# Evidence-Based Management

## *The Basic Principles*

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## INTRODUCTION

Consider this hypothetical situation. You pay a visit to a dietitian after gaining a bit of weight over the holiday season. The dietitian advises you to try diet X. It's very expensive and demands a radical change in lifestyle, but the prospect of having a slim and healthy body motivates you to stick to the diet. After a few weeks, however, you have gained five pounds and suffer serious side effects that require medical treatment. After searching the Internet, you learn that most scientific studies find diet X to be ineffective and fraught with such side effects. When you confront the diet consultant with these findings, he replies, 'Why should I pay attention to scientific studies? I have 20 years of experience. Besides, the diet was developed by a famous American nutritionist, whose book sold more than a million copies.' [1]

Does that sound like malpractice? It probably does. Unfortunately, in management, disregarding sound evidence and relying on personal experience or the popular ideas of management gurus is daily practice. Yet managerial decisions affect the working lives and well-being of people around the world. As Henry Mintzberg said:

'*No job is more vital to our society than that of a manager. It is the manager who determines whether our social institutions serve us well or whether they squander our talents and resources*.' [2]

In this paper we will explain what evidence-based practice is and how it can help you and your organization make better decisions. Whether we work in a bank, hospital, large consulting firm or small startup, as practitioners affecting the lives of so many, we have a moral obligation to use the best available evidence when making a decision. We can do this by learning how to distinguish science from folklore, data from assertions, and evidence from beliefs, anecdotes or personal opinions.

## 1. WHAT IS EVIDENCE-BASED PRACTICE?

The basic idea of evidence-based practice is that good-quality decisions should be based on a combination of critical thinking and the best available evidence. Although all management practitioners use evidence in their decisions, many pay little attention to the *quality* of that evidence. The result is bad decisions based on unfounded beliefs, fads and ideas popularised by management gurus. The bottom line is bad decisions, poor outcomes, and limited understanding of why things go wrong. Evidence-based practice seeks to improve the way decisions are made. It is an approach to decision-making and day-to-day work practice that helps practitioners to critically evaluate the extent to which they can trust the evidence they have at hand. It also helps practitioners to identify, find and evaluate additional evidence relevant to their decisions.

In this paper we use the following definition of evidence-based practice [3], which also describes the main skills required to practice in an evidence-based way:

***Evidence-based practice is about making decisions through the conscientious, explicit and judicious use of the best available evidence from multiple sources by***

1. ***Asking***: *translating a practical issue or problem into an answerable question*
2. ***Acquiring***: *systematically searching for and retrieving the evidence*
3. ***Appraising***: *critically judging the trustworthiness and relevance of the evidence*
4. ***Aggregating***: *weighing and pulling together the evidence*
5. ***Applying***: *incorporating the evidence into the decision-making process*
6. ***Assessing***: *evaluating the outcome of the decision taken*

***to increase the likelihood of a favorable outcome.***

## 2. WHAT COUNTS AS EVIDENCE?

When we say ‘evidence’’, we basically mean *information*. It may be based on numbers or it may be qualitative or descriptive. Evidence may come from scientific research suggesting generally applicable facts about the world, people, or organizational practices. Evidence may also come from local organizational or business indicators, such as company metrics or observations of practice conditions. Even professional experience can be an important source of evidence, for example an entrepreneur’s past experience of setting up a variety of businesses should indicate the approach that is likely to be the most successful.

Think of it in legal terms. In a court of law, evidence is presented in a variety of forms, from eyewitness testimonies and witness statements to forensic evidence and security-camera images. All this evidence helps the judge or jury to decide whether a person is innocent or guilty. The same is true for management decisions. Regardless of its source, all evidence may be included if it is judged to be trustworthy and relevant.

## 3. WHY DO WE NEED EVIDENCE-BASED PRACTICE?

Most management decisions are not based on the best available evidence. Instead, practitioners often prefer to make decisions rooted solely in their personal experience. However, personal judgment alone is not a very reliable source of evidence because it is highly susceptible to systematic errors – cognitive and information-processing limits make us prone to biases that have negative effects on the quality of the decisions we make [4] [5] [6] [7]. Even practitioners and industry experts with many years of experience are poor at making forecasts or calculating risks when relying solely on their personal judgment, whether it concerns the credit rating of bonds [8], the growth of the economy [9], political developments [10] or medical diagnoses [11].

