ These factors are, after all, defined by the fact that they do not change with time. It is relevant to state here that the structured models for clinical risk assessment – primarily HCR-20 (Webster et al., 1997) here in Sweden – place much weight on the static historical factors. Of the 20 items included in the HCR-20, half relate to static historical factors.

This is a good reason for developing a model that is focused on risk management. The research group behind HCR-20 (Webster et al., 1997) clarified this need in *HCR-20 violence risk management companion guide* (Douglas et al., 2001):

/.../ a good risk assessment procedure should be prescriptive; it should identify, evaluate, and prioritize the mental health, social service, and criminal justice interventions that could be used to manage a patient's violence risk. (Douglas et al., 2001, p.15).

It is, therefore, important to correctly judge and evaluate static historical factors. New information regarding patients may come to light. As has been mentioned, some static historical factors can actually change status, although this is likely to be less common. However, it is likely that most weight should be placed on those factors or circumstances that are changeable.

It is worth noting that in this context statistical based (as opposed to unstructured clinical) risk assessments are nothing new (e.g., Burgess, 1928 as cited in Gottfredson & Moriarty, 2006). It is likely that there will continue to be a relatively constant stream of new risk assessment models (for an overview see Webster & Hucker, 2007; Monahan, in press). Risk assessments, with or without the help of checklists and other aids, have for a long time been standard practice in connection with discharge decisions (Webster & Hucker, 2003). In the context of such assessments it is the duty of every clinician to use all available means to prevent violent recidivism. Risk supervision and risk management are no more new concepts than risk assessment. Forensic clinicians have doubtless endeavoured to minimise these risks for as long as it has been standard practice to institutionalise individuals on the basis of the danger they pose to society. However, one important ambition should be that the procedures surrounding the assessment are constructed in such a way that it is possible to repeat them. This presupposes a clear and transparent model in which the documentation clearly states the basis of the assessment.

SORM is a proposal for just such a model of risk supervision. However, again it is important to point out that this field is in a constant state of change, where there is ongoing development of models and what may currently be considered “cutting edge” may soon be obsolete. All risk assessment models should be applied with a degree of flexibility in relation to the conditions of the assessment. In other words, there is a need to take into consideration any details specific to the individual which may be critical for the assessment concerned. Following Kennedy's (2001) argument, risk (of violence) is

⁸ It is appropriate to mention that “Although these [historical items] are rooted cast in the past, it should be clear that scores may change as people commit new offences, find stable romantic bliss, give up drinking, and so on” (Webster & Hucker, 2007, p. 83).

stratified in time, it varies over populations and sub-populations and it is subject to contextual factors, and all this, ideally, has to be accounted for in risk assessments.

The SORM can also be used as a protocol to collect data in order to create a standardised measure of outcome of treatment for patients treated by forensic mental health and thus provide a means to evaluate and compare services. Considerable investments in time and effort are made by forensic mental health staff in order to collect, analyse, use and communicate information about the patients they assess, treat and provide care for. The goal of this is, of course, for the benefit of the individual patient. If this effort of organising and managing information on individual patients could be standardised it can also provide the basis for secondary uses of information (i.e., quality registers) which “although secondary to direct patient care, can indirectly improve the quality of service” (Lelliot, 2003, p. 221).

Glover (1995) identifies different levels within the society that needs patient information:

At the point of care, staff need user friendly, accurate, and confidential information about patients' past and current problems and care /.../ [p]roviders managing clinical teams need to deploy staff and other resources around the catchment area according to need and to allocate patients in realistic numbers to appropriately skilled staff: excessive loads impede effective care and can lead to burnout /.../ purchasers need to know the numbers of patients being cared for, the range of clinical problems, and the outcomes of care if they are to judge the value of the services they are buying and to forecast future needs /.../ the government needs to determine its mental health policies (Glover, 1995, p. 1138).

To close the loop that runs from risk assessment via risk management and using data that are routinely collected for the purpose of assessment, treatment and providing care back to risk assessment one can assume that all our current (wobbly) estimates on the base rates and risk of violence and reoffending would be firmer if we (routinely) could collect (all) data on an aggregate basis from the mental health system (Glover, 2000).

2 AIM

The focus of this thesis is on assessment and measurements of a few different aspects of forensic psychiatry made in a clinical setting.

In more specific terms, the aim is;

- to develop and test an instrument for structured outcome measurement and community risk monitoring (SORM; paper I), and
- to test inter-rater reliability with the SORM model (paper I), and
- to describe the clinicians' perceptions of which items (in the SORM) increase or decrease the risk of violence among a sample of forensic out-patients (paper II), and
- to describe the content of the forensic psychiatric care by mapping the use of time during a 24-hour time period in a sample of patients treated at a forensic psychiatric clinic (paper III), and
- to describe an effort to develop a local quality register largely based on the SORM (paper IV).

3 METHOD

The research on which this thesis is based was partly performed in the framework of the COMET (Contextual factors that mediate violence risk) project. The COMET project was made up of three parts: First, a case reference study (COMET 1). Second, a prospective follow-up study (COMET 2). Third, a case crossover study relating to trigger factors for violent recidivism (COMET 3, Haggård-Grann, Hallqvist, Långström, & Möller, 2006a; Haggård-Grann, Hallqvist, Långström, & Möller, 2006b).

Paper I and II deals exclusively with data from COMET 2 collected 2000 – 2004. The study reported in paper I aimed to develop and test an instrument for structured outcome assessment and community risk monitoring (SORM). Paper II reports on an effort to review clinicians' perceptions of which items (in the SORM) increase or decrease the risk of violence among a sample of forensic out-patients.

Paper III and IV uses data collected at the Forensic Psychiatric Centre (FPC) in Säter, Sweden. Data was primarily produced as a part of the quality assurance work at the FPC in Säter during 2002 – 2007. The study in paper III seeks to review time use among forensic patients in inpatient care, and in paper IV a local quality register, primarily based on the SORM, is described and some sample data is shown.

3.1 THE PILOT STUDY

A pilot study carried out in 1999 (Stähle et al., 2001) sought to describe the life situation of former forensic patients and to gather new information on positive and negative outcomes and which factors (background, individual, care or contextual factors) influence these outcomes. A further aim was to develop a structured method for short and long term follow-up of care under the LRV with a view to future routine use (Stähle et al., 2001).

The pilot study identified 23 former patients of the FPC in Säter, Sweden eligible for in-dept interviews. In total 11 interviews were carried out. Two of the initial group members died, nine declined to participate in the study and one agreed to participate initially but declined at a later date. During the interviews, which were recorded and carried out in a semi-structured format, five different areas were discussed:

- General quality of life – Does the individual have hopes for the future and goals? Self-esteem and self-belief? Does the individual feel involved in a social group? Does the individual have a job/occupation which s/he finds meaningful?
- Social situation – what type of housing, financial support and employment does the individual have? Does the individual have a partner or family? How is the individual's social life – friends, involvement in clubs/societies?
- Psychiatric care – how does the individual see their treatment in retrospect? What does the individual think of the content of their treatment? What did they find to be positive and negative? Has the treatment had an effect on the individual's current

life situation? State of health, symptoms, substance abuse? Is the individual receiving any treatment at the moment, for example medication, therapy? Did the individual feel that the hospital was supportive and interested when s/he was discharged?

- Criminality – how does the individual view their criminality, any recidivism, previous criminality (i.e. prior to treatment period)? Identification with criminal others?
- Contact with authorities – how is the individual’s general attitude towards authorities? Actual contact? In what form and to what extent? Does the individual feel that s/he has received support and help to reintegrate into society and into the employment market?

