

# Clinical Jazz: Harmonizing Clinical Experience and Evidence-Based Medicine

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*The real purpose of the scientific method is to make sure that Nature hasn't misled you into thinking you know something you actually don't know.*

—Robert Pirsig, *Zen and the Art of Motorcycle Maintenance*

*If you can't listen, you can't play jazz.*

—Wynton Marsalis

Music is an apt metaphor for the practice of medicine. The best medical practice, like the best music, melds technical skill and expertise with individual artistry. The new paradigm of evidence-based medicine and the apparently conflicting concept of clinical experience represent these 2 aspects of medicine. To many physicians, evidence-based medicine seems rigid, highly structured, and uninspiring—as stilted and regimented as a poorly performed Bach fugue. In contrast, economists, academics, and health authorities view the enigmatic and seemingly unpredictable use of clinical experience as analogous to punk rock: uncontrollable, chaotic, and obeying few rules.

The best medical practice is similar to neither baroque nor grunge music; instead, it is like good jazz, combining technical mastery with the artistry of focused personal improvisation. Clinical jazz combines the structure supplied by patient-oriented evidence with the physician's clinical experience to manage situations of uncertainty, instability, uniqueness, and conflicting values.<sup>1</sup>

## WAYS OF KNOWING

Evidence-based medicine and clinical experience represent 2 different ways of knowing how to treat patients. Evidence-based medicine seems logical and

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rational; clinical experience, sagacious and intuitive. Evidence-based medicine is explicit and can be evaluated; clinical experience, implicit and difficult to measure (Table).<sup>2</sup>

The implicit knowledge of clinical experience has been called "knowing in practice."<sup>3</sup> This method of knowing allows the experienced physician to arrive at a diagnosis after only a few moments of history taking, although it would be difficult to explain the method for arriving at this diagnosis.

Knowing in practice has 3 important roles in clinical medicine. Diagnostic expertise can only be developed with experience. The development of the motor skills involved in medical practice—feeling an enlarged thyroid gland, for example—requires practice as well. Physicians also learn to hear what patients are saying and develop an understanding of their patients' needs and desires through experience. Any diagnostic or therapeutic maneuver, however, should not rely solely on knowing in practice; it also requires an understanding of clinical epidemiologic concepts.

It can be difficult for physicians to admit that clinical experience and scientific evidence each have limitations. But if the 2 approaches are combined to address the shortcomings of both, we get good clinical jazz.

## PROBLEMS WITH CLINICAL EXPERIENCE

The role of clinical experience in decision making is based on a complex interweaving of the observations obtained from medical practice and the physician's own values, intuition, and judgment to make assessments and predictions. Unfortunately, information derived from clinical experience, as an integral aspect of decision making, is often considered sacrosanct and thus above question.<sup>3</sup>

TABLE

**The Characteristics of Clinical Science and Clinical Experience**

SCIENCE	EXPERIENCE
Explicit Can be evaluated	Implicit Cannot be measured
Universal Population-based	Personal Individualized
Abstract Relating to general rules	Concrete Focused on a specific patient
Public Available to all for comment	Tacit Passed on through apprenticeship
Democratic Allowing scrutiny by all	Authoritative Supporting a hierarchy based on experience
Threat to physician autonomy	Basis of physician autonomy

Using clinical experience to determine the effectiveness of a medical intervention can falter for many reasons.

**FALSE ATTRIBUTION**

Treatments generally work in clinical practice. However, without the benefit of a control group for comparison—a central requirement of evidence-based medicine that is rarely possible in clinical practice—we are unable to tell whether the treatment was responsible or if the natural history of the disorder explains the results. This false attribution of the results of therapy, called the illusory correlation bias, is very resistant to contradictory data from better information sources, such as clinical trials.<sup>4</sup> In other words, clinical experience is given undue preeminence over research experience.

**OUT OF SIGHT, OUT OF MIND**

Can you imagine reading a study that had an outcome measure consisting of whether the subjects returned for follow-up evaluation? Of course not. Yet in clinical practice, “the patient did not return” is the most frequent outcome measure. We assume that these patients improved because we did not hear from them.

**COMBINING NUMBERS**

It is difficult to look back on a set of experiences and try to tally the number of patients for whom a particular treatment worked. Even when we do, the results are often not definitive. Our minds are not wired to readily calculate probabilities or to compare groups of experiences.<sup>5</sup> Bayesian reasoning is not an inherent skill in most physicians.<sup>6</sup> Instead, clinical impressions are

formed using an estimate that may not reflect actual rates of benefit. Intuition cannot help us decide whether a real benefit occurred; statistical analysis is needed to combine the results.

