ABSTRACT. This paper explores the relationship between concepts of probability and hermeneutics. It seeks to examine the relationship between subjective (Bayesian) views of probability and hermeneutic descriptions of understanding. It is argued that Gadamer’s account of the prejudicial nature of understanding, derived from Heidegger’s analysis of foreunderstanding, offers a provocative model of clinical reasoning. The implications of this model for “evidence-based” medicine are discussed in conclusion.

KEY WORDS: hermeneutics, probability, clinical reasoning, evidence-based medicine, philosophy of medicine, Bayes Theorem

INTRODUCTION

Clinical reasoning is an extremely complex process. It is frequently described as probabilistic reflecting its status as a stochastic art with a lineage dating back to classical antiquity. On this view, the use of probability models to study medical decision making under conditions of uncertainty seems straightforward and uncontroversial. The application of probability models to clinical problems, though, leaves undisturbed a set of theoretical and philosophical questions that may provide fertile grounds for exploration. A central question involves the source of clinician’s knowledge of probabilities.

One explanation of the origin of clinicians knowledge of probabilities is that they arise from the published scientific literature. Clinical reasoning and knowing is then essentially a species of scientific inference. This view is largely echoed by clinical epidemiologists and proponents of evidence-based medicine. Those unsympathetic to this view have argued for the tacit dimensions of physician knowledge. Hence a dynamic tension exists between the “art” and “science” of medicine.

An alternative account of the status of probability estimations may come from an analysis of the hermeneutic dimension of medical experience. It is the intention of this essay to explore the nature of clinical probability in hermeneutic terms as the working out of a foreunderstanding. This will situate the generation of clinician’s prior probabilities clearly in an existential context and permit a possible fusion of Bayesian thinking...
with hermeneutics. The implications of hermeneutics for evidence-based medicine will be discussed.

**UNCERTAINTY AND PROBABILITY**

Uncertainty and probability are often used interchangeably. This is unfortunate because both terms embrace contrasting concepts and so are not entirely synonymous. Uncertainty has two dimensions relating to the incompleteness of understanding: underdetermination and ignorance. In the case of underdetermination, uncertainty relates to the degree to which the totality of scientific evidence fails to give a complete account of a subject. In this case competing interpretations of the same data or clinical scenario may be offered by reasonable persons. Answers to important questions may be at present unknown, or there exists a community of interpreters with varied and conflicting interpretations of the best answer given current evidence. In the case of ignorance, the correct answer exists, but the interpreter is unaware of how to access the evidence or fails to grasp or utilize the existing correct information. In this analysis we shall be concerned solely with the first type of uncertainty.

Statistics is the science concerned with the quantification of uncertainty. Probability calculus is central to the discipline of statistics. There is a long, and sometimes divisive debate among theoretical statisticians concerning the ultimate meaning or status of the nature of probability itself. The point here is not to rehash the debate, but merely to highlight the essences. There are two competing and conflicting views of the nature of probability: Bayesian and frequentist. For a frequentist a probability is “the relative frequency of some kind of event in a certain type of sequence of events or...in a set of events.” It is a property or propensity of the way things behave in the world. The idea of a relative frequency can best be appreciated by the kind of sampling examples used in elementary statistics courses. If one has an urn filled with two different colours of beads, by repeated sampling one can more precisely determine the true distribution of coloured beads. Frequentist conceptions of probability rely on replications, repeated sampling and the invocation of the long run. With modern computer technology, one can conduct simulations of almost infinite replications, thus providing robust distributions. Yet they remain simulations.

The second primary interpretation of probability comes from those statisticians influenced by Bayes Theorem. To them, probability is a characteristic of a person’s opinion about an event. It is an index related to one’s willingness to believe, take action or change one’s mind on the basis