The interviews were supplemented by collateral information in the form of interviews with staff from the FPC.⁹

The result can be summarised by saying that the interview group’s evaluation of and attitude towards the treatment received was consistently good. Many emphasised the importance for them of having good relationships with contact persons or other important figures during their time of treatment. Perceived important staffs’ characteristics were trust in the patient and commitment to the work. The group’s negative opinions on treatment had primarily to do with the content and lack of influence on treatment planning. Other negative views pointed to the lack of meaningful activities.

In order to relate the outcome in the five domains to post-treatment criminal behaviour, extracts from the criminal records registry were obtained. The files showed no violent recidivism for any of the group members but non-violent criminal behaviour for 4 of the 11 subjects.

3.2 SETTING

In Sweden during 2006 – according to latest available statistics (BRÅ, 2007) – 326 individuals convicted of various crimes were deemed as having a *serious mental disturbance* and in accordance with the law transferred to forensic psychiatric care. Most patients are treated at forensic psychiatric clinics, but treatment is also provided in some general psychiatric clinics.¹⁰ Sweden along with the Nordic countries is known for its high-quality national coverage registers. Those registers are available in many areas including treatment quality and are based on each individual’s unique 12 digit personal identification number, which enables linkage of data from various kinds of registers. Given the high personal and societal needs and costs, it is a bit puzzling that there is no national register that specifically covers forensic psychiatric care.

⁹ These interviews were carried out with the permission of the individuals concerned.

¹⁰ For a general overview of the Swedish mental health system see Silfverhielm and Kamis-Gould (2000) and for an overview of Swedish forensic psychiatry see Belfrage and Fransson (2000) and Dernevik (2002).

As a consequence, there are no reliable numbers on how many individuals that are being treated within the forensic psychiatric care on a given day. Estimates, however, suggest a range between 1000 to 1500 individuals. A recent inventory indicated that 929 individuals were registered as in-patients (May 18th 2005) and a further 497 individuals were registered as out-patients, totalling 1426 forensic psychiatric patients in Sweden (Socialstyrelsen, 2005).

The majority, 62 percent, of these patients had a main diagnosis of psychosis and another 19 percent had a personality disorder as a main diagnosis.¹¹ A third (34%) of the patients has been treated in-patient for more than five years (Socialstyrelsen, 2005).

Data for papers I and II were collected within the COMET-project which was a multi-center study comprising nine forensic psychiatric hospitals and clinics in Sweden, with a total capacity of treating about 300 in-patients.

Data for papers III and IV were collected at FPC in Säter, Sweden. The FPC has a total treatment capacity of 88 patients on ten wards. Seven of these ten wards, holding half of the patients, are maximum security units, while the remaining wards are high security units.¹² There is also an additional 4-bed half-way house within the hospital perimeter. On admission, patients are provided with a tailor made treatment plan and components from a range of treatment domains are typically included; pharmacological and psychological treatment, occupational therapy, vocational training, education and physical education, and training.¹³

3.3 PARTICIPANTS

In paper I and II the participants were the patients followed in the COMET-project. They were patients released from any of the nine forensic hospitals or clinics in Sweden participating in the COMET-project during the period between 2001 and 2004.

In paper II the raters ($n = 35$) were clinical psychologists (37.1% of the interviewers, 45.6% of the interviews), psychiatric nursing staff (57.1% of the interviewers, 48.5% of the interviews), and social workers (5.7% of the interviewers, 5.8% of the interviews). Among the raters there were 19 (54.3%) female raters and 16 (45.7%) male raters. Their mean age was 45.43 ($SD = 9.39$) years. Mean clinical experience in forensic psychiatry was 11.09 years ($SD = 8.17$) and ranged from 1 year to 30 years.

¹¹ Substance-induced psychotic disorder (2%), psychotic disorder due to a general medical condition and dementia (2%), substance-related disorders (3%), mental retardation (1%), pervasive developmental disorders (9%), and other conditions (2%) accounted for the other categories of diagnoses in the population.

¹² The security classification of forensic psychiatric clinics in Sweden is regulated by Socialstyrelsen (the National Board of Health and Welfare) and their regulation SOSFS 2006:9 Säkerhet vid sjukvårdsinrättningar som ger psykiatrisk tvångsvård och rättspsykiatrisk vård samt vid enheter för rättspsykiatrisk undersökning [Security at health care institutions that are providing psychiatric mandated care and forensic psychiatric care and units for forensic psychiatric evaluations].

¹³ Established by a multi-professional team, using a scheme with preset standards formulated by the Swedish National Board of Health and Welfare,

All of the patients (n = 51) were forensic psychiatric patients in various stages in the process of being released into the community (spending at least 50% of their time outside the forensic psychiatric institution). Among the patients were 42 (82.4%) males and 9 (17.6%) females. Their mean age was 40.59 (SD = 11.20) years. All of the patients were violent offenders who had been diverted to forensic psychiatric care on account of mental disorder, and they had all been assessed to be at high risk of serious criminal recidivism.

In paper III the participating patients were selected by using a random number list from the patient register of the FPC in Säter during 2002-2005.

The participants in paper IV were all the patients at the FCC in Säter, 137 individuals, consecutively included in the local quality register from its inception in March, 2005 up to January, 2007.

3.4 PROCEDURE

Paper I is describing a twofold effort in the area of methodological development within forensic mental health. Twofold, because firstly the aim was to develop a tool for a standardized measure of outcome for offenders formerly treated by the forensic mental health system and thus providing a mean to evaluate and compare services: *Structured Outcome Assessment and Community Risk Monitoring* (SORM). Secondly, the aim was to investigate if the same tool could be used to monitor violence risk in the community over time. In paper I some sample data collected using the SORM was presented.

In paper II the data were collected using the SORM. The unit of observation in paper II was the data provided by SORM interviews stemming from a total of 103 unique clinician-patient encounters that were administered by 35 clinicians to 51 different patients. Fourteen raters assessed only one patient each, 8 raters assessed two patients each, and 13 raters assessed more than two patients each. The units of observation in the paper III are thus these 103 unique constellations of a rater and a patient.

Data for paper III were collected as part of the clinic's quality assurance work during 2002-2005. The unit of analysis in the study was the activities the informants reported during a 24 hour time period. In total, 48 time periods were available for analyses. Initially a protocol was designed to map all the possible activities an informant may engage in. The protocol was then used in a semi-structured interview carried out by two registered nurses who knew the informants. An interview started by asking the informant what time he or she woke up that particular day and what they had been doing during the day up to the time of the interview. Information was recorded in 15 minutes segments and all necessary questions were asked to establish the time-line. Informants were then asked at what time they had gone to bed the day before and then asked to report on yesterday's activities using the 15 minute time segment up to the time where 24 hours were covered.

In paper IV, a description of the implementation of a local forensic psychiatric quality register is provided. The quality register largely builds upon data collected using the SORM but supplemented with information from other sources including treatment files. Data for the quality register was collected using a checklist largely building on the SORM. The actual data collection was done by the clinic's staff that was trained to assess the various items in the checklist. Patients rated their health, quality of life and perceived risk of committing violent acts. On completion, the paper protocols were handed over to administrative staff that in turn entered data into the database.

3.5 SORM

The development of SORM was based on the experience gained as part of the in-depth follow-up of former forensic patients (Ståhle et al., 2001) described above. Experienced clinicians from the FPC in Säter worked with a research group from Karolinska Institutet to determine which factors should be included in a model for risk supervision. Over a hundred possible factors were discussed initially. The main focus was, however, to include factors where there is research that shows or implies a connection between that factor and violent recidivism.

