

Commentary

Golden rules to nurture nephrologic logic

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Does Design Demand a Designer?

I have had the rewarding opportunity to study comparative aspects of the kidneys in health and disease for more than three and a half decades. I was taught, and initially accepted, the scientific premise that evolutionary random mutations and natural selection were responsible for the complex structural design of nephrons and the multifaceted renal functions, including glomerulotubular balance, the countercurrent mechanism of urine concentration, and the renin-angiotensin-aldosterone system.^{1,2} But, as I learned more about their ingenious structural and functional design, I began to ponder the question “What is the origin of the interrelated balance of excretory, regulatory, and biosynthetic functions of these marvelous organs?” Additional research led me to ask, “Is it logical to unquestionably credit chance for the ingenious, intricate, and highly ordered structural and functional design of life-sustaining paired mammalian kidneys?” This design is so orderly (a characteristic of organs) that the kidneys’ responses to various internal and external stimuli are predictable. This prompts the question “Does the structural and functional organization of an organ require an organizer?” The 1996 edition of a highly esteemed textbook *The Kidney* contains a chapter titled “The Development And Maturation Of The Kidney.” In the opening paragraph, the authors state, “The extraordinary structural and functional complexity of the mammalian nephron is reflected in the tightly coordinated series of events that lead to its development.”³ Is it reasonable to ask whether events that are tightly coordinated require a coordinator?

As the body of scientific knowledge and understanding of renal structures and functions increase, I find that the most plausible scientific hypothesis is to acknowledge the existence of a superior intellect responsible for the design and development of the system that helps to maintain homeostasis by producing, storing, and eliminating the golden liquid—urine. Comparative physiologists at times mention design in context of renal structure and function.² Doesn’t scientific logic based on probability and the principle of cause and effect point to the conclusion that design

demand an intelligent designer? Unquestionably, the design of the kidneys fulfills a life-sustaining purpose.

In terms of the diagnosis and treatment of naturally occurring renal diseases and renal failure, why is the issue about the origin of the kidneys, and by implication the origin of life, important? In partial answer to this question, let me pose another question. Who deserves credit for the cure of illnesses that are self-limiting? Likewise, who deserves credit for complex structural and functional host responses to irreversible renal diseases that minimize the adverse consequences of renal dysfunction? Rather than credit Mother Nature and Father Time with our innate ability to overcome the adverse consequences of various types of disorders, available evidence leads me to the view that the symbolic “miraclemycin” of our medical armamentarium is the body’s innate homeostatic and repair mechanisms created by Father Design and nurtured by Mother Time. In context of treating patients, I view my role as a doctor in context of being one of Father Design’s children. In this role, I have an obligation to carefully design my diagnostic and therapeutic efforts so as to augment rather than hinder his efforts. In other words, no patient should be worse for having seen the doctor. In keeping with this principle, in context of the life sustaining formation of the “golden liquid,” I have compiled some thoughts and titled them the Golden Rules of Nephrology.

Why the Golden Rule?

What ethical rule can we rely on to guide us in the formulation of diagnostic and therapeutic actions so that, to the best of our abilities, we will help rather than harm our patients? What ethical rule will help us to choose the best course of action when existing guidelines do not seem to apply? What ethical rule, if properly applied, can we rely on to maintain our professional integrity in terms of being responsible for our patients and being responsible to our clients? Although there are several possible answers to these questions, I suggest that a common denominator to all of them is encompassed in the golden rule, which is, we should do to others as we would have others do to us. Based on the underlying motive of the golden rule, I propose 4 applied rules to nurture the art and science of nephrology.

Rule I—learn about the diseases of others as we want others to learn about us.

Consider the following corollaries:

Corollary 1: There is a difference between unan-

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swered questions and unquestioned answers. Even if hundreds of authorities unknowingly make incorrect statements, they are still incorrect statements. Repetition does not transform errors into facts.

Corollary 2: There is a difference between knowledge and wisdom. Knowledge consists of our familiarity with facts. In contrast, wisdom consists of acquiring a combination of knowledge and understanding so that it enables us to successfully apply the facts. If we have knowledge but have not learned to apply it properly, we lack wisdom. In context of the practice of nephrology, being wise implies continued effort to acquire sufficient depth of knowledge and breadth of understanding to provide us with the wisdom that will benefit our patients.

Corollary 3: To put knowledge and wisdom into practice emphasizes the importance of practicality. But our commitment to practicality should not be misdirected. Practicality may be a virtue, provided we do not hide behind it as an excuse for ignorance.

