Actuarial Risk Assessment Models: A Review of Critical Issues Related to Violence and Sex-Offender Recidivism Assessments

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Risk assessment in the area of identification of violence has been dichotomized by several prominent researchers as the "clinical approach" versus the "actuarial method". The proponents of the actuarial approach argue for actuarially derived decisions to replace existing clinical practice. The actuarial method requires no clinical input, just a translation of the relevant material from the records to calculate the risk score. A risk appraisal approach based upon a sole actuarial method raises several questions: those of public safety, peer-accepted standards of practice, liability issues, and concordance with evidence-based medicine practice. We conclude that the sole actuarial approach fails to satisfy these critical issues.

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Risk assessments of violence and sex offender recidivism have been dichotomized by several prominent researchers as the "clinical approach" versus the "actuarial method." The proponents of the actuarial approach^{1, 2} have long argued that clinical judgment is bereft of accuracy and produces many more false positives (i.e., incorrect identification of individuals as violent) than the actuarial model. Their argument is that clinical judgment cannot be used to augment predictions based upon actuarial instruments as such an approach leads to the compromise of accuracy. Quinsey *et al.*³ argue for the actuarial approach, through the use of actuarial instruments based on atheoretical factor analysis of variables found in recidivist samples. These authors also argue that actuarially derived decisions should replace existing clinical practice.

One basis of the argument for a sole actuarial approach is the older studies which demonstrated that clinician-based outcomes were less accurate than those based upon empirically derived risk factors.² Dawes *et al.*,² for example, cite a 1966 study revealing that none of 17 comparisons between actuarial and clinical judgment favored clinical judgment. While the actuarial proponents criticize human judgment for its inaccuracy, it should be noted that more recent research in this area has shown that clinicians have been able to predict at moderate levels of accuracy shorter-term risk for assaultive behavior. In a recent study, for example, Hoptman *et al.*⁴ found that forensic psychiatrists were able to correctly pre-

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dict assaultive behavior at a 71 percent rate during the first 12 weeks following hospital admission. This finding not withstanding, the actuarial proponents^{1, 2} have cited the instability of the human element in clinical judgment. They noted, ". . . actuarial procedures, unlike the human judge, always lead to the same conclusion for a given data set" (p. 1671),² whereas in human judgment "random fluctuations" decrease accuracy. These authors noted that clinical judgments are "self-fulfilling prophecies," that clinicians have difficulty separating valid from invalid variables, and that clinical experience is based upon a skewed exposure to an ill population, thereby fostering a tendency to emphasize the abnormal and disregard other information.

The "actuarial only" proponents contend that accurate risk appraisal demands the use of statistically based models where clinician judgment is omitted. Risk appraisal, thereby, would be simplified by the use of an instrument that statistically identifies relevant factors and weights, and calculates a numerical risk score. The score would translate into descriptors of "low," "moderate," or "high" risk.

Variables commonly used to predict general criminal recidivism include a history of juvenile and adult criminal behavior; being young; being unmarried; having criminal associates and antisocial attitudes and values; and psychopathy.⁵ The Violence Risk Appraisal Guide (VRAG),³ an actuarial instrument for the prediction of violent recidivism, considers items such as age, marital status, criminal history, Psychopathy Checklist⁶ score, performance on conditional release, victim injury and gender, history of alcohol problems, psychiatric diagnosis of schizophrenia or a personality disorder, and developmental factors such as elementary school problems and separation from parents prior to age 16.³

A number of actuarial schemes have examined sex offender recidivism. The Sex Offender Risk Assessment Guide (SORAG)³ is based upon a series of statistically identified factors differentiating recidivists from non-recidivists. Recidivism was defined as the number of convictions for sex offenses. Other sex-offender risk scales include the Rapid Risk Assessment of Sex Offender Recidivism (RRASOR),⁷ comprised of four atheoretical factors derived from the results of a factor analysis of seven follow-up studies and one replication sample. Recidivism was defined as detected sex offenses. Hanson and Thornton's Static-99,⁸ an outgrowth of the RRASOR and a British actuarial instrument, has 10 items including those that comprise the RRASOR, as well as the elements of a sex offense against a stranger, non-contact sexual offense, marital status, non-sexual assault, and the number of convictions greater than four. The Minnesota Sex Offender Screening Tool-Revised (MnSost)⁹ is divided into "static" (fixed) and "dynamic" (changeable) variables (e.g., treatment and disciplinary history).

