

# Handbook of Evidence-Based Management: Companies, Classrooms, and Research

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Oxford University Press (2011 publication)

## Chapter 3: Learning from other Evidence-Based Practices: The Case of Medicine

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### 1. General introduction

Today, Evidence-based practice is all around us. Not only medicine embraced its principles, but education, social welfare, criminal justice and, last but not least, management as well.

[elaborate]

To many professionals, Evidence-based practice seems to have become the logical way of doing their business. With only some exaggeration, we could say that Evidence-based practice has grown into the mantra of the modern professional and into the program of his discipline. What is the meaning of this? In order to understand Evidence-based practice, it may help to take a closer look at its first introduction, which was in medicine. Since Evidence-based medicine has an almost paradigmatic meaning, we would like to start our exploration of this intriguing phenomenon by focusing on medicine.

[elaborate]

### 2. The Rise of Evidence-Based Medicine

As a concept, "Evidence-based medicine" was coined in the 1990s. It was defined as "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients" (ref.). This definition is striking, because it is addressing a practice that apparently was not always "conscientious, explicit and judicious". Already in the 1960s and 70s, people like Alvan Feinstein, Archie Cochrane and Henrik Wulff – generally considered as the pioneers of the movement - were struck by the fact that clinical practice was characterized by much diversity.(ref.) In clinical decision making, experience, intuition and the wisdom of former teachers seemed to be more important than scientific first principles. They found this intellectually disturbing, and tried to remedy this situation by writing books that have become classics to the movement: *Clinical judgment* by Feinstein (1967), *Effectiveness and efficiency* by Cochrane (1972) and *Rational diagnosis and treatment* by Wulff (1976).(ref.) Parallel to this self-reflection by physicians, there was growing criticism on medicine and doctors coming from the outside. Doctors were accused of being inconsistent in diagnosis and treatment, of behaving in a paternalistic way, of causing iatrogenic damage and of being responsible for a cost explosion in health care.(ref.) This was considered to be especially disturbing, because the average life expectancy at birth had more or less remained the same.

An evaluation of the effectiveness and efficiency of health care was called for, and this is exactly what happened. A new discipline was created: clinical epidemiology. Epidemiology had existed much longer, but it was associated with public health. Because of its political connotations, public health was viewed with suspicion by both biomedical researchers and clinicians. Therefore, something new had to be created, that would appeal to both groups and be a viable solution to the problems of intra doctor variability and the cost explosion in health care at the same time. This is what clinical epidemiology set out to do: while the research questions of the new discipline were supplied by the clinic, its methods were solid enough to appeal to basic researchers. Epidemiology – once considered to be a rather boring and irrelevant discipline - had become *clinical* epidemiology. In the process, it moved from the periphery to the centre of the medical enterprise.

The new discipline was developed at McMaster's University in Canada, by a team of clinicians, biostatisticians, engineers and health economists headed by David Sackett. Greatly inspired by the work of Feinstein, Sackett succeeded in creating a program in which problem-based medical research was translated into a problem-based medical curriculum. The new approach was embraced and funded by the Rockefeller Foundation, and successfully exported to several other western countries. It didn't take too long before clinical epidemiology was institutionalized in a handbook, a journal and a network. In 1985, David Sackett, Brian Haynes and Peter Tugwell published *Clinical Epidemiology: a Basic Science for Clinical Medicine*. Two years later, the *Journal of Chronic Diseases* was rebaptized into *Journal of Clinical Epidemiology*, and finally, INCLLEN was established: an INternational CLinical Epidemiology Network to support clinical epidemiology worldwide.

Things were taken even a step further by Gordon Guyatt, an early graduate of the Department of Clinical Epidemiology and Biostatistics at McMaster's. In an article published in the *Journal of the American Medical Association* in 1992, he launched the concept of "evidence-based medicine". The article was subtitled "A new approach to teaching the practice of medicine" and sprang from his need to justify the training program in the medical school of McMaster's.(ref.) Doctors of the future needed to be educated differently: not knowledge- and teacher-based, but rather problem- and patient-based. Guyatt claimed that Evidence-based medicine represented a paradigm shift for medical practice. While the old paradigm had valued pathophysiologic principles, teacher authority, experience and unsystematic clinical observation, the new paradigm stressed their fallibility. Clinicians should henceforth rely on evidence, and be capable to decide what constitutes reliable evidence and what does not. In order to do so, they should be able to search, evaluate and apply original medical literature. The underlying belief was that physicians could gain the skill to make *independent* assessments of evidence – that is: without the guidance of external authorities or the weight of tradition.

A few years after Guyatt's article, his mentor Sackett published *Evidence-Based Medicine: How to Practice and Teach EBM*, (1997) a book he again co-authored with Brian Haynes. In 1995, the bi-monthly journal *Evidence-Based Medicine* was founded, published by the American College of Physicians. Today, the editors are Brian Haynes – still based at McMaster's – and Paul Glasziou, director of the Centre for Evidence-Based Medicine in Oxford. The journal claims "to scan over 100 journals and around 50,000 articles a year so that we can identify the most important and valid 120 research articles and publish them".(ref.) What EBM wanted to do is to develop and apply criteria of critical appraisal, in order to reduce the mass of both published and unpublished material and boil it down to the two percent of articles "that are both valid and of immediate clinical use" (Sackett e.a. 2000, p. 3).

### 3. The Management Professional Field

Management thinkers such as Chester Barnard and Peter Drucker (ref) teach that organizations are our society's most important building blocks. Without organizations, economic progress and the state of our social facilities would not be at their current level. Whether it concerns businesses and economic objectives, government organizations and statutory duties, or non-profit organizations and social missions, an organization with a manager at the helm is the vehicle that makes delivering the contribution of added value, faster, better, more profitable, just and sustainable.

Organizational science as a discipline developed during the first half of the previous century. This period saw the introduction of the mass production principle. Organizations also began to ask questions surrounding standardization and operational process efficiency. These questions were specified and answered by organization experts of the time, who include Frederick Taylor and Henri Fayol. Seen from a management perspective, classic organizational science developed thereafter over the course of the previous century with the help of such things as systems and contingency thinking. During that time, the field was joined by the social sciences - sociology, organization sociology, psychology and social and organization psychology in particular. The contributions from these disciplines often resulted from the questions, problems or insecurities from the organization's internal and external environment. Whereas at the turn of last century Taylorism was the answer to the day's predominant production issue, psychological insights offered solace at a time when problems surrounding employee motivation and profiles became relevant to the proper arrangement of and differentiation between organizations. When seen in terms of such disciplines as social sociology and organization sociology, the management world in the 1980s already had a great amount of high-quality 'evidence' at its disposal. The associated knowledge and insights were built up by the codification of experience *and* high-quality empirical research conducted in the previous decades. It was chiefly towards the end of the 1960s and the start of the 1970s that evidence in the organization sociology field saw accelerated advancement. The social psychology field underwent a similar development during the 1950s and 1960s. Nevertheless, the professional field we call management is seen as still being in its infancy, as far as empirical foundations are concerned. Why is this, and is it justified? There are three possible explanations for this image of 'infancy':

1. The first possibility is connected to the developments the professional field deployed during the 1980s. During this decade, the carefully cultivated and nuanced contingency thinking from the sixties and seventies (ref. Burns and Stalker, Lawrence and Lorsch, Woodward) was being increasingly exchanged for universal recipes for success (see for example: Peters and Waterman). This line of thought, into which a concept such as 'excellent businesses' fits, was propagated over the 1990s and the start of this century. During this period we encounter such concepts as 'Visionary Companies' (ref. Collins and Porras) 'G2G Organizations' and 'High-performance Organization' (ref. De Waal). The fact that people speak of 'the holy grail of management' in relation to these concepts, thus invoking the suggestion that there is a universal recipe for success, illustrates this development nicely. Comparable suggestions are made with respect to leadership and strategy, for example. Leaving aside the investigations' debatable empirical foundations that underpin these insights, they do not do justice to the context of organizations and their specific developments and characteristics. In that framework, an answer to the question 'what works?' is less relevant to management practice than the answer to the question 'what works, for who, with which problem, in which context?'. At the start of this century, Christensen and Sundahl directly pointed out a sensitive area: *"Many researchers and writers about management have been so eager to offer theories- in the form of "if you do this, this will result" – that they haven't taken the care to build their predictions of cause-and-effect on a robust classification scheme. .... Some treatises on leadership or on managing change seem to assert that leadership is leadership and that change is change".* (ref.)

