

# Chapter 1

## Introduction

**Konstantin Umanskiy**

*Where is the wisdom we have lost in knowledge? Where is the  
knowledge we have lost in information?*

T.S. Eliot 1934

### **Tell Me a Story. The Importance of an Anecdote**

At the center of medical decision-making is always the patient; their story, their feelings, their family support and their unique perception of the problem. At this intersection of medical art and science stands the surgeon who must combine the unique aspects of the ancient art of healing with modern medical science to provide the treatment most likely to create a good outcome. Instinctively we as surgeons tend to rely on impressions from our clinical practice, experiences during surgical training, or maybe what we have just heard at the morbidity and mortality conference this week. This anecdotal decision making, while typically thought of as rudimentary and not “evidence-based”, is in fact one of the most basic forms of evidence based medicine (EBM). This method of medical practice has been known since antiquity where early EBM was based on ancient historical or anecdotal accounts. Teaching during this time was mainly authoritative and passed on with stories. By the seventeenth century, a renaissance era of medical practice had ushered the earliest form of modern EBM. During this period, written journals were kept and textbooks began to become more prominent.

### **Information Literacy. Learning the New Language**

Fast forward to 1970–1990s, the era often called the transitional era of EBM. This time period was characterized by the rise of biomedical informatics, driven by the explosion of published information related to health care. At the same time came

---

K. Umanskiy  
Medical Center, University of Chicago, Chicago, IL, USA  
e-mail: [kumanskiy@surgery.bsd.uchicago.edu](mailto:kumanskiy@surgery.bsd.uchicago.edu)

© Springer International Publishing Switzerland 2017  
N. Hyman, K. Umanskiy (eds.), *Difficult Decisions in Colorectal Surgery*,  
Difficult Decisions in Surgery: An Evidence-Based Approach,  
DOI 10.1007/978-3-319-40223-9\_1

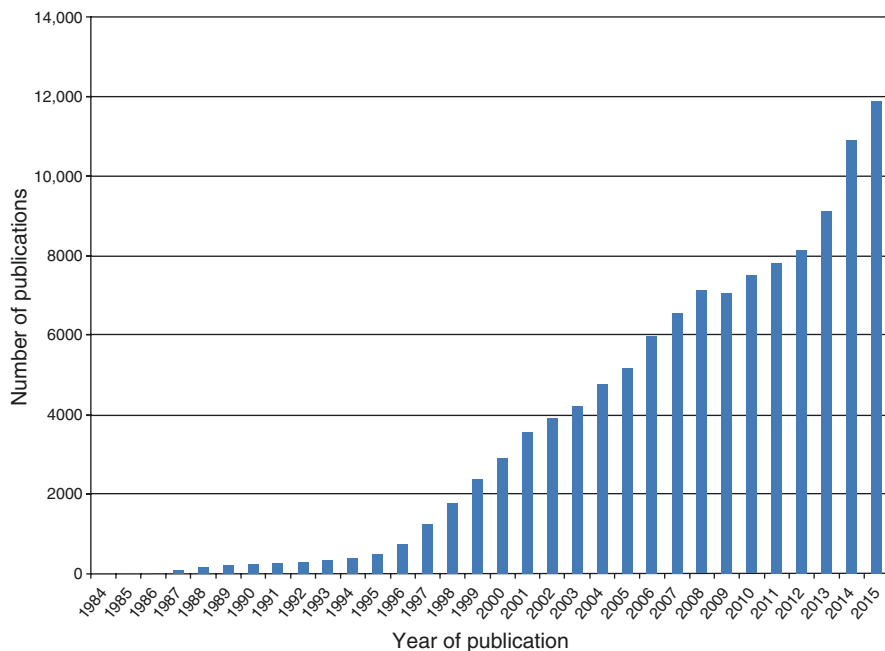
the advent of the clinical trials and of clinical research, in general. An electronic version of Index Medicus which would ultimately become MEDLINE was expanding rapidly. An early version of what would become a World Wide Web was in advanced phases of development. The stage was set for an entirely new relationship between the world of medical practice, health care and the biomedical literature.