The "actuarial only" approach demands the review of data contained in all available records. The actuarial method requires no clinical input, just a translation of the relevant material from the records to calculate the risk score. Indeed, there is no compelling reason for a clinician to be involved, as the risk assessment can be completed by nonprofessional individuals who have been trained to review charts and record the information.

A risk appraisal approach based upon a sole actuarial method raises several questions that are the focus of this article:

1. Would the omission of clinicians in risk appraisal serve the public safety needs adequately?

2. Would such an approach be considered to fall within peer-accepted standards of practice?

3. Would the use of this approach satisfy judicially defined parameters of risk assessment of violence by the clinician as defined in key landmark cases?

4. Does the approach of actuarial risk assessment, as the sole method, correspond with the methods utilized by other areas of evidence-based medicine?

Omission of Clinicians in Risk Appraisal: Public Safety Needs and the Costs of False Negatives

Since the original Tarasoff¹⁰ ruling, mental health professionals have incurred increased responsibility in the recognition and assessment of violence risk potential in psychiatric patients. Subsequent case law and legislation have charged mental health professionals with the responsibility of identifying potentially violent patients and protecting the public from them. For example, in Macintosh v. Milano,11 the court opined that a therapist was in a special position of knowledge about the patients and that the therapist assumed a high level of responsibility to take measures to protect the identified victim. Several jurisdictions have codified clinician responsibility under mandated reporting for patients who threaten to harm readily identifiable third parties and have instituted involuntary hospitalization measures for individuals who are potentially "dangerous to others."¹² These cases and legislation reaffirm the notion that clinicians are in a special position to make violence risk assessment determinations, and can be held liable for their failure to do so. Whether sole actuarial risk assessments discharge this duty is a critical issue.

The actuarial method emphasizes detected and punished episodes of violence for an assessment of high or even moderate risk for recidivism. Therefore, the use of actuarial instruments alone may fail to detect violence or sex-offender risk in a patient where there is an idiosyncratic factor related to risk, that is not encompassed within the actuarial scheme. For example, a patient suffering from a delusion that redheaded women were out to harm him and who attempted to assault a red-haired woman on a bus would have this delusional belief as a violence risk factor. Even without a prior detected act of killing or injuring a red-headed female, the clinical approach would assess the symptomatic presence of this delusion as a significant risk factor for assaultive behavior. An atheoretical actuarial scheme such as the VRAG³ does not identify delusional beliefs as a risk factor; therefore, it would not place a great weight on this variable. A rigid adherence to actuarial schemes as the only method of violence risk assessment ignores the contribution of idiosyncratic factors to violence potential in individual cases as well as research suggesting that a suspicious frame of mind in psychotic individuals is associated with assaultive potential.^{13, 14} Further, even researchers whose findings do not support that a subset of delusions is linked to violence risk¹⁵ caution that their findings do not "disprove clinical wisdom that holds that persons who have acted violently in the past on the basis of their delusions may well do so again" (p. 571). When there is an association between assaultive behavior and a clear psychiatric symptom, the prudent clinician should consider all relevant clinical information in assessing risk potential, not just those identified in one actuarial scheme.

Case Example

One of the most compelling arguments for not utilizing a sole actuarial measure in evaluating risk potential is the case of Jeffery Dahmer. As is widely known, Dahmer was a Wisconsin serial killer and necrophiliac who had 17 victims by the time of his arrest. Dahmer had no prior history of arrest for vi-

olent or sex offenses. Utilizing the RRASOR actuarial scheme for sex offender recidivism, Dahmer¹⁶ would have received a score of 0 for prior offenses (none prior to the conviction for the 17 killings), a score of 0 for age at release (older than age 25), a score of 1 for having male victims, and a score of 1 for nonrelated victims. The total RRASOR score of 2 would correspond to a 14.2 percent 5-year risk for re-offense and a 21.1 percent 10-year risk for sexual re-offense. By this method. Dahmer at the time of his conviction for the 17 sex killings would fall in a low range of risk for recidivism. The only factors that are positive for risk would be Dahmer's choice of unknown male victims. His absence of prior convictions and his age at the time of arrest as over 25 are RRASOR factors negative for risk. The clinical data, by contrast, tell another story. In the sanity phase of the trial, psychiatric and psychological experts testified that Dahmer had a multiple-decade necrophiliac obsession that was resistant to his attempts to control sexual deviancy (e.g., via attempts to substitute mannequins for corpses).¹⁶