2. In addition to the search for universal solutions at the expense of attention and respect for context and situationality, the nature of the professional field also offers an explanation for the infancy image. Management as a profession is always strongly connected to business administration, a discipline that, just as communication and change management for example, is seen as a synoptic science or 'Integration Science'. Or put another way: a science or professional field composed of, supplied by, or dependent on other sciences or professional fields. In the case of business administration, this usually concerns such fields as economics, psychology, organizational science, sociology and strategy. With regard to psychology, it has been noted earlier that this is a field of study with a strong empirical basis. This means the field of social psychology is characterized by scientific research with a high 'level of evidence'. The question is, however, how to assess the business administration field and its associated management discipline using these 'strong' suppliers of evidence. Is it a matter of tallying up the supplier's collective track records and research contributions or is the chain called management only as strong as its weakest link? Or put another way: should management be chiefly assessed within its own domain and does only evidence that has been generated within the professional field itself count? Various authors point to limited progress, despite the fact that management can be seen as a country with a great desire for profit. Some authors attribute this to a form of 'balkanization' within the professional field (ref. March, Pfeffer, Schuring). To this end they point in particular to the independent development of a series of varying perspectives, without the issue of cross-pollination or mutual influence. March describes this phenomenon as follows: "... *Energized subfields have tended to seal themselves off, each seemingly eager to close further minds of the already converted, without opening the minds of others*" (p. 280). Other authors such as Gioia and Pitre express themselves in similar terms and summarize this development under the term 'compartmentalization' (ref). March looks back to around thirty years after the conclusions he drew halfway through the sixties and notes that since that time, very little in the professional field has changed: "*Plus ça change, plus c'est la meme chose*". The image of stagnated development and a lack of empirical foundation that management is often presented as its share can therefore be partially attributed to the discord and fragmentary approach to research within the professional field itself.
  
3. A third possible explanation for the image of 'infancy' is the strong normative view of what organizations are, can do, and the associated resistance against concepts such as 'design', 'systematic and methodical' and 'evidence-based'. The epicentre of this view can be localized in the Organizational Development (OD) approach. In this epicentre, much emphasis is placed on the human factor and the limits of (or limits to) the rational perspective and its associated concepts such as 'planning', 'design' and 'steering'. But then again, concepts such as 'learning and 'development' are prized very highly by the followers of this approach. This controversy between the founder of strategic management, Igor Ansoff, and management thinker Henry Mintzberg illustrates this point, whereby the latter publicly attacked the former for the limitations that strategic planning was supposed to have. As an alternative to Ansoff's strategic planning that he saw as static and mechanical, Mintzberg proposed an approach in which people could work in a more learning-based and 'open' way (ref. Mair, Eppink & Ten Have). This discussion still appears to be current to this day and touches on the possibilities and limits that the role that 'design' and its associated concepts such as 'systematic and methodical' and 'evidence based' have in relation to the professionalization of the field. For this reason, this topic is discussed in further depth below.

Peter Drucker views the professionalization of management as the most important technological development of the previous century. He links the enormous economic growth that took place in the previous century with the development of what he describes as 'management technology'. His position is that without professionalization of the field, economic growth would have been significantly lower and organizations would have not been able to make the contribution that is so common in our societies: "*But surely if management had not emerged as a systematic discipline, we could not have organized what is now a social reality in every developed country: the society of organizations and the 'employee society.'*" (ref. Drucker). Drucker stresses that organizations are systems in which a whole

range of activities are consciously and purposefully coordinated. Moreover, an organization's right to exist is determined by their capacity to coordinate their economic activities more efficiently than the market. Bower notes this in connection to the assignment that managers have in relation to this right to exist and the action and operational orientation that is needed for that purpose: "*It is one thing to recognize that a corporation is a complex non-linear system interacting with a very rich and changing environment. It is another to provide a map of that system that permits managers to act in an intentionally rational fashion*" (ref. Bower, p. 91). Managers are therefore thought to do business in a purposeful, determined and practical way. In line with this theory, Drucker argues for a kind of management practice in which people work 'systematically and methodically' and he makes mention of the 'management profession'. Simon too ascribes a central role to 'design' in relation to management practice and even sees it as the central characteristic of a profession: "*Engineering, medicine, business, architecture, and painting are concerned not with the necessary, but with the contingent – not with how things are but how they might be – in short with design ... Everyone designs who devises courses of action aimed at changing existing situations into preferred ones ... Design, so construed, is the core of all professional training*" (p. 12).

Despite the obviousness of the role of design that Simon propounds and the demonstrable contribution that planning and systematic and methodical working has for managers, these concepts are often used in an adverse, bad or even pejorative sense. An example is formed by the reactions to research into managers' 'change preferences' (Mastenbroek en de Caluwe, 2004). This research reveals that a great deal of things are changed using 'blue prints' and 'design'. The connotations that apparently belong with this phenomenon are not positive: this way of working is seen as top-down, one-sided, problem-driven and rational (ref. Visscher). For this reason, various authors have justifiably called for this way of thinking to be refined, for us to say goodbye to outdated ideas and to look instead towards the rich possibilities offered by the 'design' concept (ref. Boonstra, Liedtka). To this end, they refer in particular to the 'design' concept's central notion of synthesis. Liedtka describes this as follows: "*The creation of a coherent harmonious whole emerging with integrity from a collection of specific design choices*" (ref, p. 9). Synthesis can be seen as a fundamental notion which can be used to describe what good design(s) is/are, no matter whether it concerns engineering, medicine, management or architecture.

Historical literature pays a great deal of attention to earlier architectural theories. The historical city of Babylon and Egypt's first pyramids are important examples of said theories. These theories chiefly addressed the concept of 'beauty' and emphasized the importance of such principles as harmony and symmetry. More recent insights emphasize the concept of 'best solution' to a posed problem in relation to concept of 'design' (ref. Bazjanac, 1974). This concept can also offer management a framework and direction in which to further develop the professional field. Coordinates to be considered here are the specific context, connection and interaction between the building blocks, good designs, evidence and systematic and methodical work methods in both the professional and the scientific sense.

