

## Letter From the Editors



Dr Dean Ferguson and Lionel Zuckier refer to the art of medicine in their guest editorial.<sup>1</sup> This characterization of medical practice probably has its origin with Hippocrates.<sup>2</sup> It comes from one of his common aphorisms “Ars longa, vita brevis, or the Art is Long, Life is Short.” Hippocrates refers to medicine as an art numerous times in his Hippocratic oath.<sup>2</sup> During the millennia following the remarkable observations and discoveries by Hippocrates, physicians approach the field not as a science but as an art that evolved from experience and careful observation. Even today when we consult a physician we depend primarily on his or her experience in the belief that more extensive experience correlates with better knowledge and better care. We have now come to realize that this is not necessarily true. The physician with a vast experience making decisions based on that experience may sometimes present to the patient the wrong therapeutic approach based on some misleading experience. It is now clearly accepted in imaging that the interpretation of images varies greatly between different practitioners and that there will be many cases in which a physician will interpret an image differently from a colleague.<sup>3</sup> The French mathematicians Blaise Pascal and Pierre de Fermat in 1654 introduced the mathematical theory of probability,<sup>4</sup> which is the basis of our scientific analysis of comparisons between various approaches to the therapy of disease. Despite the availability of this basic methodology, it was not until well into the 20th century that statistical theory began to be used commonly in medicine. The Seminars Editors took note of the increasing trend toward a scientific approach to practice by devoting an issue of the journal to Clinical Decision Making. This issue was guest edited by Dr Dennis Patton and Dr Patton himself wrote an introduction to clinical decision-making in that issue.<sup>5</sup> Since that time there has been increasing awareness of the need to evaluate diagnostic and therapeutic approaches on a basis that permits accurate comparison and to differentiate between ineffective modalities and effective ones. In Nuclear Medicine this means choosing a test that is most likely to be useful in a given situation and choosing the proper interpretation to provide the most accurate result. There has been an increasing movement away from case reports, which were a popular teaching modality in the early 20th century to epidemiologic studies in which groups of patients or studies or procedures

are compared. They may be compared on a cohort basis simply combining patients who have similar characteristics but have been treated differently or more effectively they can be compared by a prospective study in which patients are randomly assigned to a specific group and the two groups are analyzed. Nuclear Medicine studies may also include an analysis of the individual observes with comparison between them. In medicine this process can be used for choice of the best possible therapy. In surgery it helps in the selection of the best procedures. In Nuclear Medicine we need these data to develop proper clinical guidelines and guidelines for interpretation of the studies we do. This is necessary to provide the most reliable information to the referring physician so the patient will gain optimum benefit. It is clear at the present time that decisions based on experience without proper underpinning from carefully constructed studies are fraught with potential error. It is also clear that we cannot depend on a single interpretation by a single physician without knowledge of the reliability of that report. The practice of medicine can no longer be conducted as an art but needs to move into the 21st century and take its place along with the physical sciences. Although it is unlikely we can ever achieve the type of reproducibility and precision that is found in physics or the other physical sciences we can certainly improve our practice of medicine so that errors are less frequent and the benefit to the patient is increased. This is particularly true in imaging specialties like Nuclear Medicine where the data can be quantified relatively easily and can be compared to find the optimum benefit. These improvements toward increasing accuracy can resolve how we practice Nuclear Medicine but will still leave the issue of individual physician judgment and the potential error of the physician his or herself. This may be obviated potentially by using technology to aid in the decision-making system such as the methodology that has been introduced by Dr Taylor and colleagues.<sup>6</sup> The editors believe that an awareness and understanding of evidence-based medicine is critical to the practice of Nuclear Medicine and we hope that our readers will benefit from this issue.

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**References**

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