As is obvious, a clinically salient issue for Dahmer was not represented in the actuarial tool: that of preoccupation with sexual deviance as well as behavior not previously detected and subject to legal sanction. This raises the question of sole reliance on an actuarial instrument for sex-offender risk assessment when one of the most infamous and dangerous sex-offenders in recent history is assessed as a low risk. Therefore, the scale's constructor, Hanson,⁷ cautions against the use of the instrument as the sole method of risk appraisal, and recommends adjustment of actuarially derived base rates for offense with other empirically derived risk factors not included in the scheme. The omission of critical clinical variables such as diagnoses and behavior is an issue that remains a relevant criticism of this tool and the sole actuarial method in general. The non-consideration of such essential predictive variables in risk appraisal approaches may only be because of the difficulty in quantifying them. Moreover, the expression of risk in numerical form (e.g., 39% risk for a 10-year period, as in the VRAG³ and RRASOR⁷) may give the appearance of a greater degree of accuracy and precision than in fact exists.¹⁷ It is evident that the use of actuarial instruments in isolation does not provide adequate identification of individuals who may be a risk to public safety.

Risk Appraisal Instruments Only: Is This a Peer-Accepted Approach?

The argument raised by Quinsey et al.³ and Grove and Meehl¹ for an actuarial scheme as the sole approach is based on their opinion that clinical judgment reduces the accuracy of the instrument. The principal argument of these researchers¹⁻³ is that actuarial instruments are data-driven and based upon objective information related to risk, as opposed to their contention that clinical opinion is not datadriven but based upon subjective factors.¹⁸ The issue that emerges is the extent to which this polarized approach of the actuarial score as the sole assessment of risk can be considered as a "peer-accepted" method. This is of relevance in forensic contexts where expert testimony is evaluated by judicial decision makers using standards set forth in Daubert¹⁹ and Frye,²⁰ where there is a consideration and reliance on peer-accepted method. The U.S. Supreme Court has, in relatively recent cases, established an acceptable standard of practice for identifying and treating potentially violent patients. The courts have concluded generally that a thorough, comprehensive assessment of the patient, including history, constitutes an appropriate and defensible standard of practice.^{21, 22}

Stone,²³ in discussing a recent and controversial malpractice case, noted that forensic psychiatrists have set procedures for the evaluation of violence, and a failure to adhere to those procedures can result in a negligent practice claim against a clinician, even if the purported errors were procedural rather than substantive. As a procedure, sole reliance on actuarial instruments is unlikely to fall under the prescribed standard of forensic practice and potentially can result in successful litigation against the clinician. Professional associations have formulated guidelines which direct the standard of practice.

While the American Psychiatric Association²⁴ and American Psychological Association²⁵ guidelines are designed for the ethical practice of psychiatry and psychology, specialty guidelines have been formulated for forensic practitioners. The American Academy of Psychiatry and Law's "Ethical Guidelines for the Practice of Forensic Psychiatry"²⁶ endorses that psychiatrists base their opinions, reports, and testimony on all the data available to them. Psychiatric standards for risk assessment include a focus on mental status examination and diagnostic factors, as well as historical variables such as past history of violence and an identification of exacerbating and mitigating factors of risk.^{27, 28} The "Specialty Guidelines for Forensic Psychologists"29 states clearly that "the forensic psychologist maintains professional integrity by examining the issue at hand from all reasonable perspectives, actively seeking information that will differentially test plausible rival hypotheses"30 (p. 661). Thus, with respect to all of the professional associations' general and specialty ethical guidelines, limiting one's scope of inquiry to a single actuarial measure would not be construed as a prudent or acceptable practice for the basis of a clinical-forensic opinion on violence. Additionally, guidelines related to psychological testing compel clinicians to use these tools in ways they were intended and for subjects that are relevant to the groups upon which the tool was "normed." Psychologists are urged to cautiously interpret results of tests and to temper opinions with the specific factors unique to the individual being evaluated.^{30, 31}