#### **4. Trust in numbers**

In his widely acclaimed book *Trust in Numbers. The Pursuit of Objectivity in Science and in Public Life*, Theodore Porter discusses the appeal of quantification in the nineteenth and twentieth centuries.(ref.) He argued that quantification is no inherent quality of science, but rather the result of compromise, that becomes necessary when a discipline is experiencing external social pressure and distrust. As such, quantification is a pacification strategy suggesting disinterestedness. It is interesting to apply this line of reasoning to Evidence-based practice. In his book, Porter introduces a distinction between two sorts of objectivity. Whereas disciplinary objectivity relates to consensus among professional experts, mechanical objectivity is referring to formalized knowledge to satisfy the general public. This is not just an analytical distinction, but a chronological one as well. Over time, personal trust in professionals in

face-to-face communities faded, to be replaced by 'trust in numbers' in democratic mass societies. Professionals no longer made a difference; instead, standardized and transparent guidelines became the instruments in the hands of bureaucrats and managers. Quantification and calculation were a response to an emerging political and social culture marked by distrust of elites and experts: '*Quantification grows from attempts to develop a strategy of impersonality in response to pressures from outside*'.(ref.)

Applied to medicine, this means that EBM is not only reducing clinical uncertainty. It is also organizing public accountability. At the end of the twentieth century, physicians were facing an exploding volume of literature, the rapid introduction of technologies, a deepening concern about burgeoning medical costs, and increasing attention to the quality and outcomes of medical care. There was an urgent need to address these challenges, but the profession could not do this by itself. Greg Stoddart and George Torrance, two members of the Department of Clinical Epidemiology and Biostatistics at McMaster's realized this, when in 1988, they founded the Centre for Health Economics and Policy Analysis. A year before, they had published a book called *Methods for the Economic Evaluation of Health Care Programmes*. The aim of the new Centre was to develop and apply methods for the economic evaluation of specific services and to design and evaluate systems of health care delivery. The Centre wanted to study decision making in health care: not just by health providers, but by consumers and policy makers as well. In doing so, Stoddart and Torrance took decision making to a higher level of aggregation, transcending from the clinic to society at large. The market – so they argued -, should be organized on the basis of analyses of technical efficiency *and* cost-effectiveness. Whereas the Sackett program had focused on the clinical encounter, Stoddart and Torrance were turning to macroeconomic issues of health policy. In the process, they not only showed clinical epidemiology and health economics to be highly compatible, but they politicized EBM.

Over the course of the 1970s and 80s, the protagonists had moved from basic science to applied clinical epidemiology, and from there to health economics and health policy. Gradually, the Janus-face of EBM had become fully clear. On the one hand, there was a strong urge to improve clinical decision making while on the other, it became clear that a tool had been created that facilitated intrusion by third parties, who generally were medical lay people. In a sense, clinical epidemiology, evidence-based medicine and health economy have been instrumental in making medical practice transparent and open to public scrutiny. Whereas the initial motive of the movement may have been to improve clinical decision making, it gradually became politicized. This should hardly come as a surprise, given the fact that medicine is dealing with life and death, with high hopes and expectations of science, and with increasing scarcity on a highly elastic market. For all these reasons, EBM is not just about clinical decision making, but also about cost containment, recourse allocation and distributive justice. In health economy, it is imperative to make incommensurable things comparable; to stand back from specific medical interventions and consider their place in the bigger picture. Numerical and statistical methods seem the only way to do so: they provide a common language that allows translation between disciplines, between medical and political professionals, and between professionals and the general public.

EBM caused new notions to develop with regard to autonomy, objectivity, medical jurisdiction and risk. The boundaries between science, politics and society faded, while the stakeholders had to position themselves and articulate their goals continuously. Because it is not certain where medical expertise and medical power will henceforth be located - in consensus meetings, in protocols or in insurance companies -, physicians have a love-hate relationship towards standards and clinical guidelines. While they realize it is part of their struggle for survival in a world full of distrust, they resent opening up to third-party accountability. Guidelines are said to have led to a loss of individualized treatment of the patient and to contribute to rethinking scientific expertise and to redistributing medical power. As such, EBM may be said to reconceptualize modern, democratic citizenship.

## **5. Differences and similarities between medicine and management and the implications for evidence-based practice**

### **5.1. The levels of professionalism of management**

It has been pointed out in various articles on evidence-based management that management is not really a profession, unlike medicine, a discipline that is regarded by many authors as a genuine profession (ref). Walshe and Rundall, for example, argue that medicine, in contrast with management, has a formal body of knowledge, which is shared by all members in the professional group and which acts as a common frame of reference during discussions and debates within the discipline (ref). Moreover, access to the discipline is restricted in the case of medicine: only those who have studied medicine at a recognized university are qualified to be called a doctor of medicine. In many cases, even then they are not allowed to perform certain medical procedures until they have had further training, during which the doctor acquires further knowledge and skills in a specific area of his discipline. To guarantee the quality of these specialized training courses, they are periodically assessed by peer specialists in a system of peer review and visits. A training course or institute can lose its approved status if it does not meet the quality criteria that apply within the speciality. Additionally, in many countries practising doctors are subject to a permanent system of evaluation. For a doctor to be allowed to continue practising medicine, he or she must demonstrate each year that he/she has had further training and met the formal minimum standard with respect to certain medical procedures. The fact that medicine is a profession is also borne out by the uniform way in which doctors practise their profession. A diagnosis is made on the basis of a standardized physical examination and a surgeon in Norway will operate on appendicitis in the same way as his/her counterpart in Singapore.

Authors point out that the situation in the field of management is quite different (ref). There are no formal or legal rules that set conditions for using the title of manager, so anyone can call himself a manager. Managers are therefore a diverse group and they come from various disciplines, often with a widely varying training and education background. In this way, an employee who after a few years of experience without any formal training has become a manager, belongs to the same professional group as the CEO who received an MBA degree at a renowned business school and then gained experience in various sectors for years. Because of this difference in training and education and experience, managers do not have a common language and there are huge differences in their familiarity with the body of knowledge. Consequently the debate within the field only takes place in small and isolated communities. It is also pointed out that there is hardly any consensus in the field as to which management techniques would be the best to apply and in which way and in which situations. As a result, management practice varies considerably not only between countries or organizations, but even within divisions or departments, and personal experience and self-generated knowledge play an important part in that. Finally, it is observed that by and large, the training of managers takes place within the confines of the training institute and that students upon graduating can take up a management position immediately, without any work experience. This is in sharp contrast to medicine, where students after their formal training at a university first have to hone their skills in practice under the supervision of a senior colleague before they are allowed to practise their trade independently. On the grounds of these observations, it is concluded that management is not a profession and that the application of the principles of evidence-based practice in management practice is barely possible (ref).

The situation described above sounds worrying, but on closer observation this view appears to be coloured by the naïve image that some authors have of the discipline of medicine, and seems to be influenced by the fact that over the past few decades, the field of management has come under increasingly frequent critical scrutiny. Research shows that medical practice is far from uniform and

that the variation in clinical decisions and the results of medical interventions can be enormous from one doctor to the next, in spite of their common educational background and shared body of knowledge (Wennberg 1999). These differences cannot be explained by the seriousness of the illness or the patient's preference, and must therefore be the result of the doctor's personal preference and experience<sup>1</sup>. And although it is true that within each medical speciality there are clear clinical practice guidelines that doctors are required to follow, research demonstrates that sometimes the reality is a far cry from this lofty ideal. For example, asthma is a disorder for which there is an official guideline in the USA, but a study among doctors responsible for emergency aid in hospitals revealed that four years after publication of the guideline, only 45% of the doctors had heard about it and that a mere 24% had actually read it. A study among American paediatricians even showed that although 88% stated they were aware of the guideline, only 35% actually followed it (ref). Similar percentages crop up in studies with respect to other guidelines, leading to articles with titles such as "Why don't Physicians follow Clinical Practice Guidelines?" (ref). Also the statement that anyone without a formal education or formal training can become a manager proves to be somewhat at odds with the real situation. Although this has never been officially investigated, it is not likely that there are many top managers in big corporations who are without any formal management training. Even the management of smaller companies and non-profit organizations such as hospitals is well-educated, and the majority of its managers have completed their studies at a university or in a business school. As there is a great demand for well-trained managers, a self-regulating system has developed in most Western countries, so that it is difficult for people without a formal management training to qualify for a management job. This is partly why the number of management courses and trainings on offer has rocketed over the past few decades and there are various international initiatives to guarantee the quality of MBA and other management courses through accreditation.

