

can be estimated. This means that approximately 80 percent of patients who are regarded as high-risk will not become violent, whereas 20 percent of high-risk patients will become violent. If the base rate of violence were lower than five percent, the degree of certainty in the high-risk categorizations, expressed as the PPV, would be lower still.

During the mid-17th century, the English clergyman Thomas Bayes considered the degree of certainty that an observer can have in the probability of future events after observing nothing more than their previous occurrences and non-occurrences.⁵ Part of Bayes' answer, now immortalized as Bayes' Theorem, was that belief in contingent probability (in this case the contingent probability of a high-risk categorization) depends on belief in prior probability (in the present case, the incidence of difficult-to-manage violence in the population of patients). In contemporary terms, the positive predictive value of a risk assessment depends not only on its psychometric properties (measured by the AUC or another indicator of effect size) but on the base rate.^{3,4} It follows that the usefulness of a risk assessment can never be separated from base rate considerations. Newton *et al.* have illustrated that even a powerful statistical test of future violence has a limited utility when rare and more severe acts of violence are considered.

Violence against fellow patients and staff is a major problem that faces psychiatric hospitals all over the world. However, there is an inverse relationship between the severity of violence and its incidence. Very severe violence resulting in permanent injury or even death is fortunately rare,⁶ while more minor violence can be regarded as common. Furthermore, base rates of violence vary over time and between settings and can be known with certainty only in retrospect. It follows that the predictive value of risk categories for severe violence is always going to be both low and, to some degree, uncertain. After an episode of severe violence, it is sometimes assumed that the event could have been anticipated and avoided. However, risk assessment cannot provide certain or accurate predictions of rare and severe harm. Instead, as Bayes suggested, the purpose of a risk assessment is to modify our prior beliefs about future harm with systematically collected data.

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Editor:

The outstanding differential review on firesetting by Burton *et al.*¹ in the September 2012 issue makes an important contribution to diagnostic clarity. However, these conscientious authors omitted an essential differential-diagnostic category: partial (focal) seizures. Such an omission is understandable, since even the most common type, temporal lobe epilepsy (TLE), has been absent from the table of contents since the Diagnostic and Statistical Manual of Mental Diseases, Third Edition (DSM-III),² constricting psychiatry's realm of expertise. Nonconvulsive behavioral seizures of partial epilepsies, such as TLE, tend to present with paroxysmal bizarre behavioral changes that can mimic various psychiatric syndromes. Neurologically informed psychiatrists are required to diagnose a partial epilepsy in the absence of convulsions. Such psychiatric expertise is necessary, given that even the presently most advanced objective brain tests are not yet consistently positive in partial epilepsies, not even in TLE (due to a deeplying focus or lack of accurate methods to detect subtle brain dysfunction). Thus, a patient suffering a brief, nonconvulsive, behavioral seizure may be misdiagnosed and inappropriately treated.

As to firesetters, not otherwise diagnosable, one subtype of partial epilepsies with nonconvulsive behavior seizures appears to be of specific interest: the proposed limbic psychotic trigger reaction (LPTR).³

Four of the 24 published cases of LPTR involved firesetters.^{4–7} The subject of one case⁷ had kept in memory repeated mild-to-moderate experiences related to various aspects of fire. Just before he set fires, such memories had suddenly been revived by a chance encounter with a highly individualized trigger stimulus, actually or symbolically associated with fire.

LPTR invites future research because of its primate model; its analogy to the experimentally established neurophysiological mechanism of seizure-kindling; its specific 12 interrelated symptoms and signs, strictly determined by 16 inclusion and 13 exclusion criteria (all met by the 24 cases); and its similarity to mesotemporobasal limbic seizures,⁷ evoked by direct electrical stimulation of brain implants in presurgery patients. Many more nonfelonious paroxysmal cases with merely socially bizarre misbehaviors may exist undetected (and untreated with antiepileptics) among the general population or among misdiagnoses.

In essence, the central role of memory (in certain cases of LPTR, specifically of fire) is supported by Halgren *et al.*⁸ in a neuroanatomic comparison of normal hippocampal functioning of repeated memory updating with hippocampal susceptibility to seizures.⁴

Thus, all LPTR patients were social loners who ruminated on mild-to-moderate stresses related to individual experiences with fire.

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Reply

Editor:

We would like to thank Dr. Pontius for her response and contributions to the firesetting literature. Indeed, a comprehensive differential diagnosis for the behavior of firesetting would include partial seizures and epilepsy. Further, there are cases in which arson defendants have been found not guilty by reason of insanity related to epileptic seizures.¹

Additional Axis III conditions have been associated with firesetting (e.g., stroke, intracranial space-occupying lesions, head trauma, delirium, chromosomal disorders, and metabolic and endocrine disturbances).^{2–13} We encourage the consideration of medical and neurologic conditions during firesetting assessments in both forensic and clinical settings.

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