Practitioners frequently also take the work practices of other organizations as evidence. Through benchmarking and so-called ‘best practices’ practitioners sometimes copy what other organizations are doing without critically evaluating whether these practices are actually

effective and, if they are, whether they are also likely to work in a different context. Benchmarking can demonstrate alternative ways of doing things, but it is not necessarily a good indicator in itself of what would work in a different setting. At the same time there are many barriers to evidence-based practice. Few practitioners have been trained in the skills required to critically evaluate the trustworthiness and relevance of the information they use. In addition, important organizational information may be difficult to access and what is available can be of poor quality. Finally, practitioners are often not aware of the current scientific evidence available on key issues in the field. For example, a survey of 950 American HR practitioners showed large discrepancies between what practitioners think is effective and what the current scientific research shows. [12] This study has been repeated in other countries with similar findings. [13] These results suggest that most practitioners pay little or no attention to scientific or organizational evidence, placing instead too much trust in low-quality evidence, such as personal judgment and experience, 'best practices' and the beliefs of corporate leaders. As a result, billions of dollars are spent on management practices that are ineffective or even harmful to organizations, their members and their clients.

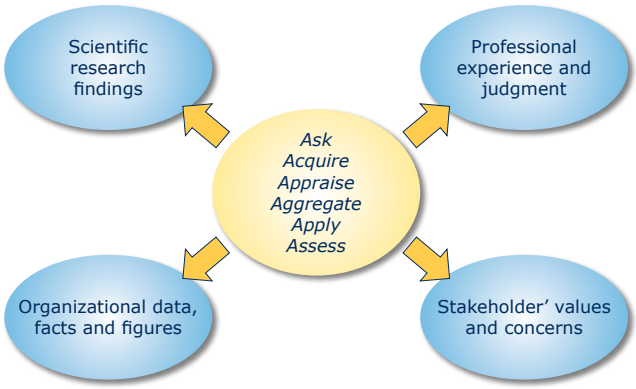
**Case example**

An American IT company believed for years that technical expertise was the most important management capability. They thought that the best managers were those who left their staff to work independently and intervened only when people got stuck with a technical problem. However, when the company asked employees what they valued most in a manager, technical expertise ranked last. More valuable attributes were asking good questions, taking time to meet and caring about employees' careers and lives. Managers who did these things led top-performing teams and had the happiest employees and the lowest turnover of staff. These attributes of effective managers are well established in scientific studies, so the company's improvement efforts could have been put in place years earlier.[1]

# 4. WHAT SOURCES OF EVIDENCE SHOULD BE CONSIDERED?

Before making an important decision, an evidence-based practitioner starts by asking, 'What is the available evidence?' Instead of basing a decision on personal judgment alone, an evidence-based practitioner finds out *what is known* by looking for evidence from multiple sources. According to the principles of evidence-base practice, evidence from four sources should be taken into account:

- **Scientific evidence**
  Findings from published scientific research
- **Organizational evidence**
  Data, facts and figures gathered from the organization
- **Experiential evidence**
  The professional experience and judgment of practitioners
- **Stakeholder evidence**
  The values and concerns of people who may be affected by the decision




## Scientific evidence

The first source of evidence is scientific research published in academic journals. Over the past few decades the volume of management research has escalated hugely, with topics ranging from evaluating merger success and the effects of financial incentives on performance to improving employee commitment and recruitment.

There is also much relevant research from outside the management discipline, since many of the typical problems that managers face, such as how to make better decisions, how to communicate more

effectively and how to deal with conflict, are similar to those experienced in a wide range of contexts. Although many practitioners learn about research findings as students or on professional courses, new research is always being produced, which often changes our understanding. In order to include up-to-date scientific evidence in your decisions, it is essential to know how to search for studies and to be able to judge how trustworthy and relevant they are.

**Case example**

The board of directors of a large Canadian law firm had plans for a merger with a smaller firm nearby. The merger's objective was to integrate the back office of the two firms (IT, finance, facilities, etc) in order to create economies of scale. The front offices and legal practices of the two firms were to remain separate. The board was told by the partners that the organizational cultures of the two firms differ widely, so the board wanted to know whether this would create problems for the merger. Partners of both firms were asked independently about their experience with mergers. Those who had been involved in one ore more mergers stated that cultural differences mattered and could cause serious culture clashes between professionals.