Unfortunately, this increasing professionalization doesn't say much about the levels of expertise of managers. Several authors (Rousseau, Mintzberg, ref) are right in pointing out that in general, management training leaves future managers ill-prepared, at least with the current form in which the training is given. The content of management training seems to be heavily influenced by fads, fashionable topics and theories based on poor evidence presented by management gurus. Goshal has already rebuked renowned business schools such as Harvard and Stanford to teach pseudo scientific management models and theories without questioning (ref). This criticism shows significant similarities to the observation made by David Sackett at the end of the 1960s with respect to the medical training: "*A group of us came together in the late sixties, rebels with a cause. We said, 'We know a lot of stuff about medical education, we think its crap and we ain't going to do any of that'. So we set up our own Medical School... We attracted a lot of brilliant young minds because what we were doing was so iconoclastic: it allowed them a way of questioning the pervasive authority of leading clinical teachers... Attitudes to medical authority changed as students started asking their teachers, respectfully, "Why are you doing this with this patient? What is the evidence you have for this?"*" Also the (correct) observation that in the present management training hardly any attention is paid to scientific research and promoting methodical and systematic procedures in management practice is a parallel with medicine, witness a comment made by Gordon Guyatt in 1990: "*The problem isn't clinical experience: the problem is that we (physicians) are so unsystematic, intuitive, and with no notion of scientific principles in our accumulation of clinical experience.*"<sup>2</sup> The current situation with training managers bears a great resemblance to the medical training situation a few decades ago, which could constitute an argument in favour of educating management students in the principles of evidence-based practice. In that sense, Drucker's 1985 plea for a systematic and methodical approach can be regarded as prophetic (ref). Although the above shows that the statement that management is not a

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<sup>1</sup> This is partly to do with the sometimes limited implementation of evidence-based medicine, in particular with the older generation of doctors, because it was not included in the medical curriculum.

<sup>2</sup> It must be noted that this comment by Guyatt squares with Drucker's plea in 1985 for a systematic and methodical approach. In this plea, Drucker emphatically talks about management as a profession.

profession does not paint the whole picture and that we must conclude that at the least management is fast becoming a profession, there is an important obstacle related to this, which impedes the development of the field as an evidence-based practice.

From within sociology, various criteria have been drawn up to make a field or discipline a profession. A number of these criteria have already been addressed above, such as formal training, certification and quality control. An important criterion that has not yet been mentioned here is the existence of a common body of knowledge: a profession needs to be based on a clearly defined domain of well organized and systematized knowledge that can be used for the training and development of professionals (Khurana, ref). Admittedly, this body of knowledge is amply available in the field of management<sup>3</sup>, but it is still insufficiently systematized and also insufficiently accessible, so that it does not act as a common frame of reference enough yet. The lack of this common frame of reference also impedes the development of peer pressure aimed at the use of the body of knowledge by the manager. For management to develop into a genuine profession, such as medicine, the field should integrate the body of knowledge better into management training and make it more accessible to managers. With respect to training, the assumptions developed by Sackett and Guyatt as to evidence-based medicine are an important starting point: educating managers and students based on self-learning and problem-based instruction in small groups which provide intensive, hands-on instruction on how to find the best available evidence, how to critically appraise the evidence, and how to integrate the evidence in (management) practice.

## **5.2. The nature of management research and the researchability of management practice**

The Western world distinguishes various sciences. A distinction is made between fundamental and applied sciences, and they are also divided into humanities, the natural sciences and social sciences. The humanities, also called the liberal arts, include disciplines such as philosophy, history, anthropology and literary theory. The humanities occupy a special place in the spectrum, as these are less suited to experimental research and therefore use techniques from logic to construct internally consistent theories. Natural sciences, also called exact sciences, are different from other sciences in that they are based on the laws of nature and theories that can be tested in experimental research. Examples are physics, chemistry and biology. The social sciences are a halfway house so to speak. These disciplines, also known as social studies, include sciences that are focused on man and his environment, e.g. sociology, pedagogics or educational theory, psychology, economics, business administration and law. From this perspective, management is squarely in the social sciences camp. In the natural sciences, experiments are conducted which allow the researcher to control all the conditions and factors that may influence the result. This often takes place in a controlled environment such as a laboratory. This is why the term "cause" as used in the natural sciences has the same meaning in common parlance. In the social sciences, the results of studies are often influenced by multiple variables that affect each other as well and causality is not often demonstrable. For this reason, terms such as 'cause' and 'effect' are avoided by social scientists, who prefer to use terms such as "regression" and "correlation". Regression is used to demonstrate a relationship and correlation indicates the strength of that relationship. If a relationship between variables is observed, it is often a much more tenuous one in the social sciences than in the natural sciences. In social studies, a correlation of 0.30 is already treated as a strong link between two variables, while a correlation of 0.50 is almost too good to be true! Bear in mind that a correlation of 0.50 means that only 25 percent of the result can be explained by the variable so that 75% must be explained by other factors. Compare this with the natural sciences, where correlations are found of 0.80 or more (ref Hunt, page 78). There is a related phenomenon which is called "confounding". Confounding is the idea that a 3rd variable can distort (or confound) a relationship between two other variables. For instance, when factor X causes outcome Y, that relationship could be confounded by factor C that is associated with both

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<sup>3</sup> Pfeffer and Sutton have even argued that there is too much evidence (ref).

factor X and Y. C would be an alternative explanation for the relationship observed between X and Y. For example, there is a high correlation for children between shoe size (X) and writing skills (Y), however this relation is caused by a third (confounding) factor, to wit: age (C). Because research in the exact sciences is conducted under controlled conditions, the risk of confounding there is greatly restricted. This is in contrast to the social sciences, where research is carried out in real life and the risk of lurking or confounding factors is very high. Because of the multi-relational nature of the social sciences, it is possible to demonstrate that certain variables under certain conditions bear on a certain result, but often it is not possible to show that that relationship exists in all or even most cases. Various authors have pointed out that the practical usability of the result of management research is limited because of this tangle of multi-relational connections (ref). As a counterexample, medicine is often used, where strongly focused research questions are allegedly used that can be answered unequivocally in double blind randomized studies and where strong, mono-causal links exist. That is why medicine is considered by many authors to be a more scientific discipline than management, from which it is concluded that the principles of evidence-based medicine do not apply to management (ref). However, there are three comments to be made here.

