Clinical inertia, uncertainty and individualized guidelines

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Abstract

Doctors often do not follow the guidelines of good practice based on evidence-based medicine, and this “clinical inertia” may represent an impediment to efficient care. The aims of this article are as follows: 1) to demonstrate that this phenomenon is often the consequence of a discrepancy between the technical rationality of evidence-based medicine and the modes of reasoning of physicians practiced in “real-life”, which is marked by uncertainty and risk; 2) to investigate in this context the meaning of the recent, somewhat paradoxical, concept of “individualized guidelines”; and 3) to revisit the real, essentially pedagogical, place of guidelines in medical practice.

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In 2001, Phillips et al. described clinical inertia as the lack of compliance of Health Care Professionals (HCPs) with current guidelines [1]. Since this initial publication, several explanations for clinical inertia have been proposed [2]. In particular, uncertainty concerning the real state of the patient has been suggested [3]. Although this explanation is plausible with regard to hypertension, it is more difficult to accept in the case of diabetes care where the HCP has the objective criterion of HbA1c.

In this paper, I propose to consider clinical inertia as a preference for status quo by doctors having to make a decision in a context of uncertainty and risk, and to investigate the mechanism of this effect. Here, uncertainty does not concern the present state of the patient, but the potential outcome of the decision. Medical decisions lead to actions, and, like any human decision, cannot be free from biases, which occur when they have to be made in a context of uncertainty and risk. As will be seen, these considerations shed a new insight on the concept of individualized guidelines.

1. Knowledge and practice facing uncertainty and the risk of an illusion

According to the aphorism of Osler, “medicine is a science based on uncertainty and an art of probability” [4]. In fact, the entirety of medical practice is conducted in the context of uncertainty, both at the diagnosis level (generally, a negative test does not formally rule out a diagnosis) and during therapeutic decisions (certain patients respond to a treatment, and others do not). This uncertainty, which is paradigmatically present in the field of diabetes care [5], is the consequence of the variability of living phenomena. It actually represents the raison d’être of evidence-based medicine, because seeking evidence to prove what one already believes is contrary to the basic tenets of evidence-based medicine [6]. Indeed, through a scientific approach, it aims, by using large populations of patients, to describe this variability: it specifies the sensitivity and the specificity of the diagnostic tests and it describes the response of groups of patients to therapy by providing, for example, the number of patients to treat to avoid a pathological event.

Thus, in clinical trials, one generates knowledge. There is a predefined question, data are obtained from cohorts of patients, there are criteria of inclusion and exclusion of the patients, and researchers compare groups of “average” patients obtained by randomisation. However, this knowledge is nothing but statistical data, and clinicians can provocatively wonder whether the applicability of the data to actual clinical practice is relevant. Let us be clear. When a study showed that a given treatment caused a decrease in HbA1c of 0.5 ± 0.1% (P < 0.001) in a group of patients, this does not obviously mean that when it will be given to patient X, X’s HbA1c will decrease by 0.5% with a safety of one out of thousand. In the study, there were patients where it decreased by 3%, and other patients where it increased by 1%.

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The statistics only describe the risk (one out of thousand) that the conclusion of the trial is erroneous. Concerning specifically Mr X, one will know the result only when HbA1c is re-assayed in Mr X. If the studied parameter is a parameter of “morbidity”, his doctor will only know the actual outcome of the treatment much later.

Einstein, in a famous letter written to Schrödinger in 1935 on interpretation of quantum mechanics [7], wrote that if a person places a ball, based on a coin toss, into one of two boxes that he has in front of him, he may certainly say, before opening the box on the left, that there is a one out of two chance that that box will contain the ball; it is a statistical description of the box on the left. However, another description of the box on the left is that there are two distinct possible worlds created by the coin toss: a world where the box on the left contains the ball, and another world, where the box is empty. The only way of deciding between the two worlds is to open the box.

I suggest by analogy that the uncertainty, which will remain present as long as “the box is not opened”, may well represent a frequent explanation of clinical inertia, insofar as clinical inertia can be equivalent to a preference for the status quo. Indeed, the latter is often the consequence of the difficulty of the decisions, and uncertainty is a cause of difficulty [8]. A qualitative study aimed at understanding why doctors do not implement guidelines [9] pointed out the tension general practitioners feel about predicting the clinical course in any one person: “You don’t know, do you? You just don’t know”.

Thus, it would be illusory to believe that evidence-based medicine may attenuate, using statistics, the climate of uncertainty that leads to clinical inertia, as statistics cannot take into account the singular context of any medical decision. Clinical inertia may be in part caused by the persistence of this uncertainty.

2. Technical Rationality of evidence-based medicine and medical reasoning

There is another perhaps more important difference between the two types of logic that underlie clinical study and individual medical practice. Thus, in large clinical trials, one wants to answer a specific question and uses a method without bias (as much as possible): the randomised controlled trial. This approach typically represents an example of what Donald Schön calls “Technical Rationality” in his book The Reflexive Practitioner [10]; the paradigm of this term directly results from positivism that stipulates that any question can be solved in a scientific way, including the questions that are not epistemic but practical: if the question can be well formulated, any problem can then be solved by an approach using the theory of probability.