The rigid use of actuarial assessment as the sole method of risk assessment does not represent the general view of leading forensic researchers. Several prominent forensic practitioners have developed a comprehensive view of risk assessment employing the benefits of actuarially derived methods, while recognizing the necessity of considering behavior contextually. Heilbrun³² has noted that risk appraisal can be divided into two approaches. One, called the prediction model, focuses on the probability of a specified event's occurrence within a given future time period. The other, called the control model, relates to identifying the factors that reduce the risk of an event (e.g., violent act) occurring. The nature of risk factors in a prediction model maximizes predictive accuracy and can be based upon static (i.e., not changeable, such as number of prior arrests) or dynamic (i.e., changeable via intervention or other influences, such as participation in treatment) factors. The control model would target such dynamic factors to manage and reduce the risk for an event's occurrence, such as violent or sexual assault.

Heilbrun³² advocates matching forensic assessments to legal demands. He suggests that the prediction model is appropriate for legal decision-making in which a single decision must be formed by the most accurate available information and where there is no continued jurisdiction (e.g., completion of commitment as a sexual predator). However, where there is ongoing legal decision-making and jurisdiction, a control model may be more appropriate (e.g., continued NGRI commitments, adult and juvenile probation decisions, restoration of competence to stand trial, continued sexual predator commitments). Thus, it is argued that the practice of risk assessment should be sensitive to the legal issue.

Other forensic practitioners have developed a structured approach to integrating clinical judgment into risk assessments.^{33, 34} Hanson and Thornton,⁸ the developers of the Static-99 sex-offender risk scale, have cautioned that evaluators need to consider the unique features of the individual which limit the applicability of the scale in making their assessments. They advocate a method beginning with a risk prediction provided by an actuarial risk scale, and then considering empirically validated dynamic risk factors and adjusting the risk predictions up or down accordingly. Sex- offender risk scales that include an assessment of dynamic factors (e.g., Structured Risk Assessment and others)³⁵⁻³⁷ require the use of clinical judgment in weighting the aggravating and protective factors related to risk (e.g., sexual interest; distorted attitudes about sexual deviance, emotional functioning, and self-management. Other researchers³⁶ are in the process of developing systems that examine changeable risk factors such as the role of intimacy deficits, negative social influences, emotional instability, substance abuse problems, and lack of compliance with community supervision to enhance risk prediction. The methodology is intended to begin with a risk level based upon a static calculation (e.g., score based on an actuarial instrument such as the Static-99)⁸ and amended based upon the risk level as calculated using the dynamic factors. Thornton's³⁷ work in the United Kingdom, though preliminary, has found that an integrated approach to sexoffender risk assessment improves predictive accuracy over the actuarial approach alone. It is the unguided clinical method, when compared to actuarial risk assessment, which has low predictive accuracy for sex-offender recidivism.³⁸ However, when clinical judgment is guided by researchidentified risk factors, the predictive accuracy for risk is much improved.^{4, 38}

Actuarial Risk Apprasial: Does It Meet Judicially Defined Parameters of Clinicians' Risk Assessment of Violence as Identified in Key Landmark Cases?

Courts have ruled and clarified the clinician's responsibility for their patients' violent behavior. The following cases are used to illustrate judicial decision making regarding the parameters of risk assessment made by clinicians.

Petersen v. Washington

In *Petersen*,³⁹ the clinician was held responsible for the violent acts of a released psychiatric patient because of a failure to conduct an adequate risk assessment. The patient was known by the mental health hospital staff to be a chronic PCP abuser, under court-mandated treatment with a history of bizarre delusional behavior. Five days after release from the hospital and while under the influence of drugs, the patient struck the car of Petersen. The history contained references that the patient had been noncompliant with psychiatric medications. At the time of the patient's release, he was described as fully recovered from a drug-related schizophrenic reaction.

The Petersen court³⁹ relied on the standard of clinicians taking "reasonable precautions" and cited the patient's mental illness, drug addiction and history of medication noncompliance as risk factors which should have alerted the clinician to seek an extension of involuntary commitment. The question raised is whether the administration of an actuarial risk scheme such as the VRAG and its score alone would be sufficient to alert the clinician about a patient's risk and thus impel the clinician to take "reasonable precautions." Additionally, relying solely on the VRAG would not assist the clinician in understanding the unique relevant factors that underlie and produce violence in this specific patient, namely, the interaction between medication noncompliance, sexually related injurious behavior to self and others, and the dual diagnosis of psychosis and severe drug addiction.