1. It is true that randomized research is widely used in medicine. In as early as 1925, Ronald Fisher, the founding father of modern statistics, proposed to use randomization in research into the effect of medical treatments. The first Randomized Controlled Trial (RCT) was not conducted until the end of the 1940s and took place in agriculture (ref 1948 Bradford Hill), but they have since been applied worldwide and have been regarded as the golden standard for a few decades. All the same, most evidence in medicine is based on non-randomized and observational research. One reason for this is that blinding is not always possible in medicine. With surgical procedures for example, it is blindingly obvious to the patient and the researcher that an operation has taken place. The same is true for pharmacological research in which the side effects of the drug to be tested are such that blinding is pointless. Moreover, randomization is not always feasible in medicine. Sometimes randomization is not possible for practical reasons, but more frequently, objections of an ethical nature come into play, for example in research into the effects of smoking on the development of lung cancer. Additionally, quite often it is not possible to conduct experimental research in medicine. This is the case in research into disorders that afflict only a very small part of the population, research into the side effects of drugs and research into the mortality rate of certain diseases or treatments. In all these cases, observational research is used, where the researcher merely observes but does not intervene, with the intention of finding correlations among the observed data. Such research too can lead to robust empirical foundations, particularly when repeated frequently and under varying conditions (ref). One form of observational research that is widely used in medicine is cohort research. In this type of research, large groups of people are followed over a long period to see (prospectively) whether differences occur among the groups. Another type of observational research that is frequently used is case-control research. In this type of research, one group of patients with a particular disorder is compared retrospectively with a group that does not have this disorder. In management research too, randomization and experimental research is often hard to carry out for practical reasons. In spite of this, cohort research or case-control research is used relatively little. This is remarkable as case-control research could be applied in management relatively easily<sup>4</sup>. This forces the conclusion that the research practice of medicine shows extensive similarities with that of management, and that yet the extent and the methodological repertoire of management research is significantly smaller.

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<sup>4</sup> Well-known case-control studies include "In Search of Excellence" by Peters & Waterman and "Good to Great" by Jim Collins. In these studies, a group of companies with above-average performance is compared retrospectively with a group of companies that did not perform as well.

2. A second comment must be made with respect to the assumption that there are strong, mono-causal connections in medicine. For example, it is a well-known fact that a person's blood pressure is influenced by a dozen variables and that the effect of a treatment for high blood pressure is modified by a range of factors. Even with an intervention that looks unequivocal at first sight, such as a hip replacement, its success is determined not only by variables such as the quality of the prosthesis or the surgeon's experience, but also a great number of less obvious variables such as the patient's nutritional situation, living conditions, social support, state of mind and the ability to cope with setbacks. In medicine too, there is a tangle of multi-relational links that are also difficult to measure or to standardize. Most doctors therefore regard medicine as a social science (ref). The most important difference between the research practice in medicine vs. management is not so much the nature of the research practice as the degree of variation in meaning in the discipline. For researchers to be able to carry out a study in the discipline, they must attach the same meaning to concepts and models and strive to eliminate ambiguity and achieve value freedom. Every doctor knows what is meant by fever, and a standardized measurement tool has been developed even for a subjective concept such as pain, so that it can be used globally as a hard outcome measure for research. This is in contrast to the management practice, where the use of multi-interpretable abstractions that are far from unambiguous and therefore difficult to operationalize hinder the development of a common frame of reference and restrict the researchability of the discipline.
3. The third and also most important comment relates to the assumption that evidence-based practice is only possible if the discipline has a research practice with a high level of evidence. This is a common fallacy. With evidence-based practice, whether it involves medicine, education, justice or management, it is all about the "best available evidence". If evidence is available on the basis of multiple systematic reviews of double blind randomized studies, that is great, but often the results of observational research, surveys or even case studies are the best available evidence. The level of evidence in itself does not say anything about the extent to which an evidence-based decision is possible, as a decision based on the opinion of experts can also be an evidence-based decision. In many cases, there is even insufficient evidence, so a professional has no option but to make a decision based on experience or intuition. Therefore, the scientific status or developmental phase of a field does not determine the applicability of the principles of evidence-based practice. If research is conducted within the field, and a decision is to be made, a professional can establish whether there is evidence to underpin this decision and in doing so apply the principles of evidence-based practice.

### **5.3. The practice – knowledge gap**

The management field shows a broad consensus on the existence of a deep chasm between practice and knowledge. Journals frequently feature articles on the gap between practitioners and researchers and the authoritative Academy of Management Journal even dedicated a special issue to this subject several times. In most publications it is pointed out that researchers and practitioners live in separate worlds and hardly communicate with each other, and that consequently results from scientific studies are hardly applied in practice, if at all. There seems to be less consensus on the cause of this gap and on the best way to bridge it.

As for the cause, many authors look to medicine again and they are right to observe that the culture among managers is very different from that of doctors. Doctors regard medicine as a scientific domain. Consequently, much attention is given in their medical training to research and methodology and the scientific method is regarded as the basis for developing medical knowledge. In the hierarchy of the discipline, doctors who participate in research or who have done research for a doctorate degree have a higher status than doctors who only practise. Many medical consultants therefore have a career in both research and clinical practice, so the communities of researchers and practitioners in medicine

overlap each other to a large degree. That is why doctors, unlike managers, recognize the importance of scientific research and appreciate the results of studies. This combination of scientific knowledge and practice-based experience enables doctors to assess the results of research critically and to translate these into their daily practice and into individual patient cases. Managers on the other hand do not tend to see research results during their training, which explains why their knowledge in this area is minimal. Only a small number of managers read academic journals from time to time, the majority of them gain their knowledge from colleagues, popular management books, authoritative consultants or success stories about well-known CEOs (ref). Students also tend to have strong normative beliefs and ideas as to what they need as future managers and they are primarily interested in current company practices and experiences of corporate leaders. This suggests that they rate face validity and readability more highly than methodological validity and evidence based on scientific research (ref Rousseau). This cultural difference does not just exist between managers and doctors but also between management researchers and their medical counterparts. In medicine, a researcher is typically a doctor as well, which means that he or she has completed a medical training and has had years of experience working with real patients, so he or she knows what the daily practice of a doctor is about. Management researchers on the other hand tend to be people who have never worked in management themselves and who therefore have no experience of the issues a manager has to address in practice. Moreover, many management researchers appear to cherish a strong Aristotelian perspective, where the importance of an internally consistent theory explaining the observed phenomena is paramount. Put differently, it seems that management researchers are particularly striving to explain how things work, whereas managers just like doctors are mainly interested in the question whether things work. That is why over the past few decades the body of knowledge of management has degenerated into a hermetic, self-referential universe, which in addition is forcefully driven by academic interests. This results in articles that are hard to read and contain a disproportionate number of pages dedicated to hypothesis formation and theoretical underpinning, and only a small number of pages dedicated to the results of the research, which in most cases do not touch on the implications for practical operations. This excessive attention for how things work has also given rise to the situation where inductive, qualitative research methods in the field still prevail, and quantitative intervention research with a high level of evidence barely exists.