In 1991 the term ‘evidence-based medicine’ was declared to be both ‘a new approach to teaching the practice of medicine’ and ‘a new paradigm of medical practice’. In 1992, the Journal of the American Medical Association proposed a radical change in the hierarchy of knowledge in which clinical evidence, particularly that stemming from randomized trials and meta-analyses, was placed above the pathophysiological understanding of disease process and ‘clinical experience.’ [1] This concept, while controversial, took the medical community by storm, fueled by reports such as the one published by Antman et al. [2] that demonstrated that thousands of patients with myocardial infarction had died unnecessarily as a result of failure to adequately summarize the trial evidence on the efficacy of thrombolytic therapy.

With the advent of public access to the Internet via the World Wide Web in 1995, the door had swung open to the proliferation of electronic biomedical resources. But with the rapid explosion of medical information, came the necessity of equipping the practitioners and teachers of medicine with resources to acquire ‘information literacy’ [3], a concept defined as an identification of the information needed and the process of performing a search, evaluating the quality of the evidence and, finally, integrating it with independent pre-existing information. This process that can be described as ‘ask’, ‘acquire’, ‘appraise’ and ‘apply’ became the instructional model for EBM [4].

Since the mid-1990’s medical journals have featured a number of well-designed analyses and clinical practice guidelines put together by well-respected groups of experts. The number of publications with the keyword ‘evidence-based medicine’ has risen dramatically from 1984 to 2015 (Fig. 1.1). While the emphasis on evidence-based practice has been robust and quite persistent over the past two decades, the evidence provided often conflicts with other evidence, may be overtly misleading or even just plain wrong. One such conspicuous example was the recent excitement about avoidance of mechanical bowel prep in colon surgery [5], only to later realize that mechanical bowel prep with oral antibiotics as originally proposed by Nichols and Condon decades ago is demonstrably superior [6].

Without a doubt evidence-based medicine provides surgeons with a rational basis to support guidelines for treatment modalities and contributes to standardization of care, which in many instances results in improved quality of care and better patient outcomes. But with the guidelines may come an unwelcomed restrictiveness; many surgeons are reluctant to alter their practice and may have very legitimate concerns whether the generalized evidence really provides the best solution for the individual patient. The interpretation of data as presented in medical literature may require the reader to become ‘information literate’ to appraise the quality of the evidence and its true applicability to the individual surgeon’s practice.



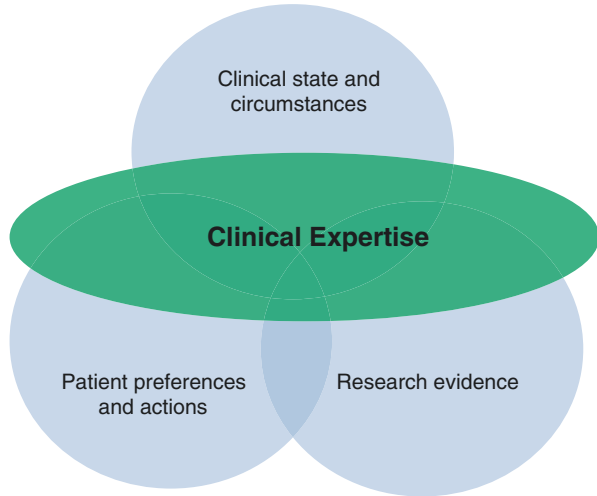
**Fig. 1.1** PubMed entries with keywords ‘evidence based medicine’

Introduction of new technology into colon and rectal surgical practice is resulting in a rapidly expanding technical armamentarium. Some surgeons self-described as “early adaptors” are quick to jump on the bandwagon to embrace new and often unproven technology, driven by a general desire to advance the field and push the envelope. An unbiased and thoughtful review of data and careful reflection on the ethical considerations based on the surgical dictum of “do no harm” should be liberally exercised.

