

Patients' nonadherence and doctors' clinical inertia: two faces of medical irrationality



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Practice points

- Do not expect that your patients will take all your prescriptions: ask them kindly whether they did, and if they did, congratulate them.
- Doctors' clinical inertia is a frequent phenomenon: each time you recopy a prescription, ask yourself whether you can justify it.
- Patients' nonadherence is often due to a preference for the present rather than for the future: do not ask the patients only about their past history; ask them about their projects.
- Emotions matter: this applies to patients and to doctors, as well.
- Empathy is necessary, but not sufficient: sympathy, in other words, the desire to relieve patients' suffering, may be the appropriate way for a successful patient–doctor relationship.
- Patients and doctors: use the force of habit, but do not forget deliberation.
- Good practice guidelines proposed by health authorities should be individualized, as should be any medical prescription to a given patient.
- Doctors: consider that a person is seated in front of you, not a patient (or worse, a disease): the patient–doctor relationship is a conversation between two persons.
- This conversation is the essence of patient education: it generates trust, which tackles patients' nonadherence and doctors' clinical inertia.
- Patients and doctors: care takes time.

SUMMARY Patients' nonadherence and doctors' clinical inertia, two phenomena jeopardizing the efficiency of care, represent two faces of 'medical irrationality'. It often happens that patients or their doctors do not do what they know they should. I propose that common mechanisms are involved, including a failure to consider the future; an innate aversion for losses; the effect of emotions, especially fear and anticipated regret and the desire to protect freedom. Recognizing medical irrationality as a psychological reality – both patients and doctors are human beings – and clarifying its mechanisms have important practical and ethical implications: it shapes the format of sound patient education and good practice guidelines, and leads to the promotion of a patient, or better, of a person-centered, medicine.

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“It is through wonder that men now begin and originally began to philosophize.”

– Aristotle, *Metaphysics*, A2, 982 b

During the past 100 years, medicine made more progress than during the 50 preceding centuries. For example, consider in the diabetes field the continuous pathway from the miracle of insulin discovery [1] to the current state-of-the-art of diabetes care. Meanwhile, there was a major decrease in the rate of diabetic microangiopathic complications [2], and treatment of hypercholesterolemia and blood pressure led to a significant increase in life expectancy [3]. The beneficial effect of the current therapies has been established in a number of randomized controlled trials forming the corpus of evidence-based medicine [4], which is readily accessible through the internet. On the basis of the expectations of a longer and happier life, a gift from medicine, any patient would rationally follow the advice of his/her doctor in the same vein as David Hume explained a few centuries ago [5] about the reason why a sound man should exercise: “Ask a man why he uses exercise; he will answer, because he desires to keep his health. If you then enquire, why he desires health, he will readily reply, because sickness is painful.”

However, it often happens that diabetic patients do not exercise (the same holding true for doctors) [6] and, more generally, patients do not follow the prescriptions of their doctors, although they know that they should. The lack of what was first called compliance [7], now referred to as adherence [8], represents a major impediment to the efficiency of care. More recently, one recognized that it also happens that doctors do not prescribe or intensify a therapy when they should do, according to current good practice guidelines that they know, a phenomenon described by Phillips *et al.* under the name of clinical inertia [9]. The aim of this article is to demonstrate that patients’ nonadherence and doctors’ clinical inertia are related phenomena, being the two faces of what can be referred to as ‘medical irrationality.’

Patients’ nonadherence & doctors’ clinical inertia are frequent phenomena having potentially severe consequences

In a study in which adherence was determined by a Medication Possession Ratio (MPR) index, defined as the ratio of total number of days of supply of medication that was dispensed divided

by the number of days of the evaluation period (adherence being considered as good when this ratio is >80%), as much as 27, 35 and 65% of patients with hypertension, diabetes and gout, respectively, were considered nonadherent [10]. In another study, the MPR index was assessed during the 2 years following drug initiation [11]. It was found to decrease progressively, whatever the drug considered and at 2 years, around only 50% of the prescribed medication was dispensed (approximately 60% for antidiabetic oral agents). There is evidence that nonadherence to medication, as measured with the MPR index, is associated with a poor control of diabetes [12], hypercholesterolemia [13] and hypertension [14]. Nonadherence to medication is an independent determinant of hospitalization and of mortality, whatever its cause [15]. In the USA, the economic cost of treatment nonadherence was estimated at US\$100 billion annually [16]. By contrast, adherence is associated with a decrease in health expenditure, through a decrease in hospitalization rate [17,18].

