Assessing Violence Risk in Psychiatric Inpatients: Useful Tools
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Psychiatrists who work in inpatient units are faced with daily decisions about predicting which patients will be violent, both in the hospital and after discharge. These decisions are often made using unstructured clinical judgment based on the clinician's experience and knowledge of the literature. How long such judgment stays the standard of care remains to be seen, because psychiatric researchers have produced a number of assessment and management tools to improve the accuracy and use of violence risk assessment. This article briefly outlines 3 tools: the Brøset Violence Checklist (BVC), the Classification of Violence Risk (COVR), and the Historical Clinical Risk-20 (HCR-20).

Background
Violence in hospital psychiatric units is a terrifyingly well-known worldwide reality. In addition to the physical danger that violent inpatients present to themselves and to hospital staff, their actions are frightening to all involved and at the very least, significantly disrupt the therapeutic environment. At worst, violent behavior can result in serious injury or death.

This is hardly news to those who work in inpatient mental health units; more than 90% of physicians and nurses working in some European psychiatric hospitals reported having been victims of violent patients during their careers.1 Psychiatric nurses are at particular risk, as demonstrated by the findings of a Canadian study, which showed they have the highest number of injuries caused by physical abuse reported per 100,000 work hours when compared with the rest of the nursing staff in a large hospital.2

Keeping this in mind, the prediction of violent behavior in psychiatric inpatients with the goal of preventing violent incidents becomes an obviously important topic of study. Several studies in this area note the difficulty of finding informative, dynamic data about patients and highlight the need for an efficient, standardized tool that can predict imminent violence in these units.3,4 A tool that uses dynamic data is particularly important, given that demographic and historical information does not change for many inpatients with violent histories who frequent psychiatric units and thus has little predictive power above a baseline awareness of danger. In addition to protecting staff by potentially alerting members to an escalating threat, consistent use of a standardized tool may protect "repeat offender" patients from unnecessary physical and chemical restraint by hyperaware staff who may be too quick to instinctually use these interventions.

Brøset Violence Checklist
Using data from a large inpatient study5 that empirically measured 55 behaviors exhibited by patients 24 hours before a violent incident, Roger Almvik and Phil Woods6 created the BVC as a tool that can be used by hospital staff (nurses in particular) to predict an acute episode of violence among psychiatric inpatients.

The BVC addresses the 6 most common behaviors exhibited by inpatients in the aforementioned study: confusion, irritability, boisterousness, verbal and physical threats, and attacking objects. Each attribute is scored as present (1) or absent (0), with the resulting sum between 1 and 6 corresponding to a degree of risk. For patients with baseline presence of nonviolent attributes (e.g., irritability), a score of 1 is given for a change of that attribute to above baseline.

Almvik and Woods charged their nursing staff with the task of using the BVC to rate all 109 consecutive
patients who were admitted over a 2-month period to their inpatient units. Each patient was rated once toward the beginning of each nursing shift for the first day of admission plus 3 consecutive days, as applicable. Initial results were encouraging. Each of the 6 examined attributes was significantly correlated with the group of 12 patients displaying violent behavior. Further statistical examination showed a BVC score above 2 to be both sensitive (74% accuracy in predicting a violent event) and specific (91% accuracy at predicting a nonviolent patient with a score of 1 or less), with a subsequent study showing similar results and good interrater reliability in rating each attribute, as well as for the BVC as a whole.7

Receiver-operating characteristic analysis, another method of analyzing predictive validity, demonstrated good predictive ability with an area under the curve of 0.82 (95% confidence interval [CI], 0.75 - 0.89; \( P < .0001 \)). Indeed, a recent study showed that a score of 0 correctly predicted nonviolence 99.2% of the time.8 It should be kept in mind that the number of false positives (ie, the number of times a patient scored 2 or more but did not subsequently engage in violence) is likely artificially high, because scores indicative of some violence risk necessarily triggered a response by staff to prevent a violent event, for obvious ethical reasons.

Because the BVC was tested in psychiatric hospitals, it is likely to be generally applicable to inpatients, despite differences in diagnoses or comorbidities. The BVC relies on common, universal human behaviors that are often displayed before a violent episode. The BVC includes a quick, fluid assessment of a patient’s clinical course over a brief stay. To its advantage, it is easily understood by nursing staff, who are all too familiar with the affective vicissitudes of the psychiatric inpatient population and the warning signs of impending violence, but who may benefit from a structured assessment tool. In addition, because it takes less than 5 minutes to administer and does not require difficult and time-consuming history taking, it may be easily implemented as part of routine shift work.