**FALLACY OF MAKING HASTY CONCLUSIONS**

Results obtained through clinical experience with a few patients are often hastily applied as a general rule of practice, without subjecting the rule to more rigorous scientific testing. Clinical practice is an unblinded, unrandomized, and uncontrolled study in which the outcomes are vaguely evaluated in just a few patients. The small sample size of clinical experiences and the low regard for the role of chance leads to errors in estimates of the probability of benefit.<sup>7</sup>

**STACKING THE DECK**

Good clinical judgment involves matching patients to the therapies most likely to work for them. Likewise, when trying new or uncertain treatments, we reserve them for those individuals most likely to respond. Thus, new or unproved treatments will always look better because those patients selected for treatment were likely to do well anyway. While this approach maximizes clinical success, it violates a fundamental principal of clinical research. Only through comparing randomly assigned groups can we determine the effectiveness of a therapy.

**ROSE-COLORED GLASSES**

We share with our patients the desire to view our interactions as successful. We see what we hope and expect to see, and our patients tell or show us what they believe we want to see. This tendency was illustrated by a study of the quality of life of 75 patients with hypertension.<sup>8</sup> On the basis of patients' blood pressure control and lack of specific complaints, the physicians thought that 100% of them were improved. However, only 48% of the patients reported improvement, and 98% of the patients' relatives reported worsened functioning after the patient began treatment for hypertension.

**PROBLEMS WITH EVIDENCE-BASED MEDICINE**

Many clinicians and academics have been quick to proclaim evidence-based medicine the remedy for the limitations of clinical experience, but evidence-based medicine has limitations of its own.

**FALLACY OF DIVISION**

Studies are designed to find results that, on average, favor one approach over another. However, not everyone in a study benefits. Patients who differ from those in the study population may have less improvement than expected. Knowing that a patient management method is effective overall does not always mean that the method will be use-

ful for caring for the next patient, who may be on either end of the bell curve.<sup>9</sup>

### RIGOR OVER RELEVANCE

The demanding standards required in research, even clinical research, require selective inattention to certain clinical issues or particular patient types. Questions from everyday practice that do not fit the rigidity of the scientific method are left unanswered, and complicated patient problems—the type seen most often in practice—are frequently excluded from studies.<sup>1</sup> As a result, the clean research results may not apply to typically messy everyday clinical situations.

### STILL WET BEHIND THE EARS

Evidence-based medicine is still in its infancy—still testing its legs with regard to trial design and analysis—and a limited number of questions have been answered. Placebo-controlled trials were considered unethical until the early 1960s, and the concept of outcomes-based medicine did not surface until approximately 10 years ago. Compared with the history of medicine, evidence-based medicine has a lot of catching up to do. Two studies have evaluated the evidence base for medical practice. Sackett and colleagues<sup>10</sup> found that only 53% of the treatments rendered in their inpatient general medicine service were evidence-based, and Gill and coworkers<sup>11</sup> found that 31% of interventions in a general practice in England were supported by results obtained from randomized controlled trials.

### LACK OF PERSONAL SIGNIFICANCE

The best scientific method is objective and thus free of judgment. Yet judgment is an integral part of clinical practice that must be applied to patient care decisions. Good outcomes research forms the basis for making the appropriate decisions, but does not make the decision for us. Physicians are required to consider evidence along with their own values and those of their patients; they must combine the best information with the patient's philosophy of health to form a course of action. The best research still requires this synthesis.<sup>12</sup> For example, the Diabetes Control and Complications Trial (DCCT) showed that tight blood glucose control may provide some benefit in young patients with type 1 diabetes.<sup>13</sup> However, what if a teen-ager with type 1 diabetes has just received a license to drive? Any benefits of tight blood glucose control should be balanced against that teen-ager's risk of losing his or her license because of an inadvertent hypoglycemic episode while driving.

### EFFICACY IS NOT EVERYTHING

Evidence-based medicine focuses primarily on the effectiveness of care: Is this drug more effective? Is

this test better? This approach does not account for other parts of the patient care equation, such as economics, patient preferences, and ethical issues.<sup>14</sup> Decisions must take into account all patient and societal factors.<sup>15</sup> The country of Norway is discouraging the use of the osteoporotic agent alendronate, for instance, because although it decreases hip fractures, 90 high-risk women would have to be treated for 3 years to prevent 1 hip fracture at a cost that could bankrupt the country's medical plan.