*How did scientific evidence help?*

A search was conducted in online scientific databases, which yielded a meta-analysis based on 46 studies with a combined sample size of 10,710 mergers and acquisitions. The meta-analysis confirmed the partners' judgment that there was a negative association between cultural differences and the effectiveness of the post-merger integration. However, the study also indicated that this was only the case when the intended level of integration was high. In mergers that required a low level of integration, cultural differences were found to be positively associated with integration benefits. In case of the two law firms, the planned integration concerned only back office functions, making the likelihood of a positive outcome higher.

## Organizational evidence

A second source of evidence is the organization itself. Whether this is a business, hospital or governmental agency, organizational evidence comes in many forms. It can be financial data such as cash flow or costs, or business measures such as return on investment or market share. It can come from customers or clients in the form of customer satisfaction, repeat business or product returns statistics. It can also come from employees through information about retention rates or levels of job satisfaction. Organizational evidence can be 'hard' numbers such as staff turnover rates, medical errors or productivity levels, but it can also include 'soft' elements such as perceptions of the organization's culture or attitudes towards senior management. Organizational evidence is essential to identifying problems that require managers' attention. It is also essential to determining likely causes, plausible solutions and what is needed to implement these solutions.

**Case example**

The board of a large insurance company has plans to change its structure from a regionally focused one to a product-based one. According to the board, the restructuring will improve the company's market presence and drive greater customer focus. The company's sales managers strongly disagree with this change, arguing that ditching the regional structure will make it harder to build good relationships with customers and will therefore harm customer service.

*How did organizational evidence help?*

Analysis of organizational data revealed that the company's customer satisfaction was well above the industry average. Further data analysis revealed a strong negative correlation between account managers' monthly travel expenses and the satisfaction rates of their customers, suggesting that sales managers who live close to their customers score higher on customer satisfaction. This evidence convinced the board to retain the regional structure after all.

## Experiential evidence

A third source of evidence is the professional experience and judgment of managers, consultants, business leaders and other practitioners. Different from intuition, opinion or belief, professional experience is accumulated over time through reflection on the outcomes of similar actions taken in similar situations. This type of evidence is sometimes referred to as 'tacit' knowledge. Professional experience differs from intuition and personal opinion because it reflects the specialized knowledge acquired by repeated experience and practice of specialized activities such as playing the violin or making a cost estimate. Many practitioners take seriously the need to reflect critically on their experiences and distill the practical lessons. Their knowledge can be vital for determining whether a management issue really does require attention, if the available organizational data are trustworthy, whether research findings apply in a particular situation or how likely a proposed solution is to work in a particular context.

**Case example**

A university hospital decided to ask its nurses to compile personal development plans. These plans were to include a statement of the nurse's aspirations and career priorities. The HR director pointed out that according to Maslow's hierarchy of needs (a well-known theory about motivations) basic levels of needs (such as health and safety) must be met before an individual can focus on his or her higher-level needs (such as career and professional development). The nurses at the emergency department were increasingly exposed to serious safety hazards, including physical violence. The HR director therefore recommended excluding these nurses from the program until the safety hazards had been substantially reduced.

*How did experiential evidence help?*

Experienced managers and nurses were asked independently for their view on the director's recommendation. Most of them disagreed with it and indicated that their professional experience told them that often the opposite was the case – that nurses who worked in difficult circumstances tended to be strongly interested in professional development and self-improvement. Additional evidence was harvested from online scientific databases, where a range of studies indicated that there was no empirical evidence available to support Maslow's theory. The nurses' view therefore prevailed.

## Stakeholder evidence

A fourth source of evidence is stakeholder values and concerns. Stakeholders are any individuals or groups who may be affected by an organization's decisions and their consequences. Internal stakeholders include employees, managers and board members. Stakeholders outside the organization such as suppliers, customers, shareholders, the government and the public at large may also be affected. Stakeholder values and concerns reflect what stakeholders believe to be important, which in turn affects how they tend to react to the possible consequences of the organization's decisions. Stakeholders may place more or less importance on, for example, short-term gain or long-term sustainability, employee well-being or employee output, organizational reputation or profitability, and participation in decision-making or top-down control. Organizations that serve or respond to different stakeholders can reach very different decisions on the basis of the same evidence (compare ExxonMobil and Greenpeace, for example). Gathering evidence from stakeholders is not just important for ethical reasons. Understanding stakeholder values and concerns also provides a frame of reference from which to analyze evidence from other sources. It provides important information about the way in which decisions will be received and whether the outcomes of those decisions are likely to be successful.