This gap between researchers and practitioners also existed in medicine for a long time and still exists today to some extent. Several studies reveal that late into the 1990s, the publication of relevant research results on the basis of RCTs (Randomised controlled Trials) and meta-analyses in a widely read journal was no guarantee for practical application and it sometimes took many years before relevant research results were included in guidelines or were recommended by experts (ref Antman 1992). At the time, the Institute for Medicine even estimated that it took 17 years on average before knowledge generated by RCTs filtered through in clinical practice, and that even then practical application was by no means a foregone conclusion. This led to the conclusion that *"if doctors didn't learn about something in medical school or in their residency, there was a good chance they never would."* (ref). Because of this lack of knowledge, doctors sometimes adhered to procedures and treatments which had been known for a long time to be ineffective, and consequently some patients were subjected to pointless or even harmful treatments for years. As Paul Salkovskis put it pithily: *"Some people make mistakes over 25 years and call it clinical experience."* (ref). The gap between practice and knowledge in medicine had its origin - to a considerable degree - in the kind of research that was done. Until the late 1970s, the most important medical research consisted of biomedical laboratory research, the nub of which was the pathophysiology of diseases, but it had limited possibilities for application and limited relevance for clinical practice. Here too, researchers concentrated mostly on explaining how certain diseases and disorders are caused, whereas doctors mainly want to know which clinical interventions work. Also due to the influence of evidence-based medicine, this situation has changed slowly but steadily and the focus in medical research has shifted to the most important task of doctors: treating patients. Evidence-based medicine has played an important part in that shift by emphasizing the difference between foreground and background questions. Background questions are about general knowledge of the biomedical aspects of a disease

or disorder. A typical background question would be “How does congestive heart failure lead to ascites?” Background questions usually begin with an interrogative pronoun such as who, what, when, where, how and why. Foreground questions on the other hand are about specific knowledge that can be used in a clinical decision as to the treatment of a patient. A typical foreground question is “Would adding medication X to the standard therapy for adults with heart failure reduce morbidity from thromboembolism over 3-5 years?”. Within evidence-based medicine it is pointed out that a well-formulated foreground question consists of four elements: the patient's condition, the population or the actual problem (P), the intervention (I), the intervention with which the comparison is made (C), and the outcome one is interested in (O). These four letters form the acronym PICO and the concept is now used the world over by medical researchers, doctors and students to arrive at a well-formulated foreground question<sup>5</sup>. The evidence-based medicine movement stresses that doctors need both background and foreground knowledge, and that the need for foreground knowledge grows as the experience with respect to a certain disorder or disease increases. A medical student who has just begun his studies will benefit mostly from knowledge about the genesis of diseases and the underlying pathophysiological processes, but an experienced medical consultant will need practical knowledge about the clinical treatment of his/her patients. As medical researchers focused on background questions until the late 1970s, most of the medical research did not meet the need for foreground knowledge among doctors, which resulted in the gap between practice and knowledge. For that reason, evidence-based medicine has been a reaction to the dominance of laboratory research aimed at the underlying biomedical processes and a plea for research into the effect of clinical interventions aimed at real patients. In other words: bringing research back to the bedside.

On account of the cultural difference between the big players in the field, the toughest challenge for evidence-based management, to wit: bridging the gap between research and practice, appears to be bigger than the corresponding one in medicine. An additional obstacle is the fact that many management researchers set such great store by an internally consistent theory providing a plausible explanation for the study outcomes. Without an underlying theory, it is not possible to publish scientific research in a huge number of authoritative management journals, even if the outcome of the study is relevant for practical purposes. This is also an important difference compared to medicine, where partly thanks to the influence of evidence-based medicine a more pragmatic attitude is adopted. As a result, research articles in medicine are significantly shorter, written in easy-to-read English, and the theoretical underpinning of the research outcomes is of secondary importance to the practical relevance and applicability. In this context, the Semmelweis Case is often used in medicine as an example to put the importance of an underlying explanatory mechanism into perspective. In 1847, Semmelweis discovered that the number of cases of puerperal fever, a common disease in those days killing 25% of women in childbirth, could be drastically reduced if doctors washed their hands with a disinfectant before performing a gynaecological examination. However, Semmelweis struggled to get his research outcomes published for lack of an underlying, consistent theory which explained why a doctor washing his hands saved lives. His hypothesis that there was only one cause for the high mortality, namely doctors working in an unhygienic way, was largely ignored and even ridiculed. Semmelweis responded by openly holding the medical world responsible for the high number of deaths among women in childbirth, as a result of which he lost his job and had to move. It was not until 40 years later that his findings gained acceptance in the medical community and doctors were willing to disinfect their hands, after Louis Pasteur had discovered the bacteria and provided the Semmelweis research outcomes with a theoretical explanation<sup>6</sup>.

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<sup>5</sup> The acronym PICO has by now become established in social sciences as well, usually with the addition of the letter C for context.

<sup>6</sup> Semmelweis was already dead by then, he had died a year after he had been admitted into a psychiatric institution in 1865.

#### 5.4. The accessibility of evidence

To a large degree, evidence-based medicine is justified by the enormous explosion of research literature. In as early as 1994, it was estimated that over 40,000 medical scientific journals were being published each year, containing in total more than one million research articles (ref, Olkin). In the field of coronary heart disease alone, over 3,600 articles are published annually, and this means that a cardiologist would have to read more than 10 articles each day just to keep up with developments. For a general practitioner or family doctor, this number is many times higher yet. The problem with evidence-based medicine is not so much a lack of evidence, but rather a surplus: for any individual doctor, there is too much evidence to take into consideration in the daily clinical practice. Pfeffer and Sutton were justified in pointing out that this is no different for the field of management. The number of research articles on management published annually will be significantly lower, but even then too many research articles are published for a manager to keep abreast of the latest knowledge. As a consequence of this gigantic scientific output, it is not just the volume that increases but the diversity of the research results as well, so much so that it becomes impossible for researchers and practitioners to find their way in the mass of evidence. This results in a situation where researchers no longer base their research on the cumulative knowledge in the discipline, but on their subjective perception of only a fraction of this knowledge and practitioners ignore the (sometimes contradictory) research results and rely on their personal experience and intuition. This soon led to the realization within the evidence-based medicine movement that evidence-based practice is only feasible if two crucial preconditions are met:

1. Access to evidence must be quick and easy, via online databases. The enormous development of the Internet has been an important driver in the development and spread of evidence-based practice within medicine. A great number of bibliographical databases is now available via the Internet and they often contain thousands of indexed journals and many millions of research articles. This enables doctors to search relevant research articles using keywords, text words in the title or abstract and using the embedded filter to limit the research results to research type or level of evidence. One of the most famous databases in medicine is Medline which allows the user to search publications from 1966 in over 4,000 journals<sup>7</sup>. Thanks to the access to these databases via Internet, every doctor can go online to find the most up-to-date studies and every consultation room has an immense virtual library containing the latest studies.
2. The availability of aggregate evidence in the shape of systematic reviews, synopses, summaries and evidence-based guidelines. The intention behind a systematic review is to identify as fully as possible all the scientific studies of relevance to a particular subject and to assess the validity and authority of the evidence of each study separately. As the name indicates, a systematic review takes a systematic approach to identifying studies and has the methodological quality critically appraised by multiple researchers independently of each other. The use of statistical analysis techniques in a systematic review to pool the results of the individual studies numerically in order to achieve a more accurate estimate of the effect is termed a "meta-analysis".

Systematic reviews are crucial for the development of a well systematized and organized body of knowledge. Firstly, because they summarize the available evidence on a certain subject efficiently (obviating the need to read the various individual studies on this topic). Secondly, they indicate the gaps in our knowledge and the areas for which little or at best only weak evidence is available, and this generates and shapes the research agenda in the field. The most important database for systematic reviews is that of the Cochrane Collaboration. Synopses are succinct descriptions of primary studies and systematic reviews and summaries are summaries of multiple systematic reviews on one medical topic. Summaries and synopses can be searched by doctors and researchers in

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<sup>7</sup> Medline can be accessed free of charge using the Internet search engine Pubmed, and this explains why 30% of the visitors of this database, originally intended for doctors and researchers, are members of the public.

special databases such as Trip, Sumsearch, DARE and Bandolier. Evidence-based guidelines are the highest form of aggregate evidence and they consist of systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances (ref). Guidelines are not legally binding regulations, but insights and recommendations based on as much evidence as possible regarding the requirements doctors need to meet to provide quality care. A well-known American database containing guidelines is the National Guideline Clearinghouse. Thanks to the availability of online databases with systematic reviews, synopses, summaries and guidelines, the massive amount of evidence in medicine is organized and indexed well, so researchers, doctors and medical students can quickly find the evidence they need with relative ease.