## CLINICAL JAZZ—IMPROVISATION AND STRUCTURE

As a result of the problems outlined above, neither evidence-based medicine nor clinical experience alone is capable of generating a medical music hit. Evidence-based medicine improves the care of patients by providing information to reinforce and encourage practice behaviors that have been proven to make people better. Practices shaped by clinical experience have this same goal. How can we combine the merit of both of these styles to achieve this?

Good clinical practice should be performed like good jazz, with the physician blending the structure of evidence-based medicine with the appropriate improvisation of clinical experience. With clinical experience alone, we run the risk of producing a raucous cacophony in clinical practice. Medical practice requires the underlying structure of evidence-based medicine to hold it together and produce the kind of medical music that is in the best interest of patients. Mindlessly applying the results of clinical guidelines to every patient obviates the need for a skilled and compassionate physician. Instead, what we need is the structure provided by quality outcomes-based evidence superimposed over the ability to improvise according to an individual patient's needs and our clinical experience.

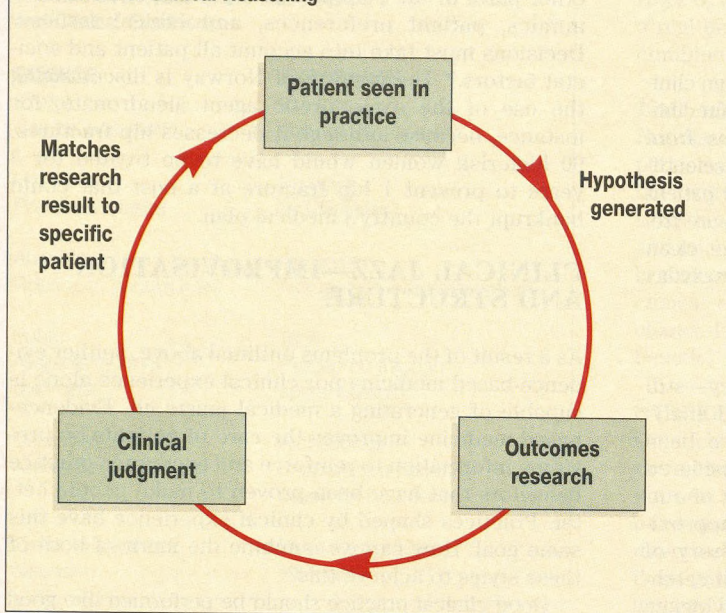
### POEMS PROVIDE THE STRUCTURE

When searching for the structure needed to augment the improvisation of clinical experience, we are seeking patient-oriented evidence that matters (POEMs).<sup>16</sup> This information matters because, if it is valid, it should change what is done in practice. Identifying, evaluating, and applying POEMs provides the structure needed for effective clinical practice. Treatments that are found through systematic study to be beneficial must be distinguished from those of harmful, unknown, or uncertain benefit, and they should be used to treat the majority of patients most of the time. To paraphrase Gershwin: If it is not a valid POEM, it is not necessarily so.

Most available medical information does not qualify as a POEM, but is instead disease-oriented evidence. This type of information helps us understand disease

FIGURE

## The Circle of Clinical Reasoning



processes and serves as the basis for POEMs, but is not a substitute for data on patient outcomes. Since relatively few true POEMs exist, an evidence-based approach to patients can be liberating. Physicians can continue to base their practices on good evidence and not feel guilty when ignoring expert recommendations or clinical tradition not anchored in outcomes-based evidence. Improvisation is necessary when applying good evidence to individual patients, and it can flourish in clinical situations when POEMs are not available. Inspiration for clinical improvisation can come from multiple sources: a physician's own clinical experiences, the experiences of others, the perspectives of patients, current care standards in the community, and careful conclusions based on disease-oriented evidence. However, improvisation must yield to the scientific evidence of POEMs when it becomes available.

The improvisation of clinical experience and the structure provided by valid POEMs are linked as illustrated in the Figure. Hypotheses are formed out of clinical experience. Outcomes research tests these hypotheses in a scientific manner to produce a general answer. However, the circle is complete only when clinical experience is used to determine whether this evidence is applicable to specific patients.

The seeming polarities of medical practice—clinical science and clinical experience—are actually as inseparable

as the rhythm and lead of a jazz quartet. Efforts to constrain clinical expertise through the rigid enforcement of guidelines or policies are just as misguided as those that ignore patient-oriented research evidence in favor of experience-guided understanding. Medical harmony only happens when the improvisation of clinical acumen is tight with the structure of valid POEMs.

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