**Case example**

To assess employees' satisfaction with their supervisors, a telecommunications company conducted a survey among its 12,500 employees. The survey contained some demographic questions such as postcode, date of birth and job title, and five questions on employee satisfaction with their immediate supervisor. The introductory letter by the CEO stated that all answers would remain anonymous. After the survey was sent out, only 582 employees responded, a response rate of less than 5%.

*How did stakeholder evidence help?*

A focus group discussion with employees from different parts of the organization was conducted to find out why so many members did not participate in the survey. The employees in the focus group stated that they were concerned that the demographic data would make it possible to identify the person behind the answers. Given the sensitive nature of the survey's topic they therefore decided not to participate. Based on this outcome the survey was modified by dropping the postcode and replacing the date of birth with an age range. The modified survey yielded a response rate of 67%.

## 5. WHY DO WE HAVE TO CRITICALLY APPRAISE EVIDENCE?

Evidence is never perfect and can be misleading in many different ways. It may be that the evidence is over-stated such that a seemingly strong claim turns out to be based on a single and not particularly reliable piece of information. A colleague's confident opinion regarding the effectiveness of a practice might turn out to be based on little more than an anecdote. A long-standing way of doing things in an organization may actually never have been evaluated to see whether it worked or not. All evidence should be critically appraised by carefully and systematically assessing its trustworthiness and relevance.

Although how a piece of evidence is evaluated can differ slightly depending on its source, critical appraisal always involves asking the same basic questions. Where and how is the evidence gathered? Is it the best available evidence? Is there enough evidence to reach a conclusion? Are there reasons why the evidence could be biased in a particular direction? So, for example, if we are critically appraising a colleague's experiences with a particular problem, we may wonder how many times he/she has experienced that issue and whether the situations were comparable. For example, if a colleague proposes a solution to high levels of staff absenteeism, but his/her experience relates to only one previous instance, and that was among migrant workers picking fruit, then it would not have much to teach you about dealing with absenteeism of orthopedic surgeons in a hospital. Similar questions need to be asked about organizational evidence such as sales figures, error rates or cash flow. How were these figures calculated? Are they accurate? Are they reliable? In the case of scientific evidence we would ask questions about how the study was designed. How were the data collected? How was the outcome measured? To what extent are alternative explanations for the outcome found possible? Evidence-based practice is about using the best available evidence, and critical appraisal plays an essential role in discerning and identifying such evidence.

## 6. WHY FOCUS ON THE 'BEST AVAILABLE' EVIDENCE?

In almost any situation it is possible to gather different types of evidence from different sources, and sometimes in really quite large quantities. But which evidence should we pay more attention to and why? A fundamental principle of evidence-based practice is that the quality of our decisions is likely to improve the more we make use of *trustworthy* evidence – in other words, the best available evidence. This principle is apparent in everyday decision-making, whether it is buying someone a birthday present or wondering where to go out for dinner. In most cases, we actively seek out information from multiple sources, such as our partner's opinion, the experiences of friends or the comments of a local food critic. Sometimes this information is so weak that it is hardly convincing at all, while at other times the information is so strong that no one doubts its correctness. It is therefore important to be able through critical appraisal to determine what evidence is the 'best' – that is, the most trustworthy – evidence. For instance, the most trustworthy evidence on which holiday destination has the least chance of rain in Ireland in early August will obviously come from statistics on the average rainfall per month, not from the personal experience of a colleague who only visited the country once. Exactly the same is true for management decisions. When making a decision about whether or not to use a quality management method such as Six Sigma to reduce medical errors in a British university hospital, information based on the findings from a study of 150 European university hospitals in which medical errors were measured before and after the introduction of Six Sigma is more trustworthy than the professional experience of a colleague who works at a small private hospital in Sydney. However, such a study may never have been done. Instead, the best 'available' evidence could be case studies of just one or two hospitals. For some decisions, there may be no scientific or organizational evidence at all, thus we may have no option but to make a decision based on the professional experience of colleagues or to pilot test some different approaches and see for ourselves what might work best. Given the principles of evidence-based practice, even if we rely on the experience of a colleague, this limited-quality evidence can still lead to a better decision than not using it, as long as we are aware of its limitations when we act on it.

## 7. SOME COMMON MISCONCEPTIONS OF EVIDENCE-BASED PRACTICE

Misconceptions about evidence-based practice are a major barrier to its uptake and implementation. For this reason it is important that misconceptions are challenged and corrected. In most cases they reflect a narrow or limited understanding of the principles of evidence-based practice.