Corollary 4: The best veterinary teaching hospitals in the world should not only use contemporary knowledge, they should create it. The often quoted cliché to publish or perish applies more to the survival of our patients than to the survival of careers of academicians employed by universities.⁴

Corollary 5: We must not let the pursuit of knowledge become sidelined by a scramble for funds, recognition, or prestige. To this end, there is almost no limit to what we can accomplish as long as we do not become preoccupied with who gets the credit.

Corollary 6: Not all research studies are worthwhile in terms of the value of knowledge that is likely to be gained and the resources that will be expended. Therefore, we should not confuse activity with accomplishment. Why do efficiently that which does not need to be done at all?

Corollary 7: We must strive to continually improve our knowledge and competence. To paraphrase the words of Dr. Donald G. Low, this will help us to practice 30 to 40 years of nephrology in our professional lifetimes rather than repeat one year 30 to 40 times.⁵ Which one of us would knowingly seek the care of a physician whose knowledge and wisdom is stagnant? By expending time, effort, and resources to make such improvements, we are applying the golden rule.

Rule II—use caution in diagnosis, as if the patient were us.

Consider the following corollaries:

Corollary 1: A well-defined problem is half solved. However, in defining patients' problems, we must use care not to mix observations with interpretations of observations. If misinterpreted observations are accepted as facts, the result may be misdiagnosis leading to ineffective or even contraindicated treatment.

Corollary 2: Belief or unbelief does not alter the truth. Clinical impressions are inherently unreliable, generally conforming to our preconceived biases. However, strong preconceptions are not a substitute for objective evidence. We should use caution not to ignore data, because it does not coincide with our beliefs. Rather than interpreting facts in light of preconceived conclusions, we must be alert to allow reproducible observations (facts) to lead us to reasonable conclusions.

Corollary 3: Diagnoses are often a matter of opinion rather than a matter of fact. It is one thing to make a diagnosis and another thing to substantiate it. Just because a favorable outcome occurs in association with our treatment does not prove that our diagnosis was correct (or that our treatment was effective).

Corollary 4: Waiting to pursue the diagnosis of the underlying cause of renal disease until the patient has not responded to symptomatic shotgun therapy is like saying, "Ready! Fire! Aim!" Not only does this approach to diagnosis often result in use of drugs that miss the therapeutic target, it often results in iatrogenic damage to surrounding structures.

Rule III—treat others as we want to be treated.

Consider the following corollaries:

Corollary 1: Hippocrates provided the following advice to his colleagues: "As to diseases, make a habit of two things—to help, or at least do no harm." When confronted with situations in which therapeutic options are associated with significant risk to the patient, we must use caution to avoid the mindset of just don't stand there—do something. Why? Because, although the psychologic pressure imposed on veterinarians to do something is occasionally overwhelming, our desire to do something must be evaluated in light of the potential benefits and risks to the patient. There are times when it is in the patient's best interest to don't just do something—stand there.⁶ We must not misplace emphasis on what treatment to prescribe when the fundamental question is whether to prescribe.

Corollary 2: Prognosis of diseases requires judgment in the absence of certainty. Therefore, when making prognoses, we must remember that almost right is still wrong. For some patients, prognoses are life saving; for others, they are a death sentence.

Corollary 3: Too often, justification for unproved treatment is the belief that some treatment is better than nothing at all. However, the prognosis of few diseases is so uniformly poor that any form of treatment is justified.

Corollary 4: Just because two events occur in consecutive order does not prove a cause-and-effect relationship. Unrelated coincidences commonly are associated with the treatment and subsequent clinical course of diseases. Therefore, we must use

appropriate caution in interpreting uncontrolled empirical observations.

Corollary 5: Diseases are often self-limiting. In fact, the severity of many disorders declines within a day or so. In this situation, any treatment may appear to be beneficial as long as it is not harmful.

Rule IV—care about others as we want them to care for us.

Consider the following corollaries:

Corollary 1: If we practice caring about patients as we would want others to care for us, we must use caution not to let the intellectual challenge of studying diseases override our concern for our patients.

Corollary 2: If we practice caring about patients as we would want others to care for us, we must not let the desire for financial profits compromise our care of patients.

Epilogue

At the beginning of this essay of golden rules about the golden liquid, I posed some questions about the origin of things. Let me conclude by asking about the word golden in the golden rule. What is its origin? A materialistic view is that gold is of great monetary value and, as such, is of great worth. But I submit that

a more enduring principle is involved. To illustrate, consider the fact that pure gold does not corrode by oxidation in air. Therefore, works of art fashioned in gold are of a lasting nature. In addition, because gold does not physically deteriorate with time, rather than discard damaged or broken gold objects, goldsmiths often refashion them into new works of art. Similarly, even though the golden rule predates the ever-changing specialty of nephrology by many centuries, we can be certain that application of this unchanging ethical principle to all aspects of our endeavors will be of lasting value.

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