SORM was thus created as a clinical checklist, covering different areas of post-treatment outcomes. In brief, these include treatment outcome on three levels: the macro level (i.e. societal economical costs, such as re-hospitalization, aftercare, financial support and public safety aspects such as recidivism rates); the intermediary level (i.e. social network, occupation, living conditions, and clinical perspective such as substance misuse and residual psychiatric symptoms); and finally the micro level (the subject's own, subjective perceptions of his or her own health and quality of life, measured by self-assessment on a VAS scale).¹⁴

SORM incorporates factors that give information on circumstances other than medical and psychiatric problems. Also, an explicit ambition was that SORM should give information from a *biopsychosocial* perspective. Thus, factors that cover aspects of the individual's circumstances in terms of interventions of a societal nature, and not just interventions relating to healthcare and/or correctional treatment was included. SORM also covers interventions relating to employment and financial situation. In addition, there are factors which are intended to reflect the individual's social network in terms of family situation, partner, children, friends and acquaintances.

The following areas of interest were operationalized and itemized into a 30 item checklist: at the macro level, current services and interventions; at the intermediary level, social situation, social network, and clinical perspective; and finally at the micro level, subjective perspectives.

¹⁴ Visual Analogue Scale (VAS), in this case between 0 and 100.

SORM		
Structured Outcome Assessment and Community Risk Monitoring		
CODING SHEET	<i>Presence</i>	<i>Risk effect</i>
	<i>A / B / C</i>	<i>- / 0 / +</i>
<i>Current services and interventions</i>		
1. Detention and correctional treatment		
2. Psychiatric institutional treatment		
3. Professional support and contacts		
4. Physical healthcare		
5. Occupational training and employment services		
<i>Social situation</i>		
6. Lack of housing		
7. Economy		
8. Work		
9. Leisure		
10. Daily functioning		
<i>Social network</i>		
11. Family		
12. Partner		
13. Children		
14. Friends		
<i>Clinical factors</i>		
15. Lack of insight		
16. Mood symptoms		
17. Anxiety symptoms		
18. Psychotic symptoms		
19. Instability		
20. Suicidal ideation and suicide attempts		
21. Homicidal thoughts		
22. Lack of treatment motivation		
23. Pharmacological treatment		
24. Substance abuse		
<i>Subjective ratings</i>		
25. Health		
26. Quality of life		
27. Risk of violence		
<i>Criterion variables</i>		
28. Violent acts		
29. Other criminal acts		
30. Risk situations		

Figure 2. Coding scheme for SORM

The first fourteen items in SORM are dynamic, contextual factors. They are divided into three sections. The first is current interventions, which aims to describe the extent to which the individual has been affected by societal interventions, both of a supportive nature and of a controlling nature. This section covers current interventions that are publicly funded or subsidised, as well as social protection measures and all interventions of a supportive or rehabilitative nature.

The second section, social situation, seeks to describe the outer structure maintained by the individual in their everyday life, in relation to housing, employment, financial situation and day-to-day life.

The third section, social network, deals with the extent to which the individual is part of a social network and to what degree. Family, partner, children, and friends and acquaintances are counted as members of an individual's network.

The following next ten items are dynamic, clinical and individual factors that make up a section that aims to summarise information on the patient's mental status as it becomes apparent over the course of the interview. The rating is carried out partly on the basis of the impression given by the patient during the conversation, and partly through direct questions. Any information from case records and other sources is also taken into consideration. This part of SORM is different from models such as HCR-20 (Webster et al., 1997) in the sense that it offers a sharper picture in terms of clinical factors. Only five of the variables in HCR-20 relate to clinical factors.

SORM also contains three self-ratings where the individual assesses their current life situation. This section aims to give a general picture of how the individual perceives his/her current situation in three different respects. This section is different from the others in the sense that no other information is taken into consideration – only the information given by the individual is included and the interviewer does not judge the result of patient's self-ratings.

Finally, there are three outcome measurements which aim to reach a higher precision or resolution of the information than can be obtained via excerpts from the criminal records registry.

The rating procedure requires some explanation as it is significantly different from previous checklists in the area of violence risk assessment on at least one point. In the first column, the presence (or no presence) of the phenomenon described in the variable description is assessed. If there is no presence of the phenomenon in question, this is noted with a simple 'no'. However, if there is presence, a three (in a few cases two or four) point scale is used to rate the extent of the phenomenon. The rating is aided by a manual in which the items are operationalized (Grann et al., 2000).

When the presence of the various items has been rated, the assessor should also judge how this presence (or no presence) influences the risk of violence in this particular individual. Rating of the risk effect is done by noting whether the presence (or no presence) of the circumstances increase the risk of recidivism for this individual, which is marked by entering a plus (+) in the column. If the presence decrease the risk this is

noted using a minus (-). If there is no perceived effect on the risk a zero is entered (0). This whole procedure builds on the idea that something which may constitute a risk factor for one person is not necessarily a risk factor for a different person in the same or different context. It may even be the case that something that is seen as a risk factor for one person may be seen as a protective factor for another.

In rating the presence of the phenomenon and its effect on the risk, the assessor should supplement the rating with a short description of the circumstances surrounding the presence (or no presence) and a short description of the reasoning behind the rated risk effect. To rationalize the rating procedure an interview guide and a decision tree for coding risk effects were developed (Hiscoke, Haggård, & Grann, 2000).

The idea of SORM is that the model can be used to gather information in a structured way on specific factors that are significant in terms of recidivism of former forensic patients or other forensic mental health groups (for example, former prison inmates or former institutionalised substance abusers or young people in the care of the Swedish National Board of Institutional Care).

SORM has been designed to be used by nurses in psychiatric outpatient care or social workers, welfare officers or non-institutional treatment staff. It takes around two hours to carry out the first time, including the clinical interview and review of the relevant documents (such as the forensic psychiatric evaluation report, case records, and extract from the criminal records registry).

In this way, SORM can offer a standardised measure of post-treatment outcomes for discharged forensic psychiatric patients, and enable us to study where the prior treatment succeeded and where more focus or interventions is needed. A further use of SORM is to make repeated assessments (for example once a week or once a month) of former forensic patients while they live in the community. By doing so, one can more easily detect changes in factors and the perceived risk. In this fashion the SORM is operating as a supervision tool where changes in the perception of violence risk should render variation in interventions.

3.6 STATISTICS

Throughout papers I – IV descriptive statistics was used to summarize and describe subjects and context. In addition to descriptive statistics, statistical analyses were performed to establish the *inter-rater reliability* (Cohen's kappa) of the SORM and to explore the possible *predictive validity* (ROC-analysis) of the SORM (paper I and II). In paper III groups were *compared* with *t*-test when requirements for parametric testing were met, and when not, with Mann-Whitney *U*-test. Also, in paper III a multiple regression analysis was used to investigate the *variance* of the distribution of psychiatric treatment. Paper IV is dominated by descriptive analyses but *differences between groups* regarding BMI and anti-psychotic medication were analyzed using chi-square test.

The question on measurement dependability is usually considered in terms of its reliability (e.g. Gliner, Morgan, & Harmon, 2001) and validity (e.g. Morgan, Gliner, & Harmon, 2001). There are different variants of both measurements depending on the kind of reliability or validity that are to be analyzed.

When using human judges for measuring, the trustworthiness of such measurements must be established. In terms of reliability one element of this is what is usually called inter-rater reliability. Inter-rater reliability is a measure of the extent to which two independent observers agree on a given observation. Several methods can be used in order to obtain a measurement of this. In order to measure inter-rater reliability in this material, Cohen's kappa (Cohen, 1960) was judged to be the most appropriate method. To investigate the inter-rater reliability of the SORM, 20 sit-in interviews with two raters were performed. One of the raters did the interviewing, but both raters independently scored the individual according to the SORM-manual (Grann, et al., 2000). Thereafter, agreement between the two raters was assessed using Cohen's kappa.

