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A Brief History of Evidence-Based Medicine (EBM) and the Contributions of Dr David Sackett

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In January 2007 the *British Medical Journal* contacted an online poll of its readers, and evidence-based medicine (EBM) was ranked seventh among the 15 most important milestones that shaped modern medicine. These 15 milestones included such things as the introduction of antibiotics, immunization, sanitation, and radiology.¹ A Google search today on websites pertaining to anything evidence-based will be in the millions.

EBM is defined as integration of the best research evidence with clinical expertise and patient values.^{2,3} An extension of EBM that is more relevant today is Evidence-Based Clinical Practice, which takes into account the healthcare setting and circumstances in which we practice.⁴

The EBM movement started in 1981 when a group of clinical epidemiologists at McMaster University (Hamilton, Ontario, Canada), led by David Sackett, published the first of a series of articles in the *Canadian Medical Association Journal* advising physicians how to appraise the medical literature.⁵ The actual term “evidence-based medicine” was first coined by Gordon Guyatt, the Program Director of Internal Medicine at McMaster University from 1990 to 1997, who was and one of Sackett’s mentees in 1991.⁶

Prior to that the Levels of Evidence (LOE) was introduced by the Canadian Task Force on Periodic Health Examination, which was founded in 1976 as a result of a joint effort of the Deputy Health Ministers across the ten Canadian provinces.⁷ The mandate of the Task Force in its first 3 years was to establish the methodology for evaluating scientific evidence. The Task Force paid particular attention to preventative measures in the periodic examination of asymptomatic patients. This task force proposed an evidence rating system (Table 1). This early LOE rating system was improved later by Sackett

(Table 2).⁸ Since then, a more stringent and elaborate system was introduced, which specifies the conditions under which a study may be upgraded or downgraded, depending on its methodological quality.⁹

On May 13, 2015, David Sackett, the physician who is considered the father of EBM, passed away. In this issue’s EBM Hub, we will tell you a few things about this extraordinary man and his accomplishments.

He was American by birth but Canadian by choice. He was born in Chicago in 1934 and obtained his medical degree at the University of Illinois. He was trained as an internist and nephrologist. He received a Master’s degree in epidemiology from Harvard University and practiced in Chicago, Buffalo, and Boston.

In 1967, at the young age of 32, he founded the first Department of Clinical Epidemiology in the world at the newly-minted medical school at McMaster University. There were other departments of epidemiology before, but they dealt with public health issues and statistics beyond the

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Table 1. Quality of Evidence

Evidence	Grade of Evidence
Obtained from at least one randomized controlled trial	I
Obtained from well-designed cohort or case-control analytic studies (preferably from more than one center)	II-1
Obtained from comparisons between times or places with or without intervention (or dramatic results in uncontrolled experiments)	II-2
Opinions of respected authorities (based on clinical experience, descriptive studies or reports from expert committees)	III

Adapted.⁶

reach of the average clinician. David Sackett demystified all this by applying the methodologies from Public Health and biostatistics and to individual patients at the bedside. He labelled this “Clinical Epidemiology.” His first book, titled “Clinical Epidemiology,” was published with colleagues in 1985,¹⁰ and his series of articles, such as “How to read clinical journals: I. why to read them and how to start reading them critically”, published in the *Canadian Medical Association Journal* in the 1980s, teaching physicians how to appraise the medical literature, shaped a whole generation of clinicians.⁵ His subsequent book with colleagues, “Evidence-Based Medicine: How to Practice and Teach EBM,” gave the tools to physicians and explained how to apply them to patients at the bedside.² The levels of evidence as we know them today can be attributed to him through his early publications.¹¹

In his own words, he fell in love with Canada within the first 3 months after arriving at McMaster. Although Canada and the USA share a common border, same language, and generally the same culture, in the late 1960s Canada decided to follow a different course in terms of health care. It decided to adopt a universal health care system. Sackett was excited about the prospect of universal health care and all the other social support systems available in Canada then but not available in the slums of Chicago, Buffalo, and Boston, where he had worked before.

According to Sackett, the key components to EBM are: (1) consideration of the patient’s expectations (wishes); (2) our clinical skills; and (3) the best evidence available to us. In the past, decisions were made on observations and the dogma of the “experts.” Sackett would often tell the story behind George Washington’s demise to make this point. Apparently George Washington was a healthy individual riding his horse at the robust age of 68. He developed epiglottitis one day, and his physicians and the experts they called upon for advice all suggested treatment with blood-

Table 2. The Relation Between Levels of Evidence and Grades of Recommendations

Level of Evidence	Grade of Recommendation
Level I: Large randomized controlled trials (clear results, low risk of error)	Grade A
Level II: Small randomized controlled trials (uncertain results, moderate to high risk of error)	Grade B
Level III: Non-randomized trials, contemporaneous controls	
Level IV: Non-randomized trials, historical controls	Grade C
Level V: Case series, no control	

Adapted.⁸

letting (of eight pints) rather than tracheostomy, which was known from the time of the ancient Greeks as the correct treatment. Thus the American hero probably died from peaceful iatrogenic exsanguination at the hands of experts. Sackett did not think much of the experts. The truth, according to Sackett, can only be found in randomized trials when these are feasible and avoiding the influence of bias.

In 1994, he left McMaster University and accepted a position as Foundation Director of the Centre for Evidence-Based Medicine at Oxford University in the UK. Upon his retirement from Oxford, he returned to Canada, where he mentored young investigators at the Trout Research & Education Centre.

Until his death he continued to lecture to students in Clinical Epidemiology at McMaster. He loved to interact with young people and share his ideas. He was a likable person who did not compete with his students and mentees, who are in fact his legacy. He was a legend in his own time and his legacy will only increase with the passage of time

Honors bestowed upon him included: (1) Fellow of the Royal Society of Canada (1992); (2) induction into the Canadian Medical Hall of Fame (2000); (3) Officer of the Order of Canada (2001); and (4) recipient of the Canada Gairdner Wightman Award (2009).

In the spirit in which he lived his life, taught his students, and helped shape EBM, we salute Dr David Sackett and wish him a fond farewell.

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