However, in the reasoning of doctors in real-life practice, the difficulty is not with answering a question but with formulating a question. Problem solving (the selection of available means best suited to establish ends) is only a part of professional practice. Likewise, problem setting is important, which is not considered by Technical Rationality. In contrast to clinical trials, in real-life clinical practice, there are no criteria of inclusion or exclusion, the patient does not ask a specific question, there are multiple clinical questions, and rather than a problem, there is a context. Thus, the qualitative study quoted above [9] suggests that “doctors are shaping the square peg of the evidence to fit the round hole of the patient’s life”.

This means that the doctor does not take care of an “average patient”, but an individual person with his/her own context. By virtue of the randomisation related to large cohorts of patients, one creates “identical” groups of “average” patients who make it possible to rigorously evaluate, in a way that is theoretically free from bias, the effect of a given treatment, with the identity of the groups usually being displayed in one of the first tables of the publication. However, what about more subtle or fuzzy data, such as the type of the symptoms, the evolution of the disease, the existence and the severity of comorbidities, the tolerance of the treatment if it was already tested, the psychological profile of the patient, the difficulties of adherence, and the wishes of the patient. In other words, what about all the questions a clinician asks before prescribing medication or a therapy? These data are rarely described in “Table 1” of such publications [11].

3. Uncertainty and risk in medicine, the use of heuristics and the role of emotions

This places the concept of medical choice into a context of risk. This also leads to a major difference in logic. Thus, the Technical Rationality of evidence-based medicine paradigmatically uses the randomised clinical trial because it is the method that is the least prone to biases, but in real-life practice, the reasoning of the doctor cannot be based exclusively on it. Instead, medical reasoning is both intuitive and analytical, fast and slow [12]. It often uses heuristics, defined by Tversky and Kahneman as fast modes of reasoning used by the human mind in a context of uncertainty [13]. Furthermore, it is necessary to consider the role of emotions insofar as the very concept of risk is inseparable from emotions [14].

3.1. Heuristics in medical reasoning

As in any type of human reasoning, the doctor calls on processes called “heuristics”, which often involve replacing a difficult question with an easier one, i.e. avoiding cognitive effort [15]. This is how we reason, for example, during the establishment of a diagnosis using the representativeness heuristic: if a doctor sees a patient who presents to the emergency room with lumbar pain, vomiting and haematuria, the doctor immediately considers renal colic, and generally, the doctor is right [16]. However, the use of heuristics is prone to biases, as demonstrated by the following example of the use of the availability heuristic. Someone is asked the frequency of cocaine addiction among the actors of Hollywood, he/she will answer that it is high if he/she can easily call to mind a Hollywood actor who is a cocaine addict, but this does not make it possible to infer the real frequency of the phenomenon [17]. Thus, as the winner of the Nobel Prize of Economy 2002, Daniel Kahneman, a pioneer in the foundation of these concepts, wrote in his Thinking, Fast and Slow [15], human beings are bad statisticians. Rather than using complex statistical calculations, they
prefer to use modes of reasoning, heuristics, which have the advantage of speed. However, the use of heuristics presents a risk of biases, and these cognitive errors can lead to clinical inertia [18].

3.2. The role of emotions in medical decisions

Emotions are part of our cognition [19], and one can identify the role of anticipated emotions: in general, we prefer to make an error by omission, where what occurs will be the consequence of the decisions we did not make, rather than make errors by commission, where what occurs will be the result of the decisions we did make. Often, doctors act by imagining the regret that they will feel if an accident occurs [20]. One can take an example drawn from daily medical practice, anticoagulant treatment of atrial fibrillation. If an accident occurs because of the actions of the doctor, the prescription of the treatment, it is a haemorrhagic accident. If an accident occurs because of what the doctor did not do (error by omission, clinical inertia), it will be a thromboembolic accident. A study revealed that after physicians had observed a case of haemorrhagic accident, in the months that followed, they significantly decreased their prescription of anticoagulant to the patients who presented atrial arrhythmia. Other doctors, who had had observed a case of thromboembolic accident, somewhat increased their prescription of anticoagulant in the months that followed, but the difference was not significant [21].

To summarise, evidence-based medicine prescribes that we act according to good practice guidelines, but doctors do not act only according to their knowledge of statistics. In addition to guidelines, doctors have recourse to what was called mindlines [22], i.e., a mental combination of information that they have worked out starting from various sources including guidelines themselves but also what they have learned during their studies and further formation such as their own clinical experience, the discussions they have had with colleagues, information obtained from continuous medical education and meetings, messages from opinion leaders and the pharmaceutical industry, their interactions with the patients, that is, what Schön superbly called reflection-in-action [10,23]. But this strategy is vulnerable to collecting biases along the way.