In paper I some preliminary data concerning the predictive validity of the SORM is presented. We calculated the predictive validity of SORM as compared to the HCR-20 (Webster et al., 1997) and the PCL-SV (Hart, Cox, & Hare, 1995) by way of ROC-analysis. As mentioned earlier, Mossman (1994) argued that ROC-analysis is the tool of choice to investigate the accuracy of (violence) predictions. ROC-analysis is, according to Mossman (1994), unaffected by low base rates and biases favouring certain prediction outcomes. By plotting the rate of true positives against the rate of false positives for all possible cut-off scores, the ROC-curve gives a visual representation of the trade-off between false positive and false negative predictions. The area under the curve (AUC) is commonly used as a measure of the predictive validity and ranges from 0.0 (perfect negative prediction) via 0.5 (no better than chance) to 1.0 (perfect positive prediction). Soon after Mossman's (1994) introduction of ROC-analysis for analysis of predictive validity it was firmly established as the tool of choice. The attractiveness of the measurement may also be explained by the fact that the construction of the ROC-curve is straightforward and easily attained in most statistical packages such as the SPSS (Philippe, 2005).

In paper II the SORM variables were rank ordered by analysing which of the variables were perceived to exert a risk effect (in any direction [+] or [-]) in most of the cases. When establishing this, the type of presence (coded A, B, or C) was collapsed into a categorical "any" presence.

Multiple regression analysis (e.g. Brace, Kemp, & Snelgar, 2006) was used in paper III to calculate if covariates possibly could explain how the amount of psychiatric treatment was distributed in the sample. In a multiple regression analysis it is possible to identify a set of predictor variables (or independent variables) to provide and estimate of an outcome on a criterion variable (or dependent variable). In our case we explored the predictor variables (amenable to discharge, substance abuse disorder, psychotic disorder, personality disorder, high risk of violence, or security level of the ward) to see whether they predicted the criterion variable (time used for treatment).

The *t*-tests can be used to determine whether two means are significantly different from one another. The use of *t*-tests requires that data is at least on the interval level, is normally distributed, and have equal variances (e.g. Brace, et al., 2006). When appropriate we analysed mean differences with independent *t*-test. Some of the data sets in paper III were normally distributed but in most cases the data sets were skewed. To determine whether two means differed significantly when the data not met the requirements of parametric analyses (such as *t*-test) we used the Mann-Whitney *U*-test.

3.7 ETHICAL CONSIDERATIONS

After WWII and the Nuremberg code followed by the so-called Helsinki declaration, research including humans has been regulated by varyingly binding rules and regulations. In Sweden, the development of ethic codes led to the formation of regional research ethics committees, which assembled voluntarily and were generally not supported in Swedish law or statute (SOU, 1999). In order for Sweden to comply with a recent EU directive¹⁵ the Swedish government in 2004 passed a law regulating research ethics; The Act [2003:460] concerning the Ethical Review of Research involving Humans (The Ethical Review Act).

The Ethical Review Act applies to, among other things, research involving the treatment of sensitive personal information and personal data concerning offences against the law that include crimes, judgements in criminal cases, coercive penal procedural measures or administrative deprivation of liberty. Most of the information that has been collected and compiled into files for the present studies falls into the category of being highly sensitive personal information with a potential of damaging the individuals' integrity. The potential of individual harm due to disclosure of sensitive personal information must be vetted and compared to the potential gain of new knowledge of value and utility for the society.

Regarding the research accounted for in paper I and II the Regional Research Ethics Committee at Karolinska Institutet (# 99-416), providing that the participants gave their informed consent to participate in the research, granted the application for an ethical permit to conduct the research.

Regarding the studies reported in paper III and IV the regional ethical vetting board in Uppsala came to the conclusion that data for the studies were collected as part of quality assurance project at the FPC in Säter and thus not research (with reference to the data collection) as defined in the guidelines for good medical research, issued by the former Medicinska forskningsrådet MFR [The Medical Research Council] - now part of the Swedish Research Council (F.d. Medicinska forskningsrådets nämnd för forskningsetik, 2003).

Also, this was reflected in the government bill preceding the passing of the Ethical Review Act: "In accordance with Section 31 in the Health and Medical Services Act

¹⁵ EU Directive (2001/20/EG) on the approximation of the laws, regulations and administrative provisions of the Member States relating to the implementation of good clinical practice in the conduct of clinical trials on medicinal products for human use.

(1982:763) quality within the Health and Medical services must be systematically and continuously developed and secured. This and similar programs shall not be encompassed by the now proposed law [Ethical Review Act] (Regeringens proposition 2002/03:50 Etikprövning av forskning, 2003, p. 91, my translation). Therefore, the regional ethical vetting board in Uppsala concluded that the vetting procedure was not applicable (Regional ethical vetting board in Uppsala # 2006:36).

Nevertheless, in the studies reported in paper III and IV we made sure that no individual patient can be identified. Datasets that were taken off the premises of the FPC (e.g. extracted from the patient file register and the quality register) was always made anonymous with reference to patient identities. We also believe that publishing the findings in paper III and IV ultimately will work as an impetus to improve services and care provided within forensic psychiatry.

4 RESULTS

4.1 PAPER I

Paper I provides a detailed description of the SORM (see chapter 3) and it also reports on the inter-rater reliability of the SORM. Some factors in the SORM are more complex than others and this is reflected when measuring inter-rater reliability.

Table 1. Kappa values (Cohen's κ) for the factors in SORM

	No/A/B/C/D ¹⁶	NO/YES
Detention and correctional treatment	1.00	1.00
Psychiatric institutional treatment	0.43	1.00
Professional support and contacts	0.79	0.82
Physical healthcare	0.57	0.67
Occupational training and employment services	0.74	0.86
Lack of housing	0.85	0.85
Economy	0.89	0.89
Work	0.83	0.86
Leisure	0.46	0.77
Daily functioning	0.81	1.00
Family	0.60	1.00
Partner	0.91	0.89
Children	0.82	0.90
Friends	0.92	1.00
Lack of insight	0.33	0.50
Mood symptoms	0.72	1.00
Anxiety symptoms	0.16	0.44
Psychotic symptoms	1.00	1.00
Instability	1.00	1.00
Suicidal ideation and suicide attempts	0.85	1.00
Homicidal thoughts	1.00	1.00
Lack of treatment motivation	0.32	0.32
Pharmacological treatment	0.78	1.00
Substance abuse	1.00	1.00
Health	1.00	1.00
Quality of life	1.00	1.00
Risk of violence	1.00	1.00
Violent acts	1.00	1.00
Other criminal acts	0.64	0.64
Risk situations	0.78	1.00
Cohen's κ (mean):	0.77	0.88

¹⁶ No/A/B/C/D refers to 'no presence' or 'presence' in varying degrees

As a whole, the level of inter-rater reliability is satisfactory (Cicchetti & Sparrow, 1981) giving a mean κ value of 0.77 [0.88] and with a median of 0.83 [1.00] and a mode of 1.00 [1.00].¹⁷ The lowest values are for the variables *anxiety symptoms* (Cohen's κ = 0.16 [0.44]) lack of *treatment motivation* (Cohen's κ = 0.32 [0.32]) and *lack of insight* (Cohen's κ = 0.33 [0.50]).