These two preconditions are not met yet in the field of management. Although research articles are quickly accessible via databases such as ABI/INFORM, Business Source Premier, Science Direct and PsycINFO, most managers cannot benefit from this wealth of information for the simple reason that the companies and organizations they work for do not have a licence. On top of that, these databases are organized and indexed differently from the medical databases, which rules out filtering on research design or level of evidence, and a search often throws up mostly irrelevant articles. More importantly, though, is the fact that aggregate evidence is almost non-existent in management: the number of well executed systematic reviews that can stand the methodological test of criticism is severely limited and synopses, summaries and evidence-based guidelines do not exist as yet. The absence of aggregate evidence can be attributed to a large part to the diverging character of management research: contrary to medicine, where research is repeated as often as possible and under different conditions, so as to obtain the highest possible level of evidence, research in management is often isolated and unrelated and does not build enough on previous studies, so aggregation of research results through systematic reviews is not possible (ref Tranfield). This makes for a heavily fragmented body of knowledge with a low level of evidence. This divergent character is partly caused by the fact that research in management is strongly driven by academic interests and there is insufficient consensus on the most important questions in the field that need answering. This situation could be resolved if researchers began to focus more on the foreground questions of managers rather than the background questions of academics, and also if management research developed into a discipline driven by problems and questions that relate to the daily practice of managers.

## **6. Negative effects of evidence-based practice**

### **6.1. The drawback of levels of evidence**

In the book *"Evidence-based Medicine and the Search for a Science of Clinical Care"* by Jeanne Daly, a famous anecdote is told about how David Sackett used evidence to settle a professional dispute: *"It concerns a consensus conference where it was difficult to reach agreement because authoritative clinical experts saw their own clinical view as definitive. Unable to persuade them otherwise, the McMaster people at the conference sent for Sackett. He proposed that experts be encouraged to make any recommendations they chose, but that they also rate on a scale the quality of evidence to back the recommendation. If a recommendation was based on evidence from randomized clinical trials with sufficient power, it would head the list. If the evidence was a case report, the recommendation would still be accepted, but it would be rated as a lower grade of evidence. Thus was born the hierarchy of evidence."*

In evidence-based medicine, the term 'evidence' is used deliberately instead of 'proof'. This emphasizes that evidence is not the same as proof, that evidence can be so weak that it is hardly convincing at all or so strong that no one doubts its correctness. It is therefore important to be able to determine which evidence is the most authoritative. So-called 'levels of evidence' are used for this purpose which specify a hierarchical order for the different research designs based on their internal validity. The internal validity indicates to what extent the results of the research may be biased and is

thus a comment on the degree to which alternative explanations for the outcome found are possible. The pure experiment in the form of a randomized controlled trial (RCT) is regarded as the 'gold standard', followed by non-randomized controlled trials (quasi-experiment) and observational studies such as cohort and case-control studies. Surveys and case studies are regarded as research designs with the greatest chance of bias in their outcome and therefore come low down in the hierarchy. Right at the bottom are claims which are based solely on experts' personal opinions. Experiments in the shape of RCTs are only suitable for assessing the effectiveness of interventions. To evaluate serious side-effects and the long term effects of an intervention, one needs longitudinal and observational research and for the assessment of the effect on the quality of life for example, qualitative research is more suitable sometimes. However, as RCTs are at the top of the hierarchy of evidence, for a long time medical research has focused on topics that could best be researched using experimental research designs and until recently only evidence based on RCTs was treated as real evidence. This restrictive view of evidence led to medical research being dominated for a long time by experimental research aimed at hard, quantifiable outcome measures and it meant that research with a lower level of evidence aimed at side effects, the long term effect or social-psychological success factors such as the patient's coping skills, the level of support from his environment and the perceived quality of life, were largely left out of the equation. Another problem that resulted from this one-sided focus on experimental research was the limited generalizability. In research designs with a high level of evidence such as RCTs, there are often strict inclusion criteria which exclude patients with comorbidity (for example, overweight or excessive alcohol consumption) or certain demographical properties (e.g., age), so that the research outcome only applies to a specific patient population, which limits the generalizability. Observational studies and non-comparative research, on the other hand, have a lower internal validity, but may sometimes be more generalizable. One drawback of the levels of evidence is that they do not say anything about the external validity (generalizability) of the research results and take insufficient account of the methodological suitability of the selected research design in relation to the research question. Alvan Feinstein and Henrik Wulff in particular, the founding fathers of clinical epidemiology who paved the way for evidence-based medicine, accused the people at the McMaster University openly of being obsessed with RCTs and reproached them with unduly promoting this research design as a higher form of truth when in fact it is only a means to determine the effectiveness of an intervention. In management too, the negative effects of the levels of evidence and the dominance of RCTs are frequently pointed out. For example, Mark Learmonth in his article "*Evidence-based Management: A Backlash Against Pluralism in Organizational Studies*" points out that the popularity of evidence-based management can lead to a one-sided view of evidence at the expense of funding observational and qualitative research.

In 1996, David Sackett and his colleagues responded to mounting criticism with an editorial in the British Medical Journal, called "*Evidence-based medicine: what it is and what it isn't.*" In this article they argue that "*evidence based medicine is not restricted to randomised trials and meta-analyses. It involves tracking down the best external evidence with which to answer our clinical questions. ...Without clinical expertise, practice risks becoming tyrannised by evidence, for even excellent external evidence may be inapplicable to or inappropriate for an individual patient.*"

In the past few decades, the focus on RCTs in evidence-based medicine has waned slowly but steadily and by now it is generally acknowledged that a clinical decision should not only be based on scientific evidence with respect to the effect of the treatment, but also on evidence regarding the long term effect, the chance of harmful side effects, the way patients experience their illness, the quality of life and other outcome measures relevant to patients. Partly because of this, the National Institute for Health and Clinical Excellence (NICE), the biggest source of evidence-based guidelines in the world, always involves two patients in the production of a guideline, which always includes a chapter on patient experience. The importance of the levels of evidence has also drastically decreased by now and they have been partly replaced by the GRADE approach. In this approach, evidence is weighed not just on the basis of the internal validity of the research design, but the size of the effect detected is taken into account, as is the subjective interest that a patient assigns to the outcome and the possible

side-effects (ref, Guyatt). This approach has led to a reevaluation of research designs with a lower level of evidence such as observational and qualitative research and initiatives like the establishment of the Cochrane Qualitative Research Methods Group.