Perreira v. State of Colorado

In this case,⁴⁰ the spouse of a slain police officer brought suit against a state mental hospital and psychiatrist for the release of a psychiatric patient who killed her husband. The patient committed this act four months after discharge from the hospital. The patient had a diagnosis of paranoid schizophrenia. At the time of a second and third hospital admission that year, he complained that the police were controlling his thoughts, burning his feet and ears with a radiation gun, interfering with his mail, and causing problems with his car. He was involuntarily hospitalized for almost two months, during which time he refused medications; the staff did not obtain a court order for involuntary medication. At the time of release, the patient refused to take antipsychotic medications.

The court ruled that the psychiatrist had a legal duty to exercise due care when considering the release of a mentally ill and dangerous patient, and to consider the public safety. The court defined the exercise of "reasonable care" as, "If a patient manifests what might appear to be violent propensities, but the psychiatrist conducts a thorough evaluation of the patient's mental condition and violence and then makes a good faith decision, in accordance with accepted psychiatric practices, that the patient does not have a propensity for violence and releases the patient, the psychiatrist will have complied with his legal responsibility" (p. 1218).⁴⁰

While Quinsey et al.³ note that "[a]ctuarial methods are too good and clinical judgments too poor to risk contaminating the former with the latter." (p.171), the Perriera court⁴⁰ judgment would suggest that this approach would fall below the accepted standard of care. The Perriera court⁴⁰ cited an integrative approach that is individually based; that is, balancing the "various therapeutic conditions" concerning the patient, and making a "good faith decision in accordance with accepted psychiatric practices." There is no indication either by the American Psychiatric Association's ethical standards of practice²⁴ or by that of the American Psychological Association²⁵ that the use of an actuarial instrument as the sole assessment tool would meet the threshold for an accepted practice.

In re Dennis Darol Linehan

The Linehan⁴¹ case involved the civil commitment of the appellant under Minnesota's Sexually Dangerous Persons Act. Linehan, a 54-year-old male, had a history that was notable for sexually deviant behavior beginning at age 15 (pulling down the shorts of a 4-year-old girl) which resulted in reform school placement. Subsequently, at age 19 he had intercourse with a 13-year-old girl; at age 22 he and a friend beat and raped a victim; at age 23, after window-peeping, he killed a 14-year-old girl he was attempting to sexually assault, and prior to his arrest one month later, he committed two sexual assaults, one being a rape. Linehan⁴¹ was sentenced to prison, and while there in 1975 he escaped and assaulted a 12-year-old in Michigan for which he was convicted of assault with intent to commit criminal sexual misconduct. Upon the enactment of the Minnesota Sexually Dangerous Persons Act in 1995, the state moved to civilly commit Linehan, and the matter was taken to the state's district, appellate, and Supreme Court levels. The Minnesota Supreme Court^{41, 42} ruling in *Linehan* addressed the issue of actuarial risk assessment in sexually violent predator civil commitments.

Linehan argued that "actuarial methods of prediction founded on base rate recidivism statistics are more accurate than 'clinical' predictions, and therefore violence predictions must rely on the former" (p. 189). A clinical psychologist for the defense testified at Linehan's initial commitment hearing that "multi-factor 'clinical' predictions based on an examiner's experience and judgment are generally less accurate than 'actuarial' predictions founded on welltailored base rate statistics" (p. 177). In a review hearing of the commitment, Linehan submitted evidence by a well-known actuarial proponent who testified as to the accuracy of clinical versus actuarial predictions. This psychologist used a hypothetical base rate of 18 percent from a study of child molester recidivism, and indicated that even if Linehan were to be in that group of re-offending child molesters, the base rate for recidivism was low, and clinical predictive accuracy would thereby also be low.⁴¹ The base-rate of 18 percent by actuarial estimation of Linehan's risk for sex offending was used to argue that the level of risk was low, and thereby did not rise to the higher legislative threshold of "likely to" engage in harmful sexual conduct in the future.