Paper I present the background and development of SORM and do this in two parts. The first part describes the background and arguments in favour of SORM as a risk supervision model, and the second deals with the traditional way of measuring the outcomes of forensic care (or correctional treatment) in terms of violent recidivism, as well as the possibility of using SORM to obtain a more detailed picture of treatment outcome than what is usually the case. Looking at the post-treatment outcomes only in terms of violence recidivism or no violence recidivism is a simplification which may be useful in a research context, but offers limited guidance for decisions in real situations where clinicians are faced with a multi-facet clinical picture to decide upon. It is therefore important for clinicians to have access to information on the details and seriousness of recidivism risk. The difference in consequences between murder and threatening behaviour (which can be deemed a violent crime under the Swedish Penal Code) is clear in a clinical context, but perhaps not as clear in a statistical context. Studies on risk assessments often focus on the probability of some undesired event, but for the clinician the first priority is to make the right judgement of the level or scope of the undesired event and to take appropriate measures to prevent it.

Furthermore, paper I also presents some preliminary data from COMET-2 in order to illustrate the potential of looking at the interplay between presence and no presence of the various factors in SORM. We also looked at how the risk effects of the various factors are assessed over time in individual cases. The data presented covered 74 individuals who were observed for an average of 10 months. Counted in terms of SORM records this amounts to 748 records. Violent incidents were present in 2.7 percent of the records and other criminal acts in 4.5 percent of the records. Risk situations were present in 10.0 percent of the records. Twelve (16.2%) of the 74 individuals had at least one violent incident recorded.

As part of this paper, two SORM factors were used to illustrate the complexity of the interplay between presence and no presence, as well as whether presence or no presence was perceived to be relevant in judging the risk of violent recidivism. The spread of presence (on any of the levels A, B and C condensed to 'presence') and no presence in relation to how the risk effect is perceived for the factors *partner* and *anxiety symptoms* were described in table format. From these tables (see paper I, p. 452) it is evident that the interaction between presence and no presence, as well as the perceived risk effect that this has, is not straightforward or uncomplicated. The explanation for the varying estimations of risk effect in relation to presence and no presence is not so much a lack of relationship between the two measurements or inconsistencies on the part of the assessors. Rather, it is likely to be a result of individual differences between the cases.

¹⁷ The values in square brackets are the values obtained when the alternatives were condensed to 'presence' and 'no presence'.

4.2 PAPER II

Using the factors in SORM, paper II investigated which items clinicians perceived to be important and relevant in terms of the risk of violent recidivism. This study was carried out by compiling SORM assessments done by different constellations of assessors and interviewees as part of COMET 2 (as per October 2002).¹⁸ A total of 103 SORM assessments were used in the study.

By using these 103 SORM assessments to place the constituent factors in rank order according to the emphasis clinicians judged the presence or no presence of each factor, a pattern emerged of which factors the clinicians perceived to be most significant in terms of risk of violent recidivism.

Of the factors included in SORM those perceived to be most important in relation to the risk of violent recidivism were in descending order *lack of insight, lack of treatment motivation, psychiatric institutional treatment, professional support contacts, and substance misuse.*

The factors deemed to be the least important were in descending order *impaired daily functioning, partner, occupational training and employment services, children, and physical health care.*

4.3 PAPER III

Paper III reports on patient activities distributed over a day (24 hours). The purpose of the study reported in paper III was to explore the use of time during a 24-hour time segment in a sample of patients treated at a forensic psychiatric clinic. In total, 122 different activities were registered, and based on these, five main categories were defined. The assignment of activities to the main categories was not driven by any theoretical assumptions, but to create reasonable categories that were mutually exclusive and descriptive in a meaningful way. The five main categories were:

- *Sleep and rest* - made up the time where patients' slept and the rest they had in close conjunction with sleep.
- *Unstructured activities* - consisted of activities that had no relations to psychiatric treatment. Listed here are activities such as listening to the radio and music, watching TV, playing games and reading. A substantial part of the activities categorized as unstructured activities appeared to have the character of passing time.
- *Daily routines* - consisted of recurrent activities that were deemed not to be part of the psychiatric care but viewed normal life activities. Categorized here were; meals, visit to a dentist, smoking, waiting, rest, and activities related to personal hygiene.
- *Structured activities* - were defined as everything that was planned on beforehand (except for activities that could be labelled as passing time). This category included activities on and off the ward, participation in non-treatment

¹⁸ Two years after the start of the COMET-2 data collection process.

programs and education, visits to relatives and authorities, review board, and administrative meetings with staff, physical exercise, and duties and chores at the ward.

- *Treatment* – events that had an obvious link to the psychiatric treatment; pharmacotherapy, psychotherapy, consulting with the psychiatrist, nursing staff, and occupational therapy were included here.

Average numbers of hours for each of the five main categories (as well as the activities) were calculated. The reported activities were distributed over a day (24 hours) as follows:

- *Sleep and rest* – the informants reported an average of 9.07 hours of sleep and rest. It should be noted that rests during the day was not included in this category.
- *Unstructured activities* – A major part of the day, 8.60 hours per day, was reported to consist of activities not planned on beforehand. The most frequent activities (average time of more than four hours) were watching TV, listening to the radio or stereo. Unstructured social activities (conversations and visits) were reported at only three minutes (0.05 hours) each day.
- *Daily routines* – made up 4.42 hours per day. The most prevalent activity in this category was rest, accounting for 50 percent of the daily routines.
- *Structured activities* – amounts to a little more than 90 minutes a day, where physical exercise and sociotherapy were prominent activities.
- *Treatment* – averaged 18.6 minutes each day where psychotherapy was the most time consuming activity. However, the variance was large and only in 25% of the cases did the patients receive any treatment at all during the studied day. This means that for most days, no treatment other than pharmacological treatment took place.

Table 2. Comparison of mean time use for treatment (in hours) of groups over six different conditions

	N	Mean	Std. Dev.
Amenable to discharge:			
Yes	34	.40	.67
No	14	.07	.27
Substance use disorder:			
Yes	21	.26	.61
No	27	.34	.59
Psychotic disorder:			
Yes	29	.49	.70
No	19	.34	.50
Personality disorder:			
Yes	22	.36	.66
No	26	.26	.54
High risk of violence:			
Yes	11	.30	.53
No	37	.31	.62
Security level:			
Maximum	21	.51	.75
Medium	27	.14	.39

To explore if treatment time was specifically allocated to the sickest patients (i.e., those showing most symptoms of a psychiatric disorder) or to those perceived to have the highest risk of re-offending or a propensity to violent behaviour, inferential statistics was used. Because of their known correspondence to the above questions, six individual or administrative features, as shown in table 2, were chosen.

For all characteristics, two groups were created, one with and one without the condition in question. The mean difference in treatment time between the two groups was calculated and compared using the Mann-Whitney *U*-test. The result showed no significant differences between groups in any of the six conditions.

To further explore the possible impact of individual or administrative factors on time differences in treatment, a multiple regression analysis was performed. The dependent variable was treatment time and the same variables as in the above analysis were entered as covariates. Using the backward regression method with the removal criterion of $p = .10$, a significant model emerged where all variables but security level was excluded: $F(1, 46) = 4.76, p = .03$. The model explains seven percent of the variance (Adjusted $R^2 = .07$). For security level the unstandardized B-value was $-.36$ indicating that a patient at the high security level wards on average received 0.36 hours less treatment a day than a patient at the maximum security level (which also can be seen in table 2).

4.4 PAPER IV

Paper IV aims at describing the development and implementation of a local quality register at a forensic psychiatric unit in Sweden. It also aims to describe the utility of such a register in forensic care by demonstrating the case-mix and side-effects of medication.

In several branches of somatic care quality registries has been a well established business over the past several decades. Examples of this are the Swedish National cataract register (Stenevi, Lundström, & Thorburn, 1995) and the Swedish Knee Arthroplasty Register (Knutson et al., 1994). These registries allow monitoring of individual treatment effects, outcome for a group of patients subjected to a specific treatment and how a treatment regime affects sub-groups of patients' differently (Swedish Association of Local Authorities and Regions, 2005). However, this development has not been paralleled in forensic psychiatry, even though the requisites for this have been available for some time. SBU (2005) notes in a review on psychiatric risk assessment methods:

Quality registers are lacking for both general and forensic psychiatry. If risk assessments are to be based on more reliable information and knowledge, such registers must be set up as quickly as possible (SBU, 2005, p. 12).