Similarly, doctors’ clinical inertia may be present in near half of medical decisions. In the field of diabetes, a French study showed that only 39% of patients received an intensification of therapy in the 6 months following a second measure of HbA1c higher than the recommended target (59% at 12 months) [19]. This delay in treatment intensification may represent an avoidable risk of complication for the patients [20]. In the hypertension field, the study by Okonofua *et al.* made it possible to calculate a therapeutic inertia score, defined as the difference between the expected medication change rate (number of visits with elevated blood pressure/total number of visits) and the observed medication change rate (actual number of visits in which medications were increased/total number of visits). The score was 0.44 ± 0.19 . This has consequences: in this study, patients treated by physicians belonging to the least inert quintile had at least 25-times greater chance of having their blood pressure controlled than those treated by physicians belonging to the most inert quintile [21]. According to O’Connor *et al.* [22], “clinical inertia in diabetes care may lead to several hundred thousand serious adverse events, billions of dollars of excess healthcare charges for these events and tens of thousands of excess deaths per year in the USA alone.”

WHO in 2003 declared that increasing the effectiveness of adherence interventions may have

a far greater impact on the health of the population than any improvement in specific medical treatments – since obviously, a medication that is prescribed but not taken is ineffective [23]. This claim applies to clinical inertia as well: the medication will also be ineffective if it is not prescribed. Imagine a disease that causes 100,000 deaths per year, and a medication A that saves 20% of patients, implying 20,000 people. But if medication A is taken by, or prescribed to, only 60% of patients who could benefit from it, it will save only 12,000 people. One would need a medication B saving 33.3% of lives to have the same effect (to save 20,000 people) as medication A when it is prescribed to, or taken by, everyone. Such an increase in the effectiveness of medications through pharmacological progress is unrealistic: it should, therefore, be more profitable to tackle the problem of access to care (here to medication A) than to develop new medications [24]. However, in order to limit the occurrence of patients' nonadherence and of doctors' clinical inertia, it is necessary to understand their mechanisms. The aim of this article is to delineate the mechanisms by showing that some of them are actually common to both the phenomena.

Homologous, not only analogous, phenomena: importance of mechanisms

Doctors' clinical inertia and patients' nonadherence seem to represent abnormalities in the normal process of doctor–patient encounter, where a patient sees a doctor, who proposes a therapy, which is accepted and taken by the patient, which in turn improves his/her medical condition (**Figure 1**). Both patients' nonadherence and doctors' clinical inertia represent, therefore, a failure to act, and it is possible to give a common formal description of these phenomena. 1) For patient nonadherence, one may say that patient (P) is nonadherent if and only if (i) there is a prescription X given by doctor (D); (ii) the patient is aware of the existence of prescription X; (iii) the patient has the resource to adhere to prescription X; (iv) the patient judges that, all things considered, he/she should be adherent to the prescription X; and (v) actually, patient (P) does not adhere to prescription X given by doctor (D). 2) For doctor clinical inertia, doctor (D) is clinically inert with patient (P) if and only if (i) there is a guideline G recommending prescription X; (ii) the doctor is aware of the existence of guideline G; (iii) the doctor has the resource to prescribe X; (iv) the doctor judges that, all

things considered, guideline G is pertinent for patient (P); and (v) actually, doctor (D) does not prescribe X to patient (P).

However, the two phenomena are not only analogous, sharing a resemblance. The core of this article is to show that they are 'homologous', according to the definition of homology given by Wise and Bozarth [25]: homologous phenomena have in common not only a resemblance, but more importantly, a mechanism: thus, "knowledge of one of a set of homologous ... behaviours almost necessarily has some degree of heuristic value for the study of the others, even if the ... behaviours are superficially dissimilar." In the case of homologous phenomena, their definition through a common mechanism becomes *ipso facto* inseparable from their explanation [26]. We will show that, here, the common mechanism is related to the fact that both protagonists of care are human beings, in other words, beings endowed with rationality and that the mechanism of rationality opens the door to irrationality.

A pathophysiological link between irrationality & rationality

I propose to consider, in a quasipathophysiological approach, patients' nonadherence and doctors' clinical inertia as the two symptoms, on the patient's and on the doctor's side, respectively, of what may be described as cases of medical irrationality: this approach will make it possible to deduce from the puzzling observation of the abnormalities (i.e., patients' nonadherence and doctors' clinical inertia) the conditions of normal care.