## 6.2. Cost control as a driver

In the second part of this chapter we argue that evidence-based medicine has an important political dimension that results from the fact that governments and insurance companies have an interest in keeping the cost of health care under control and they seek to reduce it where possible. At the end of the 20<sup>th</sup> century, governments and insurance companies were faced with soaring health care costs. In many Western countries these costs rose faster than the economy grew and the costs sometimes ran to more than 10% of the gross domestic product. In addition, it became clear that many diagnostic and clinical interventions were found wanting in their effectiveness and many medical treatments were superfluous. Against this background, governments and insurance companies felt the need to regulate medical care, and evidence-based medicine could cater to that need. Governments therefore hailed evidence-based medicine as an external evaluation tool for an economic assessment of the professional activities of healthcare professionals. Evidence-based guidelines that had been set up by the professional group itself were now embraced by insurers as a criterion for compensation. Consequently, the freedom of action for doctors was drastically curtailed. Particularly in the US, this development has given rise to a situation in which doctors first have to seek permission from insurers for many medical interventions and that the applications are assessed by lowly trained employees without a medical background, using simple protocols. As a result, doctors no longer run the show in clinical decisions in the US, they have had to relinquish some power to insurers and managers. The discussion on evidence-based medicine has not only been politicized but also strongly polarized. In this discussion, advocates of evidence-based medicine see it as the tool to save health care: use the best evidence to determine the best treatment and eliminate all superfluous and unnecessarily expensive medical intervention. The opponents see evidence-based medicine as cookbook medicine, where the patient's need is no longer the main concern, but the need of governments and insurers to keep costs down. Cost control instead of medical necessity is the justification for the assignment and distribution of care. In his article "*What evidence-based medicine: what it is and what it isn't?*", Sackett warns against this depiction of evidence-based medicine which he feels is an oversimplification: "*Evidence based medicine is not "cookbook" medicine. Because it requires a bottom up approach that integrates the best external evidence with individual clinical expertise and patients' choice, it cannot result in slavish, cookbook approaches to individual patient care. ... Some fear that evidence based medicine will be hijacked by purchasers and managers to cut the costs of health care. This would not only be a misuse of evidence based medicine but suggests a fundamental misunderstanding of its financial consequences. Doctors practising evidence based medicine will identify and apply the most efficacious interventions to maximise the quality and quantity of life for individual patients; this may raise rather than lower the cost of their care.*"

It is undeniable that cost containment, recourse allocation and distributive justice are strong drivers for the popularity and spread of evidence-based practice, not just in medicine but in education, social welfare and criminal justice too. This will be no different for the field of management. Management, more so than medicine, is a field driven by economic interests, this is the reason why the quality of management is usually measured by strict outcome measures such as market share, share holder value, return on investment, profit margin and employee productivity. In contrast with medicine, in the field of management, there is no external authority such as a government or health care insurer that can impose the application of evidence-based practice across the board. It is primarily up to the companies and the managers themselves to promote and spread evidence-based management.

## 7. Implications for further development of evidence-based management

This chapter has provided a short story of evidence-based medicine's historical development and that of the professional field of management. It has also extensively covered the similarities and the differences between the two professional fields and the hindrances that block evidence-based management's further development. It has also proved the untenability of the view that evidence-based practice in our professional field is not possible because management is not a profession. The most important argument to support this statement, namely the lack of a body of knowledge that functions as a common frame of reference, says more about the developmental phase than the nature of the professional field: the body of knowledge also functioned insufficiently as a common frame of reference in medical science up until the end of the 1980s and it was precisely evidence-based practice that made the difference in this situation. The choice to focus on education within evidence-based medicine seems to be a fruitful one for our professional field too. This implies that evidence-based practice will have to make up a part of the curriculum for management courses and that current supply-driven education will have to make way for problem-based teaching and hands-on instruction on how to find the best available evidence, how to critically appraise the evidence, and how to integrate the evidence in management practice. It is not the body of knowledge but the problems that managers struggle with in practice that must stand central here. Or as John Evans, the first dean of the McMaster Medical School so aptly put it: "*The fundamentals can be boiled down to common sense and the kind of questions that you would ask about your garden. You've got to know what the most important problems are.*" (ref). By critically questioning the body of knowledge on the basis of management practice's key issues and by using the outcome within management education as a common frame of reference, evidence-based practice can make a significant contribution to the further professionalization of the field.

Also the view that medicine is a more natural science-oriented professional field than management and therefore the basic principles of evidence-based practice within our professional field are not applicable, proves difficult to maintain. With regard to scientific research, it reveals that our professional field shows a striking amount of similarities with medical science. Research results in both professional fields are determined by several variables, there are weak links and often a large number of factors that modify the effect. It is noted that the methodological repertoire of management research is significantly less broad than that of medical science. Evidence-based medicine should therefore imitate its medical colleague and promote the application of other research designs. Management researchers must stimulate the exploration of the possibility of comparative research and further randomization within the professional field. Because comparative research is only possible in homogenous categories, researchers, instructors and managers will also need to put in the effort to push back the frontiers of meaning variance within the professional field. Both aspects, a limited methodological repertoire and a large meaning variance, are characteristic of our professional field's development phase, but they do not form a hindrance to applying the principles of evidence-based practice. As remarked earlier, within every professional field where research is conducted, a professional can, when making a decision, establish whether there is evidence to underpin this decision and in doing so apply the principles of evidence-based practice.

The same is true for the gap between practice and science. The observation that researchers and practitioners live in separate worlds and that because of this, the research results are not applied in practice, proves after further examination to be sooner an argument for evidence-based practice, than against. Just as it can in medical science, evidence-based practice can act as catalyst in our professional field and make researchers concentrate more on managers' foreground questions instead of academics' background questions. This means management research can develop into a problem and demand-driven discipline that aligns closely with daily practice. One important precondition here is for practice-driven and repeated research in academic centres to be held in higher regard and

authoritative management journals should give a consistent theory for the research results found less value than its relevance to practice.

Finally, the chapter considered the limited availability of online databases and the lack of aggregated evidence. Both preconditions form one absolute condition for the development and application of evidence-based practice in our professional field. In this subject too, we can learn from evidence-based medicine. The journal 'Evidence-based medicine' was mentioned earlier in this chapter. It publishes the 120 best and most relevant research articles every year. The journal's editors summarize these articles and provide them with commentary in which they give a great deal of thought to the implications for their use in practice. Just such a journal does not exist in our professional field, but it could be a first step to bringing well-conducted and practical, relevant studies to managers' attention in an accessible way. In addition to this journal, the Cochrane Collaboration is the paragon of excellence in the promotion, production and dissemination of aggregated evidence. The Cochrane Collaboration has in the meantime been copied within the social sciences in the form of the Campbell Collaboration. The idea for the initiative was thought up in London in 1999 during a meeting of eighty scientists. A number of these scientists were linked to the Cochrane Collaboration, where in the meantime the need had arisen for a sister organization "*that would produce systematic reviews of research evidence on the effectiveness of social interventions*" (ref. Campbell). The ambition to establish a separate organization to this end was widely supported by a large number of social and behavioural scientists and led in the year 2000 to the formal establishment of the Campbell Collaboration. The need within the evidence-based management movement for an organization such as the Cochrane or Campbell Collaboration is pronounced. In order to give evidence-based practice a shot at success within the management field, the importance of the availability and accessibility of aggregated evidence would have to carry even more weight than the incorporation of evidence-based practice in managerial education. This is at any rate what Gordon Guyatt believes, the man who introduced the term 'evidence-based medicine' in 1990: "*When I started, I thought we were going to turn people into evidence-based practitioners, that they were really going to understand the methodology, that they were really going to critique the literature and apply the results to clinical practice. I no longer believe that. What I believe now is that there will be a minority of people who will be evidence-based practitioners, and that the other folk will be evidence users who will gain a respect for the evidence and where it comes from and a readiness to identify evidence-based sources which summarize the evidence for them.*" (ref.)