Given the considerable ethical and monetary costs involved in forensic psychiatric care, the treatment provided should be of high standard, evidence based, and carried out in

the most effective way in order to minimize the costs and harm to the patient. In order to ensure this the practise of forensic psychiatry needs to be monitored.

Most of the data in the local quality register was retrieved using standardized information from the SORM. Items, such as for instance diagnoses, current medication and index crime (i.e. the crime that led to compulsive forensic treatment), were added to the items from the SORM to cover more aspects of the care provided.

Table 3. Items included in the local quality register in addition to items from the SORM

<p>Background information</p> <ul style="list-style-type: none"> • Personal identification number automatically identifies age and sex • Citizenship • Date of registration • Reason for registration • Date of admission • Type of care (legislative grounds) <ul style="list-style-type: none"> Health and Medical Services Act Compulsory Psychiatric Care Act Forensic Psychiatric Care Act 	<p>Background information, contd.</p> <ul style="list-style-type: none"> • Index crime • Previous crime(s) • Diagnoses (DSM IV) • Violence risk assessment <p>Current services and interventions</p> <ul style="list-style-type: none"> • Occupational training and services • Specific interventions <p>Adverse events</p> <ul style="list-style-type: none"> • Absconding
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The formation of the quality register did demonstrate some of the difficulties of implementing a new information system in forensic psychiatric care which were well in line with the obstacles presented elsewhere (Lelliot, 2003). This particularly related to the detail that within the mental health service ‘culture’, systematic data collection is not considered a main concern for front-line staff strained by a diversity of every day demands.

Table 4. Overview over diagnoses (DSM IV; American Psychiatric Association, 2000) in the sample, clinical disorders (axis I), personality disorders (axis II), general medical conditions (axis III), and psychosocial and environmental problems (axis IV).

Diagnoses	n	%
Axis I (only)	72	52.6
Axes I and II	16	11.7
Axes I and II and III	3	2.2
Axes I and II and III and IV	4	2.9
Axes I and III	1	0.7
Axes I and IV	18	13.1
Axes I and III and IV	4	2.9
Axes I and II and IV	13	9.5
Axis IV	0	0.0
Missing	6	4.4
Total	137	100.0

Data is missing on diagnoses for six (4%) of the patients. The primary diagnoses of the patients are shown in table 4. Diagnoses are set by using the DSM-IV diagnostic system, with the most prevalent (19%) clinical disorder among the diagnoses being schizophrenia of a paranoid type (DSM code 295.30). Also, 37 percent of the patients had more than one axis I disorder diagnosed.

Data drawn from the quality register at January 17, 2007, show that of the 137 patients in the quality register, 18 (13.1%) patients are female and 119 (86.9%) are male patients. The mean age of the patients are 35.87 (SD = 11.0) ranging between 18 and 80 years. The patients have been admitted to forensic psychiatric care for a mean time of 5.05 years (SD = 4.7) ranging between 21 days and 24.6 years (SD = 4.76).

The index crimes of the patients are mostly violent crimes ranging from murder, manslaughter and attempts (20 cases), assault (40 cases) and arson (16 cases) via sexual crimes (10 cases) to other violent crimes such as robbery (9 cases) and unlawful threats (16 cases). There are also a few cases of less serious crimes such as trespassing appearing as index crimes in the quality register. A majority (58%) of the patients has been convicted of crimes before the index crime and 41 percent of the patients show a record of having been convicted of violent crime before the index crime.

The quality register also holds self ratings on the patients' perception of their own health, quality of life, and risk of re-offending in violent crime. Although there are a substantial proportion of missing data in the self ratings it is noteworthy that close to 90 percent of the patients that completed the self rating on global health perceives it to be fifty or higher on a VAS-scale ranging from zero to one hundred (where zero indicates a very poor health/quality of life and one hundred indicates the best health/quality of life possible). It is also worth mentioning that a little more than 70 percent of those patients who completed the self ratings on quality of life reported it to be fifty or more on a scale from zero to one hundred. The self ratings were trichotomised (0, 0 - < 50, and 50 or above).

About 40 percent of the patients that completed the self ratings on their perceived risk of committing a violent act (also on a VAS-scale ranging from zero to one hundred, where zero indicates no risk at all and one hundred indicates that the individual is fully convinced that he or she will relapse in violence) rated their risk as zero. A third of the patients rated their risk of violence more than zero but less than fifty, and a quarter of the patients rated their risk of committing a violent act ranging from fifty to one hundred. The self-ratings of risk and the staff-ratings of risk were not significantly correlated ($r_s = .063$, $N = 96$, $p = .541$, two-tailed).

A well known side-effect of antipsychotic medication is weight gain (Allison & Casey, 2001). When patients available for follow-up were divided into two groups (low BMI < 27.4 and high BMI > 27.4) and compared with reference to whether they were administered atypical antipsychotic medication or traditional antipsychotic medication significant difference emerged: $\chi^2 (1, N = 71) = 5.401$, $p = .020$. Thus, of 25 patients not treated with atypical anti-psychotic medication 17 (68%) was found in the low BMI group and 8 (32%) was found in the high BMI group vs. the 46 patients that were

treated with atypical anti-psychotic medication where 18 (39%) was found in the low BMI group and 28 (61%) was found in the high BMI group. However, the association was weak: $\Phi = .276$, thus accounting for a modest 7.6 percent of the variance.

5 DISCUSSION

The overall aim of the present thesis was to explore assessments of risk of violence among mentally disordered violent offenders from a broader than usual perspective. As mentioned in the background, many existing risk assessment schemes operate under the assumption that assessing risk is a single event procedure undertaken to establish a given level of “risk” for future events. Most of the times the assessment is carried out within a legal context, but even if risk assessment sometimes is performed repeatedly, it is still mostly used for legal purposes e.g. level of security, eligible for leaves, discharge etc, and only seldom to measure change or impact of interventions. However, it should be argued that the primary task of risk assessment is not the prediction per se but rather to be a tool in the prevention of future events of violence. Thus, risk assessment should be an integrated part of a risk management strategy. Considering the effort that is put into regular work of assessing and managing risk, it seems as very important to also take the opportunity to evaluate the outcome of the violence preventive interventions taken (i.e., forensic psychiatric care). This in turn, requires not only measures of individual characteristics but also of contextual factors, that have to be considered, measured and evaluated. Hence, this thesis has discussed a model and applications of it that could assist efforts in this direction. Furthermore, an effort to explore the contents of forensic psychiatric care was reported.

In paper I an effort to develop an assessment scheme for the monitoring of violence risk intended for use in outpatient settings of forensic mental health clients who have been discharged into the community is described. Also, arguments for a wider use of systematic models for outcome assessment are presented.

Increased knowledge about contextual risk factors for criminal recidivism can be used to further develop treatment programs and increase integration of different interventions, to the benefit of the rehabilitation of the individual. Structured risk management models are important to the legal safety of the clients in forensic mental health. If risk monitoring is not structured, it is neither transparent nor possible to evaluate or critically challenge. Also, structured risk management models are important for the safety of the public. With the improvement in working models for risk management, including monitoring and managing contextual mediators of violence risk, violent recidivism among forensic mental health clients may be successfully reduced.