Furthermore, as demonstrated herein, doctors’ mode of thinking includes heuristics and emotions. As predicted by Kahneman and Tversky’s Prospect Theory, people seem risk seeking over prospects involving losses. This loss aversion expresses the intuition that a loss of X € is more averse than a gain of X € is attractive [24]. By analogy, I suggest that doctors may prefer an inert behaviour because a side effect of a treatment appears more averse than its potential benefit is attractive. Here, using the availability heuristic may introduce a bias in estimating the respective probabilities of occurrence: it may be easier to retrieve examples of side effects due to the greater power of bad events over good ones on learning processes [25].

One may argue that the aim of evidence-based practice is to aid doctors in eliminating heuristics and emotions from their mode of reasoning, but one would then miss the positive aspects of heuristics in medical decision [26] and the major, general, teaching role of emotions [27]. Evolutionary psychologists have even suggested that heuristics and emotions and the resulting biases are the product of the processes that were necessary to solve specific recurrent problems in our ancient environments [28]: we need heuristics to react quickly and we need emotions, for instance fear to escape from an immediate danger, even if they may be sometimes counterproductive.

3.3. The apparent paradox of “individualized guidelines”

These considerations may aid in understanding how experts have arrived at these new guidelines for diabetes care, which are presented as “individualized” and were recently published within the framework of an American-European consensus [29]. This evolution in the guideline style appears to have followed the outcome of the ACCORD study [30]. An excessive intensification strategy in the treatment of diabetes and hypertension, not taking into account the characteristics of the often old, long-term diabetic, and patients with multiple comorbidities, resulted in a higher mortality rate in the intensive arm, which led to the early termination of the study. In the same year, other studies suggested the lack of a clear beneficial effect of intensive strategies on cardio-protection [31]. This context led to the provocative presentation of clinical inertia of doctors as a safeguard for patients, vis-à-vis guidelines that may be revealed to be hazardous [32], a position which was criticised [33]. Nevertheless, this context certainly contributed to the emergence of individualized targets and strategies in the field of diabetes care [34].

This concept is, in fact, paradoxical and appears to be an oxymoron, insofar as the initial goal of evidence-based medicine is to lead to a homogenisation of the practices (or, at least, a reduction in variance), whereas, as observed by Veazie et al., customisation of guidelines is based on the application of specific strategies to the individual needs of patients. Unfortunately, individualized guidelines can lead to undesirable variation in clinical practice, and this may, in turn, increase the risk of clinical inertia – hence, the motivation for evidence-based guidelines [35]. These authors highlight the fact that the performance of customised strategies depends critically on accurate patient categorisation. As clinical inertia may be a consequence of the difficulty in this categorisation step, providing support for proper categorisation of patients would improve the quality of good practice guidelines.

Such a support can be found in the recent American-European consensus in diabetes care [29], which proposes to categorise a patient into different groups, regarding both the definition of the HbA1c objective on the basis of criteria first described by Ismail-Beigi [34] and the choice of drugs from the bitherapy phase. Therefore, this support for proper categorisation of patients may result, in turn, in a decrease in clinical inertia [5]. However, as will be seen at the end of this article, this prediction may be challenged.
4. Conclusion: revisiting the real place of evidence-based medicine in current medical practice and the potential of individualized guidelines in fighting against clinical inertia

Actually, what appears to be novel in the new, individualized manner of writing guidelines is nothing more than the return to a basic principle of evidence-based medicine [36] that requires medical decisions be guided by considering not only scientific data but also the characteristics and the wishes of the patient (Fig. 1), a principle that is perhaps often forgotten. However, as demonstrated above, an ill-defined conception of this triangulation can result in clinical inertia, and a key issue is a correct description of patient characteristics, i.e., his/her categorisation. The fact that individual guidelines provide de facto support to patient categorisation may well represent their main interest.

Guidelines must then primarily be appreciated for their teaching value. Let us recall here that the very first article [37] using the term ‘evidence-based medicine’ described it as a new manner of teaching medicine. Here, individualized guidelines teach HCPs a method for categorising patients, which consist in providing an accurate description of their individual context. They will then gain what differentiates “the expert” from the “novice” [38], i.e., this capacity of holistic appreciation of the context of the patient they have in front of them to bring to the patient the care that appears most suitable, by remembering that, in general, several attitudes are possible. In this context, the new guidelines proposed in the American-European consensus are remarkable, being explicitly described as “less algorithmic than the preceding ones” [29]. Since an algorithm is typically a mode of problem solving in which there is a single answer to a given question, this change fundamentally acknowledges the portion of residual uncertainty accompanying any medical decision [39]. Indeed, it is important to point out that providing individualized guidelines does not attenuate the level of uncertainty concerning the outcome of the decision.

Thus, they only help the doctor to get a better definition of the triangulation – science, patient’s circumstances and wishes – which is at the basis of the medical decision. Individualized guidelines may therefore help doctors to decide the best strategy for a given patient, but if, as proposed herein, uncertainty concerning the outcome of the decision is the cause of doctors’ clinical inertia, they may, on the one hand, not help them to avoid an inert behaviour. On the other hand however, by leading doctors to enter into a process aimed at clarifying the context of the patient, they may help them to think that a decision is needed, and finally to avoid clinical inertia.

Disclosure of interest

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Appendix A. Supplementary data

Supplementary data (French summary) associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.diabet.2013.12.009.
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