The Minnesota Supreme Court rejected Linehan's argument stating that he did not provide any statutory or precedential support that actuarial methods or base rates should be the sole method employed. Moreover, the Supreme Court noted that the district court did not rely only on clinical prediction, but that the district court analyzed both base rate statistics and case-specific facts. Indeed, the Court approved the application of guidelines for violence prediction used in an earlier Linehan case; namely, a multifactor analysis using six factors: relevant demographic characteristics; history of violent behavior; base rate statistics for violent behavior among individuals of this person's background; sources of stress in the environment; similarity of present and future contexts to those in which violence has been used in the past; and record of sex therapy. The Court noted, "contrary to Linehan's assertions, violence prediction under the SVP Act, is not simply a matter for statisticians" (p. 91).

In re the Commitment of Peter Kienitz

The Kienitz case⁴³ involved the civil commitment of the appellant under Wisconsin's sexually violent person law. Kienitz had a long history of sexual violence beginning with a 1963 conviction of indecent behavior with a child, followed by a 1966 probation violation related to molesting young boys that resulted in a prison sentence. He was released from prison in 1973; in November of 1977, he was found tying up young boys and fondling their genitals. After a conviction for first degree sexual assault, he was committed to the Department of Health Services and placed on probation. In September of 1980, he was arrested for assaulting two 13-year-old boys in a park by tying them to a tree, pulling their shorts over their heads, and fondling their genitals. He was sentenced to state prison and ordered into treatment at Mendota Mental Health Institute. Kienitz was conditionally released in March of 1988, but the release was revoked due to seven instances of parole violations.

The issue at trial, with testimony taken from both expert and lay witnesses, was whether there was a substantial probability that Kienitz would engage in future acts of sexual violence. Both the state and defense experts agreed that Kienitz suffered from the mental disorder pedophilia. The defense expert argued that Kienitz had a 48 percent chance of recidivism in a 10-year period, and made this determination on the basis of an actuarial method, the VRAG. The relevance of this percentage is that it could be argued that 48 percent risk does not meet the "likely to" legislative threshold for risk interpreted by some to mean anything over 50 percent. Lay witnesses testified that they had observed Kienitz having contact with young children while on probation, that he had photos and the phone numbers of children among his possessions, and that he carried rope and a knife in his backpack. Additionally, a nurse testified that Kienitz received pornographic pictures of children in

the mail while at the Mendota Mental Health Institute in 1994 and attempted to sell computer diskettes to children in 1995. One of the issues raised on appeal was whether sufficient evidence, based on expert testimony, was presented to support "substantial probability" that Kienitz would engage in future acts of sexual violence.

Addressing this issue, the Wisconsin Supreme Court concurred with the lower court's assessment that it was not obliged to accept the weight assigned by the defense expert to the VRAG score, and "rely solely on that score as a measure of probability" (p. 717). Rather, the trier of fact accepts the testimony it finds credible. The Wisconsin Court noted and concurred with the lower court's weighting of significant factors such as Kienitz's 25-year criminal history with little improvement despite incarceration and treatment, his deliberate violations of the conditions of parole, his denial that he needs treatment, and his procurement of materials about children. Based on this evidence, the Wisconsin Supreme Court wrote that the circuit court was entitled to opine that Klenitz was more likely than not to re-offend and that he was a sexually violent predator beyond a reasonable doubt. The Wisconsin Supreme Court's ruling in this case addressed the issue of the reasonableness of weighing factors idiosyncratic to the individual which are relevant to his risk for re-offense, and not of adhering rigidly to a numerical value derived from an actuarial risk instrument.

Actuarial Risk Assessment As the Sole Method: Correspondence with Other Areas of Evidence-Based Medicine

There has been an increasing recognition of discordance between the clinical practice of medicine and research information. A practice and process of "evidence-based medicine" has been developed in an attempt to inform clinicians about current research findings. The practice of evidence-based medicine involves the integration of individual clinical expertise with available information from systematic research, recognizing that no individual patient is truly representative of a research cohort. As noted by Sackett *et al.*,⁴⁴ evidence-based medicine is not a "cookbook" approach and requires a method integrating "the best external evidence with individual clinical expertise and patient choice" (p. 3).