The findings in paper II can be concluded with that factors perceived by clinicians to be the most important in terms of the risk of violent recidivism concur with risk factors suggested by the scientific literature to be important for understanding violence risk. It can also be stated that clinicians perceived clinical factors to be more important than factors pertaining to social network and social situation. In addition, individual factors rather than contextual factors were noted as being important. Put slightly different, one can see that the factors clinicians perceived as important were the ones closest to their own everyday experience, knowledge, and responsibility and under their influence to change.

A further finding of the study in paper II was that in the opinion of the clinicians there were only a few “true” risk or protective factors that affect the risk of violence. Thus psychiatric symptoms were more or less always seen as being directly and causally linked to the risk of violent recidivism, while a stressful workplace or financial problems could contribute to mental distress which in turn could exuberate psychiatric symptoms and thereby elevate the risk for violence. Put differently, clinicians only tend to see psychiatric symptoms as genuine risk factors where other circumstances and events only could be regarded as risk or protective factors by their capacity of influencing the expression of psychiatric symptoms.

The ability afforded by SORM to describe the reasoning behind the risk assessment of each individual factor allowed the opportunity to describe the decision-making processes where a factor was perceived as a risk factor or a protection factor. This is particularly interesting because some of the factors can clearly be seen as both, depending on the circumstances. By way of example the factor *friends* is perceived as a protective factor in the event that the friends or acquaintances can be seen to be stable pro-social people. If on the other hand the friends and acquaintances are less appropriate in the form of people who exhibit criminal attitudes and/or behaviour this is then seen as a risk factor. The possibility to indicate whether, and motivate how, a certain factor increased or decreased the risk also provided additional information about how the clinician came to choose a certain rating.

The study in paper III found that interventions aimed at *treating* the specific individual and the specific disorder assumed to have led to a violent crime, on average consumed less than 20 minutes per day.¹⁹ In addition, it was found that on average, only 1 hour and 36 minutes was spent on structured activities in various forms. Summed up, together these activities account for less than two hours per day, activities that could possibly be dedicated to address the specific patient’s needs.

On the other hand, in the category *Sleep and rest*, sleep accounted for 8.70 hours a day which is considerably more than the average sleeping time of 7.5 hours a day reported for the general population (Ferrara & De Gennaro, 2001). If *rest* from the category *Daily routines* is added, time spent on sleep and rest adds up to a total average of 11.28 hours a day. This is relatively consistent with the findings in the study by Farnworth, Nikitin, and Fossey (2004), in which they found that the patients were sleeping and napping at an average of 10.80 hours per day. *Daily routines* was found to account for almost 4.5 hours a day, while almost 9 hours per day was spent on *unstructured activities* (e.g., activities that have the character of passing time).

The data in paper III was drawn from a population of patients at FPC in Säter, Sweden. As elsewhere, this is a heterogeneous population with respect to diagnoses, criminal histories and individual features. The variance in treatment time could possibly reflect that specific subgroups might receive more treatment than others. This was not confirmed by the analyses. Substance use disorders (SUD) for instance, has been shown to be a consistent risk factor of violent and antisocial behaviour (Grann & Fazel, 2004; Soyka, 2000). Co-occurring SUD is known to make matters worse regarding the

¹⁹ Including occupational therapy

illness and the treatment of patients with MMD and this calls for alterations of the treatment regime (Brunette & Mueser, 2006). In the present sample, however, this was not the case. No indications, time- or procedure wise suggested that a SUD diagnosis altered the treatment regime in any way.

This also held true for the group of individuals diagnosed with a psychotic disorder, which is a well-known risk factor of violence. In particular, psychosocial interventions are needed in this group since their level of psychosocial functioning often is lowered by their illness (Brunette & Mueser, 2006). Therefore, for this group, structured activities and active psycho-social training within the forensic psychiatric system is the best way to suppress the elevated risk of violence that the psychotic disorder poses in itself (Hodgins & Muller-Isberner, 2000; Howells, Day, & Thomas-Peter, 2004). This conclusion contrasts sharply to the very low levels of structured activities in psychiatric care as indicated in the present thesis.

Diagnoses of certain personality disorders, in particular antisocial or psychopathic personality disorder, are perhaps the strongest predictor of future violent and antisocial behaviour (Grann, Långström, Tengström, & Kullgren, 1999; Tengström, Hodgins, Grann, Långström, & Kullgren, 2004).²⁰ It has been debated if such a personality disorder could be treated in the sense that it disappears with treatment. There is, however, scientific support for the notion that symptoms of these types of disorders, for example aggressiveness, impulsivity and antisocial attitudes could be altered with specific treatment (Connor et al., 2006, Caldwell, Skeem, Salekin, & Van Rybroek, 2006). In spite of this, no signs could be found that those with a personality disorder received more or any specific treatment for their condition.

Also, it has been shown that risk scores on the HCR-20 is positively related to levels of security in clinical settings (Dernevik, Johansson, & Grann, 2002, Tengström et al., 2006), thus indicating that different levels of treatment or supervision needs can be discriminated by the use of HCR-20 scores. However, in paper III, scores from the HCR-20 risk assessment did not provide any explanation to the various treatment time provided for the patients or the security level.

However perplexing it may seem, a possible explanation of why apparently no differences in psychopathology were considered in providing treatment for the patients may be of a logistic nature. This is to some extent supported by the finding that being on a maximum security ward resulted in more treatment time (weak association). Resources in terms of treatment staff are mostly allocated to specific wards rather than to the individual patient needs, and patients are admitted to the different wards of the clinic based on available space. If the existing resources could be directed to the patients in most need of them without having to consider organizational limitations, our results may have been different.

²⁰ Anti-social personality disorder is listed as a personality disorder in DSM IV, which is not true for psychopathic personality disorder. However, psychopathy as diagnosed with the PCL-R (Hare, 2003) is one of the strongest predictors of violence and anti-social behaviour.

Finally, in paper IV a local quality register was presented. Even though there are some data missing in some of the domains of the quality register (particularly diagnoses) there have by now, for a number of patients, been three instances of data collection. Data collected so far informs us on various descriptive facts of the patients at the FPC. This is particularly appreciated by the hospital administrators for purposes of allocating staff resources and funding. When more data accumulates longitudinally, valid and reliable indications about the quality of treatment and outcomes of the care provided will be available in the register. Moreover, shifts in for example the quality of care, patients' health, or level of assessed risk can be monitored and either work as a reinforcement or lead to appropriate action. A simple and straightforward example of this is the fact that the quality register demonstrates that there is a difference in BMI related to the administration of antipsychotic medication in general – and atypical antipsychotic medication in particular. This should urge the local clinicians to intervene. There is evidence that there are effective methods that can be used for reduction of BMI among patients with serious and persistent mental illness and this has also been demonstrated among first episode psychosis patients (Hoffman et al., 2005; Álvarez-Jiménez et al., 2006).

In addition, and on a more general level, with national quality registries national and international comparisons can be made and make possible the much needed research on the contents and outcomes of forensic psychiatric care (Lindqvist & Skipworth, 2000). In other areas, the implementation of corresponding registers has rendered outlines of care that have led to development. For example, the implementation of Swedish Total Hip Replacement Register has led to an improvement of the quality of hip replacements (Herberts & Malchau, 2000) and has reduced the number of brands used to those that show the best long-term results. Riks Stroke, the national quality register on stroke care, provides opportunities to evaluate stroke units in routine clinical care on a national basis. This has shown that outcome is consistently better in patients treated in a stroke unit than in general wards (Asplund et al., 2003).

As a clinical psychologist working in various contexts in the field of forensic psychiatry I have gained a broad perspective on the conditions surrounding release of forensic patients from forensic care units (and general psychiatry). Moreover, over the past few years I have also met a number of patients, representatives and staff of various hospitals and care units. One of my perceptions has been that the conditions of forensic psychiatric care for this group of people involve a high degree of care and supervision, while when discharged, they oftentimes are left without any form of structured or task-tailored after-care and supervision.