### *Misconception 1: Evidence-based practice ignores the practitioner's professional experience.*

This misconception directly contradicts our definition of evidence-based practice – that decisions should be made through the conscientious, explicit and judicious use of evidence from four sources, *including experiential evidence*. Evidence-based practice does not mean that any one source of evidence is more valid than any other. Even experiential evidence – the aggregated professional experience and judgment of practitioners – can be an important source if it is appraised to be trustworthy and relevant. Experiential evidence is essential in appropriately interpreting and using evidence from other sources. If we are trying to identify effective ways of sharing information with colleagues, scientific and organizational evidence may be informative but experiential evidence is needed to help to determine what practices make good sense if we are working with professionally trained colleagues or relatively low-skilled workers. Similarly, scientific evidence can help us to understand the extent to which our experiential evidence is trustworthy. Research indicates that years of experience in a technical speciality can lead to considerable expertise and tacit knowledge. On the other hand, an individual holding a series of unrelated jobs over the same number of years may have far less trustworthy and reliable expertise. Evidence-based practice is hence about using evidence from multiple sources, rather than merely relying on only one.

### *Misconception 2: Evidence-based practice is all about numbers and statistics.*

Evidence-based practice involves seeking out and using the best available evidence from multiple sources. It is not exclusively about numbers and quantitative data, although many practice decisions involve figures of some sort. You do not need to become a statistician to undertake evidence-based practice, but it does help to have an understanding of basic statistical concepts that are useful to evaluate

critically some types of evidence. The principles behind such concepts as sample size, statistical versus practical significance, confidence intervals and effect sizes, can be understood without any mathematics. Evidence-based practice is not about *doing* statistics, but statistical *thinking* is an important element.

### *Misconception 3: Managers need to make decisions quickly and don't have time for evidence-based practice.*

Sometimes evidence-based practice is about taking a moment to reflect on how well the evidence you have can be trusted. More often it is about preparing yourself (and your organization) to make key decisions well – by identifying the best available evidence you need, preferably before you need it. Some management decisions do need to be taken quickly, but even split-second decisions require trustworthy evidence. Making a good, fast decision about when to evacuate a leaking nuclear power plant or how to make an emergency landing requires up-to-date knowledge of emergency procedures and reliable instruments providing trustworthy evidence about radiation levels or altitude. When important decisions need to be made quickly, an evidence-based practitioner anticipates the kinds of evidence that quality decisions require. The need to make an immediate decision is generally the exception rather than the rule. The vast majority of management decisions are made over much longer time periods – sometimes weeks or even months – and often require the consideration of legal, financial, strategic, logistical or other organizational issues, which all takes time. This provides plenty of opportunities to collect and critically evaluate evidence about the nature of the problem and, if there is a problem, the decision most likely to produce the desired outcome. For evidence-based practice, time is not normally a deal breaker.

### *Misconception 4: Each organization is unique, so the usefulness of scientific evidence is limited.*

One objection practitioners have to using research evidence is the belief that their organization is unique, suggesting that research findings will simply not apply. Although it is true that organizations do differ, they also tend to face very similar issues, sometimes repeatedly, and often respond to them in similar ways. Peter Drucker, a seminal management thinker, was perhaps the first to assert that most management issues are '*repetitions of familiar problems cloaked in the guise of uniqueness*' [14]. The truth of the matter is that it is commonplace for organizations to have myths and stories about their own

uniqueness [15]. In reality they tend to be neither exactly alike nor unique, but somewhere in between. Evidence-based practitioners need to be flexible enough to take any such similar-yet-different qualities into account. A thoughtful practitioner, for instance, might use individual financial incentives for independent sales people but reward knowledge workers with opportunities for development or personally interesting projects, knowing that financial incentives tend to lower performance for knowledge workers while increasing the performance of less-skilled workers [16] [17].

### *Misconception 5: If you do not have high-quality evidence, you cannot do anything.*

Sometimes there is very little or no quality evidence available. This may be the case with a new management practice or the implementation of new technologies. In some areas the organizational context changes rapidly, which can limit the relevance and applicability of scientific and experiential evidence derived in a context different than that of today. In those cases the evidence-based practitioner has no other option but to work with the limited evidence at hand and supplement it through learning by doing. This means pilot testing and treating any course of action as a prototype: systematically assess the outcome of the decisions we take through a process of constant experimentation, punctuated by critical reflection about which things work and which things do not. [18] [19]