Let us use a metaphor, taken from endocrinology and diabetes care, to explain this approach: the role of adrenal glands is to avoid the consequences of adrenal insufficiency. This is why, epistemologically, it was impossible to understand the precise role of these glands before the description of the symptoms of this disease by Addison (a century earlier, the jury of a competition to discover this function, presided by Montesquieu in Bordeaux, had to give up on awarding the prize) [27]; similarly, the role of insulin is to avoid diabetes, and insulin was discovered because there are people with diabetes; in the same way, nowadays, the construction of transgenic mice helps us discover new physiological factors, such as IRS-2 being discovered after the observation that IRS-1 knockout mice do not develop diabetes or ketoacidosis [28]. In other words, as superbly formulated by the physician–philosopher Georges

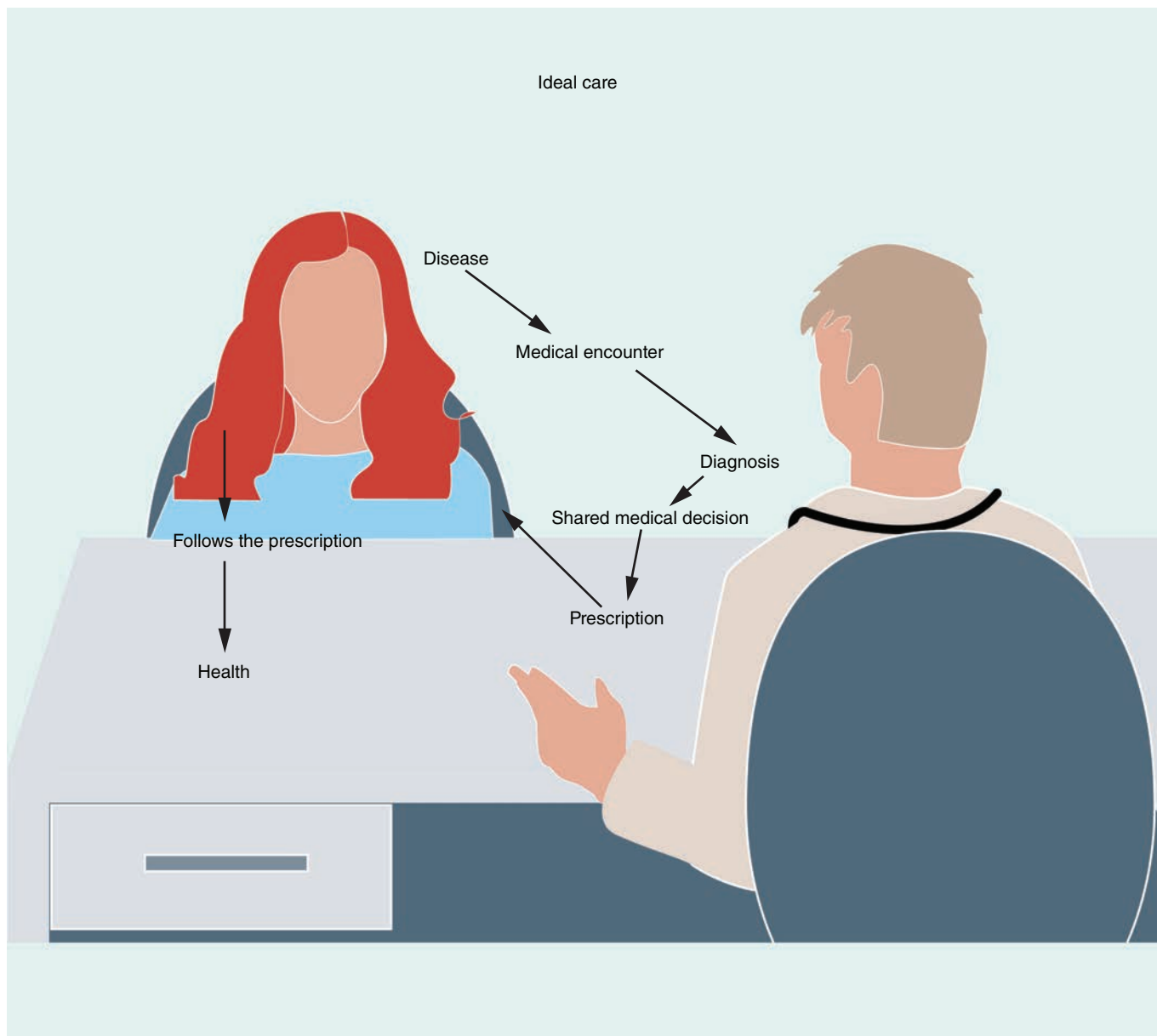


Figure 1. The doctor–patient encounter.