Bearing in mind this group's various types of needs, the *contrast* between the conditions and resources of compulsory detention (under the Forensic Psychiatric Care Act, LRV or the Compulsory Psychiatric Care Act, LPT) and what is offered within the framework of the Health and Medical Services Act (HSL) is by any measure almost extreme. From a psychosocial functioning perspective, one could say that the system require patients upon discharge from LRV to instantly increase their psychosocial functioning by a score of 25-35 points measured by the GAF-scale (Global Assessment of Psychosocial Functioning-scale). In most cases the gap is simply too wide for the individuals in question to successfully bridge. Put even more provocatively, what

society demands of these individuals is the capacity to be discharged into the community, without the option of gradual adjustment, from an environment where they have been institutionalized for many years and where even their visits to the toilet are regulated, to an environment where they are expected to manage everything from tax declarations to stay out of drugs, paying bills, buying food, clothes and everything else, find something meaningful to do during the day, establish relationships with friends, neighbours, social service staff etc. In sum; to be able to manage an ordinary life without much help from society

In the light of this, it becomes clear that the difference between inpatient care and independent living in society is so large that a non-assisted transition is an unreasonable demand to place on the individuals concerned. The conclusion must be that it is the obligation of society to – when possible – facilitate this transition. In order to achieve this, one necessary component is the creation of models of supervision that make it possible to follow-up the individuals after his/her time in inpatient care (or correctional treatment) into the community. Follow-up work is likely to learn staff when a former patient is in a context that elevates risk. Other things that can be learned are about the processes that trigger the former patient to create or ending up in risk elevating contexts.

The attention given to the *Baxstrom* and *Dixon* patients' was one of the motivating factors for the first attempts, during the 1980's, to collect data in a structured way in order to determine which factors were statistically associated with the risk of violent recidivism and the strength of this association (Monahan, 1984, Monahan, 1996). The result of this is that we now know that factors such as substance abuse and level of psychopathy are clearly associated with the risk of violent recidivism (see for example Rice & Harris, 1995; Räsänen et al., 1998; Tengström et al., 2000; Hare et al., 2000; Walters, 2003; Webster & Hucker, 2007). What we know less about is the process of recidivism. Webster (2004), one of the authors of HCR-20 (Webster et al., 1997), is of the firm opinion that what research on risk assessment needs at the moment are case studies that can give pointers as to what the recidivism process looks like. Philipse (2005) also concluded – after replicating the finding that static predictor variables did better than dynamic ones in terms of predictive accuracy – that if it is not the case that risk is static, then dynamic risk variables “is individually determined to such an extent that nomothetic research methods are unsuitable to explain it. In this event case studies and the development of a theory of reoffending are needed” (Philipse, 2005, p. 155). Case studies should also be based upon data collected in a structured way and instruments such as the SORM could be a useful tool in this process. Data has already been gathered for close to one hundred individuals in the COMET-2 project. This material contains ideographic data that can be used to describe individual cases – cases with both positive and negative outcomes. These analyses, however, remain to be done. Thus, the challenge for the future is to identify dynamic risk factors (i.e. factors that are malleable to change) or perhaps constellations of dynamic risk factors that are robust in the sense of having a good predictive validity.

Also, case studies, as the pilot study referred to earlier (Ståhle, 2001) can inform us on other areas of interest such as service users' view (Coffey, 2006) of the care provided. This inspired the study in paper III measuring time use in forensic psychiatry which

confirmed the former patients' view on forensic psychiatry as suffering from a lack of meaningful activities and content in the treatment.

One problem in the context of forensic psychiatric care is that our current legislation is not particularly well-suited to any form of forensic psychiatric care other than compulsory inpatient care. Put more provocatively it can be said that the Forensic Psychiatric Care Act (1991:1129) is only appropriate for sole medical, psychiatric inpatient treatment of what is usually called "florid symptoms" of patients with psychotic disorders and the law leaves plenty of room for measures that may be required for treating acute psychiatric symptoms. However, in forensic psychiatric care the average admission is typically many years which implies the need of treatment regimes able to conduct different forms of interventions other than acute psychiatric treatment and adjustment of neuroleptics. For example, there is of great importance to motivate the patient towards change of criminal attitudes and behaviour. Of equal importance is to address the fact that around 80 percent of all patients in forensic psychiatry do have at least one substance use disorder, when admitted. Naturally, no alcohol and only occasionally, illegal drugs are available at the wards. For most patients with a SUD, their substance use behaviour comes to an instant halt when admitted. It is however wrong to conclude that the substance use disorder also is gone when the behaviour is suppressed due to lack of substances. In many cases their disorders are in remission only and active treatment is needed to learn new coping strategies to avoid future use and relapse prevention is also greatly needed, especially when patient's start having leaves. Today not much of this work is done when appropriate and when the legal requirements are in place, meaning while the court ordered compulsory inpatient treatment is in effect. When discharged from hospital and the forensic psychiatric care, the former patient has no obligation what so ever pertaining his/her treatment, only voluntary treatment can be offered within the general psychiatric system. As obvious, it is a great risk under the current system that in order to insure maximum effect of treatment, patients are held under compulsory treatment longer than necessary periods of time due to lack of after care options.

Much of the care that is seen as important in the work to prevent violent recidivism cannot be given in the context of an inpatient care unit. Effective treatment of substance abuse demands that after the period of compulsory care the patient be exposed to environments where substance abuse is an option. Compliance with pharmacological treatment is tested primarily in an outpatient or primary care context. The extent of the patient's social interaction skills can also be assessed more effectively, and developed, outside an inpatient care environment.

With all due respect for the fact that invasion of privacy should be limited, it is still possible to claim that Swedish legislation may not create the conditions for optimal forensic psychiatric care to the extent that is needed. Given this, it seems plausible that violence risk more effectively could be decreased in a community based treatment setting, where skills could be trained and risk situations learned to be dealt with. This however require a change in the law with the implementation of a new legal instrument allowing conditional release (or a commuted sentence) from closed forensic psychiatric care (custodial sentence or other compulsory care) to community based care, combined with conditions relating to sobriety and compliance with stipulated treatment. This new

legal instrument would be particularly applicable to the minority of psychiatric patients who are treated under LRV but could also be applied to some of those treated under LPT in general psychiatry.

For our overall understanding of the process of recidivism in violent behaviour, we need more information on the interface between mental illness and violent conduct. Research around prediction of infrequent but undesired outcomes has, as I see it, shown that sole prediction can be of some interest and use at a group level and in a research context, but is less applicable in a clinical context. Prediction-focused research however, does show that it is possible to list problem-areas within and around individuals, which have a bearing on their risk of violent recidivism. Without doubt there are opportunities here for future research on what the recidivism process looks like and entails, perhaps even more importantly, what the process looks like where there is no violent recidivism.

As referenced above, there is an urgent need, both in general psychiatry and forensic psychiatry for more reliable information and knowledge that can be gathered via quality registries (SBU, 2005). The need is urgent in order to improve treatment- and cost effectiveness. Today, adolescents in Sweden report psychiatric problems on a scale never seen before (SOU, 2006) and treatment facilities specialised in child psychiatry commonly show year long back logs. This situation is not sustainable and need urgent correction. One way forward is quality registers where feed-back loops on relevant data can be created and filtered back to the treatment system.

Yet more urgent, however, is the reformation of the law on psychiatric (compulsory) care, whether LPT or LRV. This reform is paramount in order to create flexibility within the system and thereby increasing the chance that treatment needs can be met and systematic work can be done to remove or minimize the impact of factors influencing the risk of future violent behaviour.

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