### *Misconception 6: Good-quality evidence gives you the answer to the problem.*

Evidence is not an answer. It does not speak for itself. To make sense of evidence, we need an understanding of the context and a critical mindset. You might take a test and find out you scored 10 points, but if you don't know the average or total possible score it's hard to determine whether you did well or not. You may also want to know what doing well on the test actually means. Does it indicate or predict anything important to you and in your context? And why? Your score in the test is meaningless without this additional information. At the same time, evidence is never conclusive. It does not prove things, which means that no piece of evidence can be viewed as a universal or timeless truth. In most cases evidence comes with a large degree of uncertainty. Evidence-based practitioners therefore make decisions not based on conclusive, solid, up-to-date information, but on probabilities, indications and tentative conclusions. *Evidence does not tell you what to decide, but it does help you to make a better-informed decision.*

## 8. WHAT IS THE EVIDENCE FOR EVIDENCE-BASED PRACTICE?

Sometimes people ask whether there is evidence that an evidence-based practice approach is more effective than the way managers already typically make decisions. This is, of course, a very important question. To measure the effect of evidence-based practice would require an evaluation of a large number of situations and contexts where evidence-based practice was applied, and the measurement of a wide range of outcomes, preferably by means of a double blind, randomized controlled study. Such a study might well be too difficult to carry out. However, there is plenty of scientific evidence that suggests that taking an evidence-based approach to decisions is more likely to be effective. We noted earlier in this chapter that the human mind is susceptible to systematic errors – we have cognitive limits and are prone to biases that impair the quality of the decisions we make. The fundamental questions to ask include: How can we make decisions without falling prey to our biases? Are there decision practices or processes that can improve decision quality? Fortunately, there are a large number of studies that indicate the following:

- Forecasts or risk assessments based on the aggregated (averaged) professional experience of many people are more accurate than forecasts based on one person's personal experience (provided that the forecasts are made independently before being combined) [20] [21] [22] [23] [24].

- Professional judgments based on hard data or statistical models are more accurate than judgments based on individual experience [25] [26] [27]

- Knowledge derived from scientific evidence is more accurate than the opinions of experts [28]

- A decision based on the combination of critically appraised experiential, organizational and scientific evidence yields better outcomes than a decision based on a single source of evidence [29] [30]

- Evaluating the outcome of a decision has been found to improve both organizational learning and performance, especially in novel and non-routine situations. [31] [32]

## 9. SUMMARY

We started this paper by explaining what evidence-based practice was about – that it involved decision-making through the conscientious, explicit and judicious use of the best available evidence from multiple sources. By using and critically appraising evidence from multiple sources you increase the likelihood of an effective decision.

We also discussed why we need evidence-based practice. Most managers prefer to make decisions solely based on personal experience, but personal judgment alone is not a particularly reliable source of evidence because it is prone to cognitive biases and thinking errors. In addition, managers and consultants are often not aware of the current scientific evidence available – in fact, there seems to be large discrepancies between what managers and consultants think is effective and what the current scientific research shows. As a result, billions of dollars are spent on management practices that are ineffective or even harmful to organizations.
We then discussed what counts as evidence, by which we mean information, whether from scientific research, the organization itself or the professional experience of managers. Even evidence regarding the values and concerns of stakeholders may be important to take into account. However, we also noted that evidence is never perfect, and we must always critically appraise the trustworthiness of the evidence, regardless of whether it is drawn from experience or from scientific research. We can do that by asking how the evidence is gathered, if it could be biased in a particular direction, and if it is the best available evidence.
Sometimes the best available evidence is hardly convincing at all, while at other times it is so compelling that no one doubts it. In other situations there is very little or no quality evidence available. In those cases we have no other option but to work with the limited evidence at hand and supplement it through learning by doing. This means pilot testing and systematically assessing the outcome of the decisions we take.

Evidence is not an answer and in most cases it comes with a large degree of uncertainty. Evidence-based practitioners therefore make decisions not based on conclusive, solid, up-to-date information, but on probabilities, indications and tentative conclusions.

However, the most important learning point is that evidence-based practice starts with a critical mindset. It means questioning assumptions, particularly where someone (including ourselves) asserts some belief as a fact. So, from now on, always ask: ‘What is the evidence for that?’, ‘How trustworthy is it?’ and ‘Is this the best available evidence?’

# NOTES

[1] This example is partly adapted from Pfeffer J. and Sutton, R. Trust the Evidence, Not Your Instincts. *New York Times*, September 3, 2011.

[2] Mintzberg, H. The manager's job: folklore and fact. *Harvard Business Review*, 1990, Vol 53 (4)

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