## Bringing It Together

Initially, EBM focused primarily on determining the best evidence and applying that evidence to the clinical situation at hand. This early approach lacked emphasis on traditional aspects of clinical decision-making such as physiologic rationale and individual clinical experience. Fortunately, with evolution of EBM came the realization that research-based evidence alone may not be an adequate guide to action. Instead, clinicians must combine their experience, the applicable scientific evidence and the patient’s wishes and values before making a treatment recommendation. Figure 1.2 depicts a model for evidence-based decisions, which emphasizes “clinical expertise” as an overarching component in EBM decision-making. Clinical

**Fig. 1.2** Current model of evidence-based clinical decision making (Adapted from: Haynes et al. [9])



expertise encompasses the patient's clinical state and surrounding circumstances, combining it with relevant research evidence, and the patient's preferences. Getting the diagnosis and prognosis right and knowing how to provide treatment demand more skill now than ever before because the options are many and patient expectations are high. Surgeons in the current clinical environment must be abreast of not only the scientific evidence; they must also acquire and hone skills needed to both interpret the evidence and apply it appropriately in clinical settings. Finally, and very importantly, the patients' goals, values and wishes remain the cornerstone to the best and informed decisions [7].

## Why This Book?

How do we know that a parachute works? Well, one can say we don't know. Apparently there has never been a randomized, double blind, prospective, placebo-controlled trial assessing the efficacy of the parachute [8].

Sometimes common sense is all that is needed, and medicine in this regard is no exception. This book was conceived as an opportunity to hear the voice of a no-nonsense, wise mentor, who can build on the available evidence, put it in perspective and provide practical advice to tough clinical problems. While not all encompassing, this book has been designed to help surgeons with their decision-making on a very practical level based on the best available evidence. We asked many of the most 'information literate' experts in the field of colon and rectal surgery to comb through the evidence, evaluate and summarize it for our readers and provide their opinion and recommendation based on the years of experience caring for patients with com-

plex colon and rectal disorders. We are sincerely grateful to a wonderful group of colleagues and friends, recognized experts in the field of colon and rectal surgery, for their contributions to this book.

## References

1. Evidence-Based Medicine Working Group. A new approach to teaching the practice of medicine. *JAMA*. 1992;268(17):2420–5.
2. Antman EM, Lau J, Kupelnick B, Mosteller F, Chalmers TC. A comparison of results of meta-analyses of randomized control trials and recommendations of clinical experts. Treatments for myocardial infarction. *JAMA*. 1992;268(2):240–8.
3. Presidential Committee on Information Literacy. Final report. Chicago: Association of College & Research Libraries; 1989.
4. Straus SE, Green ML, Bell DS, Badgett R, Davis D, Gerrity M, Ortiz E, Shaneyfelt TM, Whelan C, Mangrulkar R. Evaluating the teaching of evidence based medicine: conceptual framework. Society of General Internal Medicine Evidence-Based Medicine Task Force. *BMJ*. 2004;329(7473):1029–32.
5. Zmora O, Mahajna A, Bar-Zakai B, Hershko D, Shabtai M, Krausz MM, Ayalon A. Is mechanical bowel preparation mandatory for left-sided colonic anastomosis? Results of a prospective randomized trial. *Tech Coloproctol*. 2006;10(2):131–5.
6. Kiran RP, Murray AC, Chiuzan C, Estrada D, Forde K. Combined preoperative mechanical bowel preparation with oral antibiotics significantly reduces surgical site infection, anastomotic leak, and ileus after colorectal surgery. *Ann Surg*. 2015;262(3):416–25.
7. Deber RB, Kraetschmer N, Irvine J. What role do patients wish to play in treatment decision making? *Arch Intern Med*. 1996;156:1414–20.
8. Smith GC, Pell JP. Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomized controlled trials. *BMJ*. 2003;327(7429):1459–61.
9. Haynes RB, Devereaux PJ, Guyatt GH. Clinical expertise in the era of evidence-based medicine and patient choice. *ACP J Club*. 2002;136(2):A11–4.