Canguilhem [29], “we can say that in biology it is the pathos which conditions the logos because it gives it its name. It is the abnormal, which arouses theoretical interest in the normal.” In a reverse way, this logos helps us design ways to correct the pathos: hydrocortisone and insulin are nowadays used as therapeutic agents.

In the same vein, if we consider the failure of patients to take care of themselves (nonadherence) and of doctors to follow good practice guidelines (clinical inertia), as, in both cases, a failure to act while they know that they should do it, the two phenomena seem to be ‘irrational’. Indeed, their formal description given above is reminiscent

of that given by philosopher Donald Davidson of an instance of irrationality, weakness of the will [30–32], a concept called by Aristotle ‘akrasia’ and by Latin philosophers ‘incontinent actions’:

“P₁: If an agent wants to do x more than he wants to do y and he believes himself free to do either x or y, then he will intentionally do x if he does either x or y intentionally.

P₂: If an agent judges that it would be better to do x than to do y, then he wants to do x more than he wants to do y.

P₃: There are incontinent actions.”

This is the ‘pathology’. To explain how weakness of the will is possible, Davidson proposed

that most of the time, our behaviors are rational, because we abide to a principle of rationality (the 'physiology'), which tells us to act after having all well considered, and according to what we judge to be the best. However, this 'principle of continence' may, from time to time, be absent, and this leads to an irrational behavior, weakness of will: the fact that our rationality is caused by the existence of 'principles of rationality' explains that irrationality is possible. This reasoning is not more circular than the statement that the existence of insulin causes a normal glucose regulation, its insufficiency leading to diabetes.

Here is the sense of our metaphor: coming back to patients' nonadherence and doctors' clinical inertia, they may, therefore, be seen as the symptoms of a 'pathos', which may 'condition a logos': thus, understanding how these apparently irrational behaviors are possible (their mental mechanisms) should help us define the conditions of appropriate care [33], and this is the aim of this investigation.

Mechanisms of medical irrationality

• Myopia

Chronic disease, such as diabetes, has been defined as an illness that is prolonged in duration, does not often resolve spontaneously and is rarely cured completely [34]. Therefore, taking care of a chronic disease implies a sustained long-term therapy.

The overall notion of care encompasses that of future: philosopher Harry Frankfurt, in an essay entitled 'The Importance of What We Care About' [35] observed "that the outlook of a person who cares about something is inherently prospective; that is, he necessarily considers himself as having a future." If we apply this general philosophical concept of care to healthcare, this would mean that taking care of oneself when one is a patient, or of somebody when one is a doctor, requires in some way giving the priority to the future. However, abiding the virtues of patience and foresight may be jeopardized by the fact that people on a daily basis often prefer smaller-sooner to larger-later rewards and in the long-term have a difficulty to imagine the future. Thus, both a patient's nonadherence and the doctor's clinical inertia may be described as myopia [36].

Hyperbolic discounting & preference reversal

Some people prefer smaller-sooner rewards rather than larger-later ones [37]. These 'impatient' individuals would choose to receive €500 now rather than €500 in 1 year, because they have a high

discounting rate of values, which leads them to estimate that the value of €500 received in 1 year is less than €500 today [38]. Studies in behavioral economics suggested that time discounting of a value (V) can be described by a hyperbolic function such as $V = 1/(1 + kt)$; the higher the value of k , the higher the impatience rate (**Figure 2A**). Using a monetary test, one finds a higher degree of impatience (k value) among smokers [39], alcoholics and other addicts [40], and obese [41] and overweight patients [42] (recent review in [43]). We observed in a small cohort of patients with Type 2 diabetes an association between preference for a smaller-sooner monetary reward and adherence to medication and HbA1c control [44], and in another study in obese diabetic patients, we observed that declaring that one gives the priority to the future was an independent determinant of adherence to medication [45].

Thus, it is tempting to propose that patients' nonadherence in chronic diseases may be at least partly due to this fact that some individuals have a preference for the present, rather than for the future [47]: indeed, 'impatient' patients may have intrinsic difficulties to make sustained efforts that are related to long-term therapies, and this may explain the behaviors that seem irrational: on a daily basis, they may fall into the pitfall of preference reversal, which is the consequence of the hyperbolic nature of time discounting. **Figure 2B** represents on the same figure the discounting curves for a small-immediate reward (e.g., smoking a cigarette) and a large-late one (e.g., avoiding the dangerous consequences of smoking). The fact that the curves are hyperbolic makes them cross. Before this 'preference reversal', it was rational to refuse the cigarette, the estimated value of which being smaller than that of health protection. After the reversal, it becomes rational to accept it, as its value is now higher than the reward of abstinence. This suggests that a high rate of time discounting may cause behaviors that are irrational, but actually only in appearance: from the point of view of the patient, they are perfectly rational.