From a forensic point of view, it is easy to see how documentation of subjective and objective data leading to an intervention by staff of a potentially violent patient may be protective in case of a negative outcome. Likewise, a structured tool likely triggers less invasive interventions from staff. Rather than proactively using physical and chemical restraints based on a subjective assessment—which may be biased by other factors—the BVC gives wary staff a more concrete threshold for an intervention.

The universality of the BVC and its predictive power is supported by a larger prospective study with 219 patients conducted in Germany. The study found similar predictive efficacy, although it found a cut-off score of 3 as a more appropriate threshold for triggering interventions, because this score was felt to eliminate more false positives.9 Further work applying the BVC in psychiatric, forensic, and geriatric settings is ongoing and addresses the use of the BVC in the United States, Canada, Europe, and Australia (P. Woods and R. Almvik, personal communication).

The BVC is available but copyrighted. Drs Woods and Almvik can e-mail a copy to those interested, but ask to be kept up-to-date on its use and results. There is no cost, and they can provide training if needed. They usually send out materials that could be used for training as well. (The authors can be reached at phil.woods@usask.ca or http://www.psychiatrictimes.com/roger.almvik@ntnu.no.)

Classification of Violence Risk
The COVR is an actuarial tool administered via computer that is designed to assist clinical decision makers who must weigh the parameters of risk in hospitalized patients with psychiatric illness who are being considered for discharge.10 The COVR is easy to use and quickly administered, taking approximately 10 minutes of chart review, followed by a 10-minute interview with the patient. It assesses a number of risk factors (personal, historical, contextual, and clinical) associated with violence in patients after discharge from civil psychiatric settings. Depending on how the patient answers particular questions, specific follow-up questions are generated. A unique pattern of risk factors emerges for each person assessed, and every factor is weighted; this produces a summary score. This method of assessment is called a "classification tree approach." Every patient who is assessed generates scores across multiple classification trees such that an individual who scores as high risk on many classification trees is more likely to be violent than a patient who does not.

After information is gathered about the specific incident that led to a patient’s admission to the hospital and diagnostic information is entered into the COVR database, the patient is asked if he or she would be willing to
answer some questions to assist the treatment team with discharge planning. A computer-generated list of questions is read to the patient, and the administrator inputs the answers into the program. Based on response to a particular question, the program follows a branching tree of follow-up questions, which eventually terminates when the end of the tree is reached.

Violent incidents are measured by patient self-report, official police records, hospital records, and collateral informants. Total scores are given in a probability format (a percent range for likely violence being committed within the next several months), a frequency format (eg, for every 100 persons similar to the patient being assessed, between 20 and 32 will commit a violent act over the next several months), and a categorical format (classes of risk, including very low, low, average, high, and very high).

Research in developing and validating the COVR was performed in conjunction with the MacArthur Violence Risk Assessment Study. While the COVR contains 10 classification tree models, the authors state that it can estimate risk reliably using only 5 of them. Data from the COVR development study indicate that 1.2% (95% CI, 0.3% - 2.4%) of the persons scoring in the lowest of 5 risk classes were violent within the follow-up period, compared with 26.2% (95% CI, 19.5% - 32.4%) for the middle-risk class and 76.2% (95% CI, 65.4% - 86.2%) for the highest-risk class.10

The COVR may be purchased from a source such as Psychological Assessment Resources, Inc. (www3.parinc.com). An introductory kit consisting of the professional manual, COVR software program, installation guide, and 10 uses costs $299. Additional uses can be purchased for $8 to $10 each, depending on the number purchased.

**Historical Clinical Risk-20**

The HCR-20 is a clinical risk assessment tool born out of the need to maximize the benefits of using the latest research in predicting violence with the experience of forensic practitioners who routinely assess risks in clinical settings. The goal of the instrument was to lay an effective foundation for completing risk assessments while keeping in mind time pressures and pragmatic obstacles faced by clinicians in clinical settings.

The instrument is divided into 3 sections.

- **Historical:** includes a review of the person's index offense; criminal, psychiatric, family, school, and vocational background; and other relevant historical information.
- **Clinical:** entails a description of the person's state of mind at the time of the incident or offense, as well as current diagnostic symptoms and other clinical factors that bear on risk.
- **Risk management:** suggests a treatment plan and gives indication of what services and supports must be available to the individual if risk or violence is to be managed within acceptable bounds.

Violence risk assessment is based on a manageable number of test items rooted in evidence-based knowledge and organized around a few important cross-disciplinary ideas. The items are defined precisely enough for testing but written so as to invite efficient application to a variety of issues and settings that contain a high proportion of persons with histories of violence and a strong suggestion of mental illness or personality disorder (eg, forensic psychology or psychiatry, parole, or correctional environments). The summary stipulates time periods for which the assessment results are intended to hold, how the prediction might vary with altered situational circumstances, and base rates of violence in pertinent samples.