Braitman and Davidkoff,⁴⁵ using a study of prognosis in skin cancer patients, provide a method for appraising a model for the prediction of clinical states in individual patients on the basis of actuarial risk models in medicine. These authors discussed a reasoning process clinicians should consider in utilizing risk studies predicting clinical outcome. Seven criteria were listed by Braitman and Davidkoff,45 five of which concerned the applicability of the model to the specific patient. These seven criteria are examined in detail below with regard to the issue of risk assessments. Braitman and Davidkoff⁴⁵ suggest that for a specific patient, one negative response to any of these seven questions should disqualify use of the model for that patient. The careful approach demonstrated in this oncology study underscores the limitations of the actuarial methods, which do not pass the critical questions suggested by Braitman and Davidkoff.45 This is of significant interest given the methodological limitations in the actuarial risk studies. In applying Braitman and Davidkoff's⁴⁵ seven questions to violence and sex-offender risk assessment actuarial tools, we also find significant shortcomings. Would the specific patient have been eligible to participate in the study?

The population base for the actuarial models is not discussed as a limitation in the application and generalizability of the model. For example, the VRAG and SORAG³ actuarial tools are based largely upon a restricted sample (e.g., Canadian prisoners or psychiatric patients). This issue points to a related criticism of actuarial models, viz, that the patients entered in the study may not be representative of the population, or they may not be representative of the individual to whom the model is being applied.⁴⁶ The RRASOR⁷ and Static-99⁸ risk factors were identified on the basis of a meta-analytic study³⁸ of 61 data sets from 1943 to 1995 and spanning several countries (Western Europe, Canada, United States, and others). The methodology in the compilation of these data sets varies across a number of issues. There was not uniform consensus in the definition of outcome; for example, whether sex-offender recidivism referred to arrest or conviction. The legal definition of sex crimes may have changed through the years from 1943 to 1995, as well as varied by region within a country and/or nations. Also, there were differences in law enforcement and judicial practices regarding the detection and punishment of sex crimes. A further problem is that evidence-based methods would, in all likelihood, have excluded many of the studies due to methodological shortcomings. Therefore, the applicability of the factor analysis from this metaanalytic study to the individual patient is limited by the extent to which that individual is represented in the actuarial developmental and validation samples. For example, a clinician in the United States evaluating an ethnic gang member from the inner city, who was raised in juvenile hall and has drug-related psychosis and rape offenses, may have problems rendering predictions about risk on the basis of a factoranalytic study where such an individual was not represented in the normative base. As is evident in this example, the response to Braitman and Davidkoff's⁴⁵ first question would have to be negative. Does the outcome in the study reflect the clinical outcome to be predicted?

Študies used to make survival prognosis have specific and comprehensively measured findings; for example, the number of people alive at ten years, in the study group, after removal of a melanoma in the study group.⁴⁷ Outcome variables in violence and sex-offender recidivism are not comprehensively measured. That is, every instance of the actual behavior is not counted; rather, the focus is on "caught" behaviors. There is general agreement that instances of detected violent or sex offenses underestimate the true rate of recidivism,^{48, 49} thereby inherently raising the risk of false negatives and seriously underestimating the risk of a given individual. Are all the variables available for the patient on whom the model is to be used?

Many of the actuarial models require information that may not be relevant to the patient's risk, such as living with biological parents to the age of sixteen for an individual who was raised in an extended versus nuclear family environment. Another problem may be that the documentation may not be available to rate a risk factor; for example, the Psychopathy Checklist-Revised,⁶ which requires juvenile delinquency history. This is a minor criticism of the actuarial application as the method may be useful in instances where the specific information targeted by the tool could be obtained. Will this outcome probability assist inpatient care?

The actuarial models are limited primarily to "static" or unchangeable variables. Additionally, the models are not targeted toward assessing patient treatment potential or management. The actuarial models were derived for the purpose of making absolute predictions of the behavior reoccurring in a specific time period. Such models do not emphasize the measurement of individual change based upon treatment intervention, or placement in community programs which might mitigate risk (e.g., placement in a residential drug program for the individual with drug-related violence). Is the degree of uncertainty in the probability estimate, (i.e., confidence intervals) small enough for it to be useful in making a prediction?

Confidence intervals are not typically specified in the actuarial violence or sex offender risk models. Rather, the scores give an estimate of the probability of re-offense over a specified period of time. Therefore, this element would be difficult to assess with most of the actuarial models in violence and sexoffender risk assessment. There has been an attempt by some⁵⁰ to develop actuarial tables, but these are limited by small cell numbers and lack of external cross-validation. How well does the model fit the data; i.e., what is the relationship between the model's estimate and the actual data for the subjects in the study?