Temporal horizon

On the other hand, the patient may think: why all these efforts, today, for somebody whom I have difficulty imagining? A study suggested that the younger one is, the more one has difficulty visualizing oneself in the future [48]. Philosopher Derek Parfit wrote [49]: "My concern for my

future may correspond to the degree of connectedness between me now and myself in the future ... since connectedness is nearly always weaker over longer periods, I can rationally care less about my further future.” Thus, the inability to project oneself into the future may explain the fact that nonadherence, in chronic diseases, is more frequent in younger patients [11], particularly in Type 2 diabetes [50]. One arrives at the concept of a temporal horizon, which can be quantified, for instance, by asking people to imagine events and to tell when they will occur. A study showed that, compared with nonsmoking women, smokers had a shorter temporal horizon.

The temporal horizon was shorter in individuals with a low income [51]. This latter observation may pave a link between social deprivation and nonadherence to medication [52].

Taken together, these arguments suggest that clinical myopia may represent a mental mechanism for patients’ nonadherence. On the contrary, patience may represent a character trait leading to adherence [53]. It may be innate, as suggested by the Mischel’s marshmallow test: one offered to 4-year-old children a marshmallow, telling them that they would receive a second one in return for not eating the first marshmallow within 20 min. Some of them were able

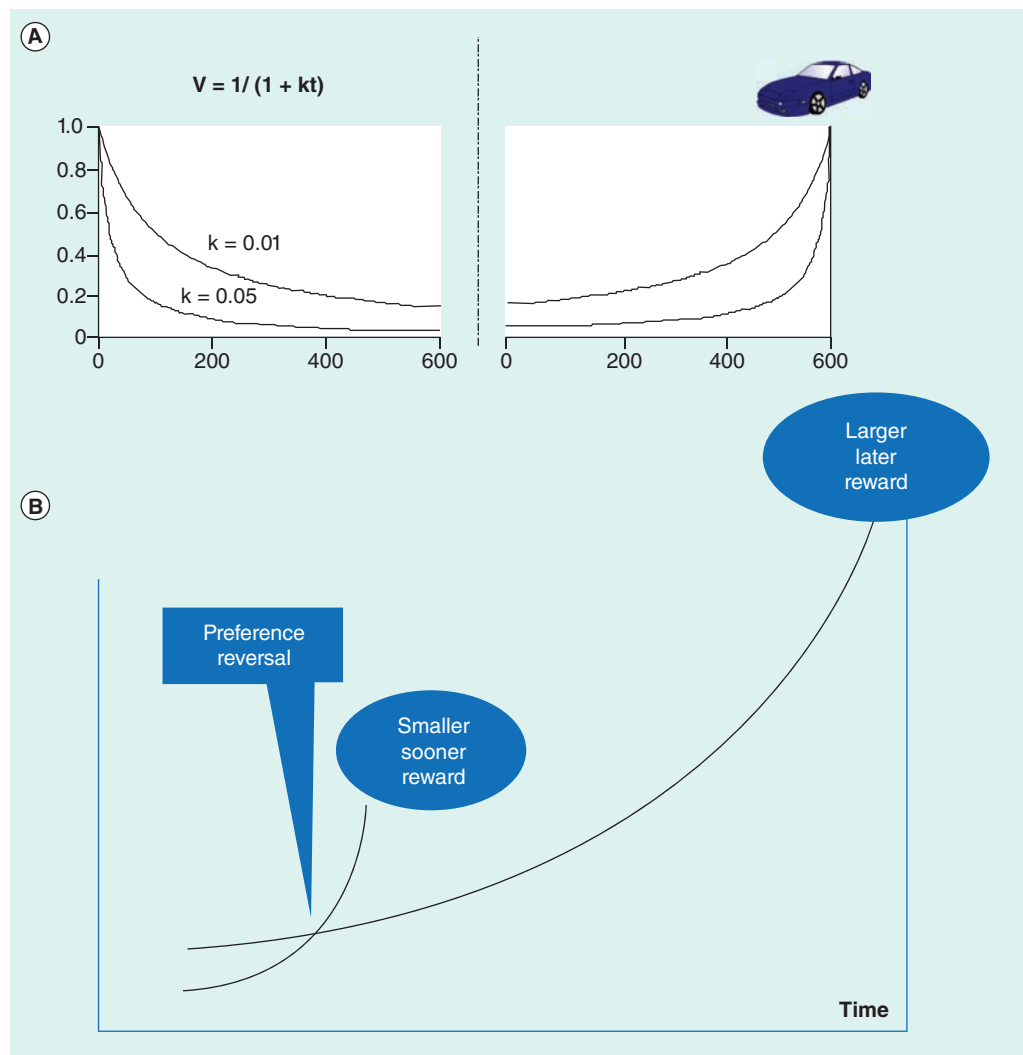


Figure 2. Time and adherence. (A) Left: hyperbolic discounting curves for $k = 0.01$ and 0.05 . Right: the reverse curves show the degree of impatience at the idea of receiving a car promised in 600 days from now. During the last days, the desire of the more impatient individual ($k = 0.05$) increases more abruptly. (B) Preference reversal. Adapted with permission from [46] © Springer (2015).

to wait, focusing their mind on an abstract representation of the marshmallow (e.g., it is like a cloud). Fifteen years later, they had a better adaptation to social life [54]. Moreover, since the concept of care, according to Frankfurt, encompasses the notion of future, we proposed that people who take care of themselves are those who abide to a principle of foresight which tells them to give priority to arguments oriented to the future [55]. Indeed, the mere Davidson's rationality principle of continence would often lead people, 'after having all well considered', to make the choice of nonadherence.

'Myopia' may also be involved in some instances of doctors' clinical inertia. Consider, for instance, the paradigmatic case of 'psychological insulin resistance' [56], where the patient's resistance to accept insulin meets the reluctance of the doctor to prescribe it (Figure 3): refusing insulin, the patient seems to give the priority to his/her immediate fears (hypoglycaemia, weight gain, and difficulty, among others) and forgets his/her long-term desire to preserve his/her health; the doctor does not prescribe insulin, being apparently driven by immediate concerns, such as the fear that the patient may refuse and the time it will take, among others, forgetting the duty to protect the patient *vis-à-vis* the long-term complications of the disease.

