Editorial

The Limits to Prediction: The Future Ain't What It Used to Be!

The title of this editorial stems from a remark attributed to Yogi Berra (1). Whatever the accuracy of the citation (the aphorist himself acknowledges, "I didn't really say everything I said"), what matters is that the remark is right on target. It is precisely because the future "ain't [always] what it used to be" that casting a prognosis in medicine is so difficult and uncertain.

In the end, however simple or elaborate the method, prognostication projects into the future trends derived from observations made in the past. If the data are representative and past and future are much like each other, prediction will be accurate. But if the future "ain't" like the past, all bets are off. The occasion for these remarks is the four articles in this issue that are intended to help clinicians anticipate the probable course of psychiatric disorders from history or clinical findings or both.

Amminger and colleagues report further data from a remarkable 25-year follow-up study of the children of parents with schizophrenia, affective disorder, or neither. Earlier findings from this investigation (2) had already demonstrated a large and significant liability within families to narrowly defined schizophrenia in the first of the two high-risk groups. This latest article reveals that among subjects in either of the high-risk groups without substance abuse, those who would later manifest "schizophrenia-related psychoses" exhibited significantly more behavioral problems in childhood. Because the outcome of interest occurred exclusively (with one exception) among the high-risk populations, no conclusion can be drawn about the prognostic implications of childhood behavior problems in the absence of a family history of psychosis.

Geerlings's team asks whether memory complaints anticipate cognitive defect before it is detectable by mental tests; Geerlings et al. report that they do. The answer to the straightforward question "Do you have complaints about your memory?" predicted later decline among subjects whose cognition was normal (by test) at the time of first examination. The finding is surprising given the ubiquity of concern about inability to remember names among community-dwelling elders (including the author of this editorial!). The resolution of the puzzle may lie in the way responses to the question were dichotomized: only those who reported "a problem" or "a serious problem" rather than "sometimes" a problem were categorized as having complaints about memory.

Grilo and co-investigators ask whether a history of childhood abuse reported by adolescent hospitalized patients is associated with a distinguishable constellation of symptoms; the constellation they discern they describe as borderline personality *in statu nascendi*. In the absence of independent verification of the presence (or the absence) of abuse in childhood, one is left with the query: is it abuse or access to memories (or fantasies) of abuse that distinguishes those with borderline personality?

Robinson and his colleagues evaluated patients with a first episode of schizophrenia or schizoaffective disorder to determine the characteristics that "predict" response to a standardized intensive treatment protocol. Male sex, a history of obstetric complications, severe hallucinations and delusions, poor attention, and the emergence of parkinsonian side effects were associated with worse outcome but not diagnosis (schizophrenia versus schizoaffective disorder), premorbid function, or du-

ration of symptoms. These findings must be viewed in the context of two special characteristics of their group: a long mean duration of illness before diagnosis (71 weeks) and a high cumulative positive response (87%) to a specified sequential treatment program.

The first study reports childhood characteristics that predict adult outcomes in high-risk families; the second documents the predictive value of memory complaints for later cognitive decline among an intact elderly population; the third identifies a clinical subgroup within a heterogeneous adolescent clinical sample associated with a report of childhood abuse; and the last describes patient characteristics associated with quality of response to a specified treatment protocol.

Despite the differences in populations, diseases, and study methods, each of these studies provides data relating patient outcomes to prior characteristics. The implicit assumption is that extrapolating these findings to new patient (or population) samples will enable physicians to anticipate disease course, offer sound prognostic advice, and intervene when appropriate. Casting an accurate prognosis is a desideratum as old as medicine.

The Hippocratic *Prognostikon* (3) stressed the importance of being able to foresee the outcome of illness because all patients cannot be saved. By identifying illnesses running a rapid downhill course, physicians can avoid taking such cases on or can protect themselves against the charge that they are responsible for the patient's death if they do. Foreknowledge of the stages through which a disease will pass enables them to avoid sudden confrontation with developments that may diminish their dignity (3). Concern with self-protection is still with us. Millennia later, physicians remain adept at "hanging crepe" in order to shift responsibility for a bad outcome and to increase acclaim if, despite the gloomy prognosis, the result is good (4).

Anticipating the course of disease has always rested on sifting clinical experience. The very slow pace of change in medicine through the centuries made senior physicians likely to be wiser than younger ones because they had had time to see more. That worked well enough for acute disease with the physician in attendance throughout the episode. When disease (or its treatment) has long-term consequences, systematic study becomes essential to guard against incomplete ascertainment and skewed observation. From these concerns derive the large study groups, sophisticated study methods, and systematic follow-up that characterize the articles referred to. However, these refinements do not settle a basic conundrum. The future is a moving target.

Consider. At the beginning of this century, by far the predominant cause of rickets in the United States was environmental; by the end of it, most of the remaining cases are genetic. The reason for the difference is enrichment of the vitamin D content of the diet. Residual cases are found among those with inherited vitamin D-refractory metabolic disorders. Elimination of external causes of a clinical disorder increases net "heritability" because of the change in ratio between extrinsic and intrinsic disease determinants (5).

Consider. Fifty years ago, the inpatient state mental hospital population of the United States exceeded 550,000 and was predicted to reach 750,000. Once hospitalized, patients with schizophrenia were likely to remain in the institution. Today, despite a 70% increase in the U.S. population during the interim, the state mental hospital census is well under 100,000 (6); the average length of stay for schizophrenic patients is more than an order of magnitude shorter. Prognoses cast by the wisest psychiatrist of the 1940s would be far off base for patients in the 1990s. The "disease" did not change; its management did; what psychiatrists attributed to the chronicity of schizophrenia was the result of a social breakdown syndrome (7). Psychosocial and pharmacologic interventions changed both the venue of treatment and the outcome of care (8).

Thus, however valid, predictions based on patient findings in this century can only be projected into the next with caution. Preventive and therapeutic measures

now under development are likely to alter "illness course" in ways that cannot be anticipated.

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