This element is difficult to assess in sex offender and violence risk assessment due to the ambiguity of outcome. The actual study data are often flawed because the measurement of violence or sex-offense recidivism may have to be based upon estimates and not actual findings. In the RRASOR,⁷ the risk numbers for 10-year sexual recidivism risk are estimated at the highest risk range and not based upon actual individuals; i.e., no individuals fell in the highest risk range in the RRASOR developmental or cross-validated samples. Additionally, there is the thorny issue of defining populations as sexual or violent "recidivists" versus "non-recidivists" when there is insufficient data to conclusively state, as there would be in mortality rates, that there is no overlap between the populations. That is, for most violence and sex-offender recidivism scales, outcome is based upon criminal databases or "caught behaviors." Significant differences in rates of occurrence may exist between a person's actual behavior and the caught behaviors. That is, a paroled child molester who has no subsequent rearrest for sex offenses, but who has sex with "child prostitutes," would fall in the "non-recidivist" group, despite having manifested an entrenched pattern of pedophilia. The issue becomes one of definition rather than actual behavior. The actuarial models based on such subjective sampling are thereby inherently flawed. Is the model more accurate than

chance and traditional methods, and does the model have follow-up data?

The actuarial risk model's utility in violence and sex-offender risk appraisal is more accurate for subjects who are highly consistent with the normative sample. As noted in our examples within the text of this article, there are instances where there is reduced applicability of the actuarial model when the individual's risk factors do not reflect the study population and are not addressed in the actuarial scheme. The predictive accuracy of the tool is directly impacted by the actual risk factors for an individual. This is the difference between what is called an "idiographic" approach and a "nomothetic" one. The idiographic approach relies upon person-specific factors for risk, while the nomothetic approach utilizes large group norms. The translation of a nomothetic (actuarial score) to the idiographic (application to the individual) is where a combined approach may be superior to sole reliance on one method versus the other. In psychological assessment, for example, normative data are the starting point for interpretation of findings in personality tests such as the MMPI-2 or neuropsychological measures. As Stricker and Gold³¹ noted recently, "It is the clinician's responsibility to use the numbers and data as a starting point for describing the unique individual" (p. 241). These authors recommend a "configurational integrative model" of assessment where norms from group data are adjusted to the individual. This approach represents a more complex assessment in which there is not sole reliance upon one or another method.

Conclusions

The courts have clearly outlined clinicians' responsibility for identification of factors that predict sexual and general violence. Clinicians have a legal and ethical responsibility to identify and understand the specific operative factors that place their clients at risk for violence. The onus, therefore, is upon clinicians and researchers to develop techniques to assess accurately and reliably individuals' risk of violence. While researchers have contributed significantly to the identification of some general factors highly associated with violent recidivism, the responsibility of the clinician is to understand how these factors are represented in the specific patient. The best strategies are based upon a solid theoretical framework, clinical acumen and actuarial data. Risk appraisal should be based upon guided clinical judgment by forensically trained clinicians.

Utilization of a single model, based exclusively on group norms, is tantamount to predicting that every individual is best described by a mean. Clearly this is both clinically and statistically incorrect. Leading researchers and theoreticians have identified and advocated a heteromethod³¹ for understanding the relevant prediction factors for any future event. Such factors would include mitigating and aggravating risk factors. This approach is widely used in medicine where the relevance of the patient's unique individual strengths and weaknesses is considered when determining treatment options and likely outcome. Evidence-based medicine, in particular, is based upon the notion that individual patients typically differ from study samples in various ways and that clinical judgment must be utilized to determine how these differences impact the prognosis.44 These models do not support the "actuarial only" advocates.^{1, 3}

Assessment for any purpose is a complex enterprise requiring understanding of research-based assessment tools and a solid theoretical framework that guides acquisition of relevant individual (clinical) information. Neither clinical judgment unguided by the research literature nor the use of a sole actuarial model would meet judicially determined or professional standards of practice. Integrating these data is the acceptable standard of practice and underlies every cautionary caveat inscribed in computer-generated assessment tools. Each caveat underscores the clinician's responsibility to utilize the individual's unique factors to interpret the results of a given test. This same caution must be applied to actuarial tools.

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