Indeed, care takes time. One study [58] indicated that diabetic patients spent on a mean 58 min/day on self-care. Many patients skipped individual self-care elements: 37.9% reported no foot care, 37.7% no exercise and 54.4% no time on food shopping/preparation. But this has also implications on doctors' behaviors: a study by Parchman *et al.* highlighted the fact that clinical inertia is more frequent when appointments are short and, especially, that this effect is aggravated when an intercurrent problem (a 'competing demand') occurs: when appointments lasted between 10 and 20 min, the percentage of cases where the treatment is changed was 29 or 66.7% if the patient had a competing problem or not, respectively, while it was 50 and 80% for appointments lasting over 20 min [59].

Loss aversion

We described both patients' nonadherence and doctors' clinical inertia as a failure to act. The preference for the status quo is often observed for any decision made by human beings under circumstances of uncertainty and risk [60]. According to Kahneman and Tversky, "a typical riskless

decision concerns the acceptability of a transaction in which a good is exchanged for money, while the paradigmatic example of a decision under risk is the acceptability of a gamble that yields monetary outcomes with specified probabilities" [61]. The traditional Theory of Rational Choice proposed that one decides according to the result of a calculation, for each possible outcome, of an expected utility (or value), being the product of its utility by the respective probability.

However, people usually do not achieve this kind of calculus: human beings are poor statisticians [62]. Suppose you have the choice between Gamble A: a 100% chance of receiving US\$500 and Gamble B: a 50% chance of receiving US\$1250 and a 50% chance of receiving nothing. You will likely choose A, while the calculus of the expected utility yields US\$500 and US\$625 for A and B, respectively. The reality is, however, more subtle and is asymmetric, depending on whether gains or losses are at stake: for instance, people were asked to choose between Gamble A: a 100% chance of receiving US\$3000 and Gamble B: an 80% chance of receiving US\$4000 and a 20% chance of receiving nothing. Only 20% of the participants chose B. However, when the participants had to choose between Gamble C: a 100% chance of losing US\$3000 and Gamble D: an 80% chance of losing US\$4000 and a 20% chance of losing nothing, 92% of the participants chose D. Thus, people seem to seek risks in prospects involving losses, while they are risk averse to prospects involving gains.

Figure 4 represents a summary of the Prospect Theory developed by Kahneman and Tversky [63]: "Subjective value is a concave function of the size of a gain: the difference between the utilities of US\$200 and US\$100 is greater than the utility difference between US\$1100 and US\$1200. The same generalization applies to losses as well; the difference in subjective value between a loss of US\$100 and US\$200 is greater than the utility difference between a loss of US\$1200 and US\$1100: the value function is convex in the domain of losses. The function is considerably steeper for losses than for gains. This loss aversion expresses the intuition that a loss of US\$X is more averse than a gain of US\$X is attractive."

