Logical empiricism in anesthesia: A step forward in modern day clinical practice

The 'art and science' of anesthesia demands a thorough knowledge of both experience and evidence of the subject. The editorial in January 2013 issue by Sinha AC and Goudra BG highlights an important aspect of modern medicine: The relative importance in deciding appropriate therapeutic interventions in anesthesia.[1] The authors rightly emphasize the difference between statistical significance and clinical significance of the results of clinical trials. They also support the right (and ability) of anesthesiologist to modify techniques. It must be noted that the authors used the words 'good anesthesia provider', 'careful titration', and 'available tools' to qualify the appropriate use of experience-based medicine. Many clinical practice parameters that are followed in daily patient care belong to the realms of experience-based learning, rather than evidence-based learning, as the authors suggest.[1] Such observations are not limited to anesthesia specialty but are also noted in other medical specialties and superspecialties.[2]

An important question still remains unanswered that; how does one ensure concordance of evidence and experience? Is this just an individual, or at the best, an editorial whim? Or has the concept of coexistence of both streams of practice have been described earlier in the science?

In modern day anesthesia practice, multiple guidelines have become available for the management of diseases during surgical intervention. These guidelines have been formulated by international societies and are difficult to apply uniformly to most of the resource challenged nations. Most of these guidelines are based on evidence and often do not take socioeconomic realities or psychosocial sensitivities into consideration. Moreover, few other guidelines speak of a patient-centered approach for management, but do not allow the physician to use innovative regimes or therapies that may have worked in a particular subset of patients in her or his experience.

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This commentary proposes a new approach to anesthesia which has multidisciplinary utility. The term "logical empiricism" is a philosophy of science which was popular in the mid-twentieth century.[3] Also known as logical positivism, it combines observational evidence (empiricism) with mathematical/logical theories (rationalism). This is exactly what a good anesthesia provider does when he or she uses available tools to carefully titrate and modify existing drugs for the benefit of patients. The provider is expected to ensure logical application of his or her training, within the particular clinical situation being confronted during elective or emergency surgery. It is understood that every clinical case will be different and unique, and therefore will merit unique management. While this management should be within accepted parameters of science, it does not mean that it must follow a rigid, algorithmic straitjacket. One good example is innovations and discoveries of so many airway gadgets, equipment, and techniques in modern day anesthesia practice; which could not have been possible had these stricter guidelines and algorithms adhered in a true sense.

The concept of logical empiricism includes elements of both experience-based decision-making and evidence-based medicine and implies a greater responsibility of the physicians in deciding therapy. While practicing logical empiricism, the physician is expected to use logos (science) to create an empirical, or individualized therapeutic plan, which is suitable for a particular patient. While the physician should be well-versed in current evidence-based medicine, he or she is encouraged to take an empirical approach based upon the individual patient's circumstances and clinical profile in order to modify the evidence-based science. This modification may be based on the availability of interventions or drugs, access to therapeutic modalities, acceptance of interventions, and overall risks and safety concerns associated with the practice of anesthesia.[3,4] The ever increasing diabetes epidemic has thrown numerous challenges to an anesthesiologist. As such the evidence-based practice and modifications of traditional therapeutic regimens on scientific principles as well as experience-based clinical therapeutics in such subset of patients are bringing a new revolution in endocrine anesthesia.[5,6]

Logical empiricism accepts that the anesthetist is well aware of the strengths, weaknesses, opportunities, and limitations of the healthcare environment wherein he or she is working.[4] These may include physical, economic, and

physiological factors that limit the utility or applicability of pure evidence-based or logical guidelines. Logical empiricism accepts that anesthesiologist is competent enough to decide the best possible course of action for a particular patient at a particular point of time. He or she is expected to thoroughly understand the pathophysiological and clinical aspects of the patient's disease and the needs and ability of the surgical team, and blend them as well as possible, with maximal concordance, with evidence-based recommendations.

Thus logical empiricism is an approach which blends the strengths of experience-based anesthesia and evidence-based medicine. It overarches both, the art and science of anesthesia. More debate and discussion is needed to ensure the efficient use of logical empiricism in anesthesia. This commentary hopes to take a small step forward in this direction and to encourage a big leap forward for our specialty.

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