The HCR-20 consists of a checklist of 20 items: 10 historical factors, which are weighted as heavily as the 5 present clinical variables, and 5 future risk management issues (Table 1). Of the individual items, substance abuse and psychopathy are most strongly correlated with violence. Violence includes verbal aggression, self-directed aggression, and aggression toward others and objects.

### TABLE 1

**The HCR-20 checklist items**
Historical (past)
H1. Previous violence
H2. Young age at first violent incident
H3. Relationship instability
H4. Employment problems
H5. Substance use problems
H6. Major mental illness
H7. Psychopathy
H8. Early maladjustment
H9. Personality disorder
H10. Prior supervision failure

Clinical (present)
C1. Lack of insight
C2. Negative attitudes
C3. Active symptoms of major mental illness
C4. Impulsivity
C5. Unresponsive to treatment

Risk management (future)
R1. Plans lack feasibility
R2. Exposure to destabilizers
R3. Lack of personal support
R4. Noncompliance with remediation attempts
R5. Stress

HCR-20, Historical Clinical Risk-20.

Reports and notes by psychologists, psychiatrists, social workers, police, prosecutors, nurses, and other professionals provide the basis for interviewing and testing the patient. The interview not only garners new information but assesses for inconsistencies between what is known about the person and what the person would have the assessor believe. For example, uncorroborated self-reports, when self-incriminating, may be more relevant than uncorroborated self-promoting self-reports. In the criminal and forensic setting, many people attempt to minimize the extent to which they may have harmed others, are responsible for negative actions, or have behaved in harmful ways in the past.

In most cases, file review, interview, and testing are enough to complete the HCR-20. However, for future risk management, consultations with colleagues responsible for treatment or community release plans will likely be needed. For example, reports from previous case managers, social workers, or probation or parole officers are needed to determine how well the individual being assessed fared on past releases. Victim or other collateral interviews may also be helpful. All sources—consulted or not consulted (with explanation)—should be noted in
the assessment. After scoring individual items, a total score is obtained. An individual is then determined (based on the available information) to be at low, moderate, or high risk for violence within parameters of a given timeframe and in a given setting. Although total score bears some relationship to the final risk assessment, the decision is not simply based on a cutoff score. The relationship between the number of risk factors present and risk for violence is probably distinctly nonlinear; risk likely depends on the specific combination, not just the number, of risk factors present. When items are omitted, assessors must qualify their opinions accordingly, acknowledging whether and how their opinions might change if full information were available (Table 2).

**TABLE 2**

**Factors to keep in mind when administering the HCR-20**

- Consider the context of the violence risk assessment (ie, community vs institutional setting)
- Decline risk assessments for psychotherapy patients to avoid potential bias
- Avoid taking innocent interview remarks out of context (creating dangerousness)
- Avoid very hurried or pressured assessments, or those based on partial information, because it invites inaccuracy
- Obtain a good understanding of the conditions under which the person will live after discharge or release
- Remember that risk is relative to the base rate of violence in a particular population
- Verify historical information through the clinical interview, reviewing the full file, obtaining collateral accounts, evaluating for the presence of mental illness or substance abuse, and considering assessments for malingering and deception
- Terms of the risk assessment should be for specific periods, eg, long-term and short-term predictions and factors that contribute to or mitigate against risk at each stage
- Consider second opinions in difficult cases

HCR-20, Historical Clinical Risk-20.

The HCR-20 has been tested in a variety of settings: civil psychiatric, forensic, and correctional. An annotated bibliography for the HCR-20 is available at [http://www.sfu.ca/psyc/faculty/hart/HCR-20%20Annotated%20Bibliograph%202006.pdf](http://www.sfu.ca/psyc/faculty/hart/HCR-20%20Annotated%20Bibliograph%202006.pdf); it lists more than 50 studies that used the HCR-20 to assess violence risk. Receiver operating curve tests for these studies mostly demonstrate areas under the curve in the 0.7 to 0.8 range, superior to unstructured clinical assessments.

The HCR-20 may be purchased from a source such as Psychological Assessment Resources, Inc. ([www3.parinc.com](http://www3.parinc.com)). An introductory kit consisting of the professional manual, 50 coding sheets, and the *HCR-20 Violence Risk Management Companion Guide* costs $115. Additional coding sheets cost $44 per pad of 50,
although they are not technically necessary to complete and document an assessment using the tool.

**Conclusion**

With the widespread use of well-researched and validated risk assessment tools in current practice, psychiatrists need to be familiar with the strengths and weaknesses of each and arrive at an informed decision about when their use is indicated. Once considered the domain of forensic psychiatrists, violence risk assessment and management research is now informing and guiding the practice of general inpatient psychiatrists throughout the nation.