This 'psychophysical' conceptual framework, largely developed by Kahneman and Tversky, makes a distinction between the normative, rational, solution to a problem and the subjective



Figure 3. Doctor’s clinical inertia and patient’s nonadherence are clinical myopia.

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answer given by real-world individuals. It may be relevant for the issue of patient nonadherence [64]: just consider, for instance, the loss aversion effect on weighing the risk of hypoglycemia after an increase in insulin dose (loss) versus the gain linked to achieving a better blood glucose level, the risk of gaining weight versus the advantage of stopping smoking, etc. Similarly, concerning doctors’ clinical inertia, consider the fear of drugs’ side effects versus their potential benefits, which may be the meaning of the old adage ‘primum non nocere’ [65].

In his Regulatory Focus Theory [66], on the basis of the idea that human beings desire

essentially to find pleasure and avoid pain, Higgins opposed a promotion focus, which aims to realize accomplishments or aspirations, and a prevention focus, which aims to ensure safety and responsibilities. A promotion focus is audacious and attempts to avoid errors of omission; it is more abstract, looking to the future; it analyses issues as a choice between gains and nongains. On the contrary, a prevention focus is cautious and attempts to avoid errors of commission; it is more concrete, looking to the present; it analyzes issues as a choice between losses and nonlosses. Veazie and Qian [67] proposed to use this theory to explain certain aspects of clinical

inertia. For example, given that promotion or prevention focuses aim to avoid errors of omission or of commission, respectively, a physician treating a diabetic patient and having the first type of focus would have the tendency to choose a lower HbA1c intervention threshold, to avoid clinical inertia, which is itself an error of omission. It may be relevant to apply this theory to the issue of patient nonadherence.

Finally, the fact that the promotion and prevention focuses are linked to abstract and distant concepts and concrete and immediate concepts, respectively, is reminiscent of the categorization of concepts as high and low levels in the Construal Level Theory proposed by Trope and Liberman, which proposes that we have the tendency to categorize concepts into two types: those of high level, abstract and oriented toward the future; and those of low level, concrete, and based on the immediate: for example, if one thinks of reading on an abstract level, one will think that it enriches the mind; if one thinks of it on a concrete level, one will mention the book that one is reading [68]. This last theory can obviously be used as an explanatory conceptual framework of patient adherence and nonadherence, whose rewards, as shown above, are abstract-distant and concrete-immediate, respectively [69]. It may be as well relevant to the issue of clinical inertia.

Role of emotions

Emotions are a part of our cognition [70] and should not be the object of blame. Baumeister *et al.* [71] proposed a model, in which emotions represent a system of feedback, the goal of which is to provide training and control behavior, shaping the cognitive process. This can be illustrated by the 'near-miss effect': there is more emotion after just missing your train by a few minutes than after missing it by half an hour. It is important that you remember this story with salience: if you miss your train by 3 min, there was a futile reason explaining it (for instance a second cup of coffee); next time, you will skip this second cup and make the train.

However, emotions may also have negative effects. Let us first consider patients' nonadherence, which we have linked to the philosophical concept of weakness of will or 'akrasia' [72,73]. Philosopher Christine Tappolet proposed that emotions, in that they act by influencing the way in which we perceive the value of things (she proposes that emotions are in fact the perception

of values), make intelligible actions which can be described under the generic term of weakness of will: for example, the pleasure of smoking makes the fact that I smoke intelligible [74]. They may also cause self-deception and wrong beliefs [75], leading, for instance, to denial of the disease and thereby to nonadherence. Finally, they may lead to an overestimation of the risk of side effect of the doctor's prescription: this is due to the availability heuristic [76], which makes it that we estimate the probability of occurrence of an event based on the ease with which we remember it: it may be easier to retrieve examples of side effects (e.g., a severe hypoglycaemia after an increase in the insulin dose) due to the greater power of bad events over good ones in the learning processes [77].

Similarly, emotions may also have an influence on the doctor's behaviors. Having a 'gut feeling' could intervene as a positive element in medical decisions due to its quick nature [78]. However, they can also have a negative effect [79] and jeopardize the adherence of the doctor to good practice guidelines. Indeed, guidelines are derived from evidence-based medicine, and there is no emotion in evidence-based medicine [80]. Anticipated emotions, defined by Loewenstein *et al.* as those that one imagines that one may feel as a consequence of the decision [81], may have a special importance if one considers the role of regret, or chagrin [82]: Choudhry *et al.* [83] showed that doctors' prescriptions of anticoagulant decreased after the occurrence of a hemorrhagic stroke (a complication of the treatment seen as an error of commission), but did not increase after an embolic event that occurred in untreated patients (a complication that could be

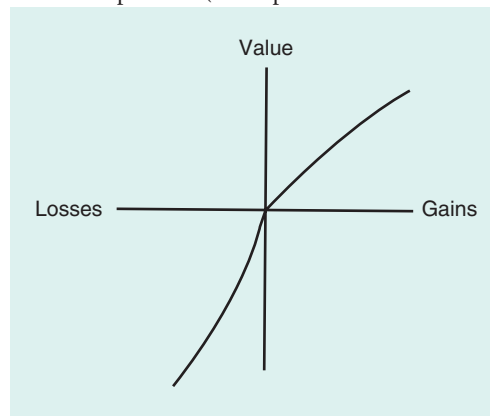


Figure 4. Prospect theory.

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interpreted as the consequences of the behavior of clinical inertia, seen as an error of omission). The concept of anticipated emotion may also be relevant to understand patient nonadherence: the immediate pleasure of smoking my pipe overcomes the anticipated chagrin that I would feel if a bad consequence occurred, this later regret becoming inoperant, due to its abstract and distant character.

Taken together, heuristics and emotions are part of our mental life and in fact promote the power of our cognition: heuristics allow us to make decisions rapidly and emotions make it possible, for example, to detect the presence of a danger and to flee in time. However, they can also distort our judgment, and this is true for both patients and doctors [84].

Reactance

Persons who see themselves as freely making their own choices in life may rebel against any infringement upon this freedom, which the psychologists call as ‘reactance.’ [85] This may lead to patients’ nonadherence [86]: presenting a medical prescription in an authoritative way was shown to lead to patient reactance and nonadherence [87]. On the other hand, obedience may represent a character trait associated with adherence in some patients: we observed in a study performed in obese patients with Type 2 diabetes that the fact of declaring to fasten seatbelt when seated in the back of a car is associated with adherence to medication [45]. Similarly, reactance may be involved in some cases of clinical inertia, such as doctors invoking the rigid nature of guidelines and the fact that they do not like having activities imposed on them [88].

Conclusion & future perspective: from mechanisms to strategies tackling patients’ nonadherence & doctors’ clinical inertia

Hypothesizing that these puzzling defects observed in the two protagonists of care are ‘homologous’ led us to search for a common mechanism. We discovered that it is nothing but the limit of human rationality: both patients’ and doctors’ actions are actually not only driven by knowledge and skills, which are only instrumental, but their real motors, as for any action, are made of desires and beliefs and are subject to the influence of emotions (Figure 5). In addition, patients and doctors, as any human beings, often

use heuristics as fast modes of reasoning. Having recognized the very nature of this ‘medical irrationality’ as a psychological reality, and clarified its mechanism – it is the expected reverse side of rationality – we are able to switch from blame or indulgence to mere understanding. These findings may have important practical and ethical implications [89].

First, patients’ nonadherence and doctors’ clinical inertia are often myopic behaviors being the consequence of the long-term nature of therapies in chronic diseases. Presenting in a concrete way to patients the short-term benefits of therapy may, therefore, be more efficient than the threats of abstract long-term complications; this may be especially useful in case of social deprivation. It may also be important to include in our interview questions on their projects, and not just on their past history, as we were taught to do during our medical studies. Doing this may help patients form the principle of foresight that will lead them to take care of themselves in the framework of a health project.

Second, emotions matter and we saw that negative emotions, such as fear, may trigger patients’ nonadherence and doctors’ clinical inertia. However, there are also positive emotions such as pride. Spinoza stated that “desire arising from pleasure is, other conditions being equal, stronger than desire arising from pain.” The Ethics, IV, Proposition 18: we suggest that positive emotions, such as pride should be used to fight against patients’ nonadherence and doctors’ clinical inertia: we should more often congratulate adherent patients for their efforts and ourselves think to appropriate care as an object of pride, especially when it proves to be difficult. A study illustrates the effect of pride on patients’ adherence [90]: Narayan *et al.* randomly exposed two groups of Pima Indians to two education programs. One group was taught the major principles of nutrition, and the other was taught about their civilization and history. Surprisingly, it was only the second group, called the ‘pride group’, that showed positive effects in terms of weight loss and improvement of diabetes.

The role of emotions also explains why empathy is a cornerstone of the doctor–patient relationship. However, empathy may not be sufficient: we proposed elsewhere [91] that in order to avoid clinical inertia, the doctor should practice not only empathy, appreciating the feelings of his/her patient, but also a new form of sympathy,

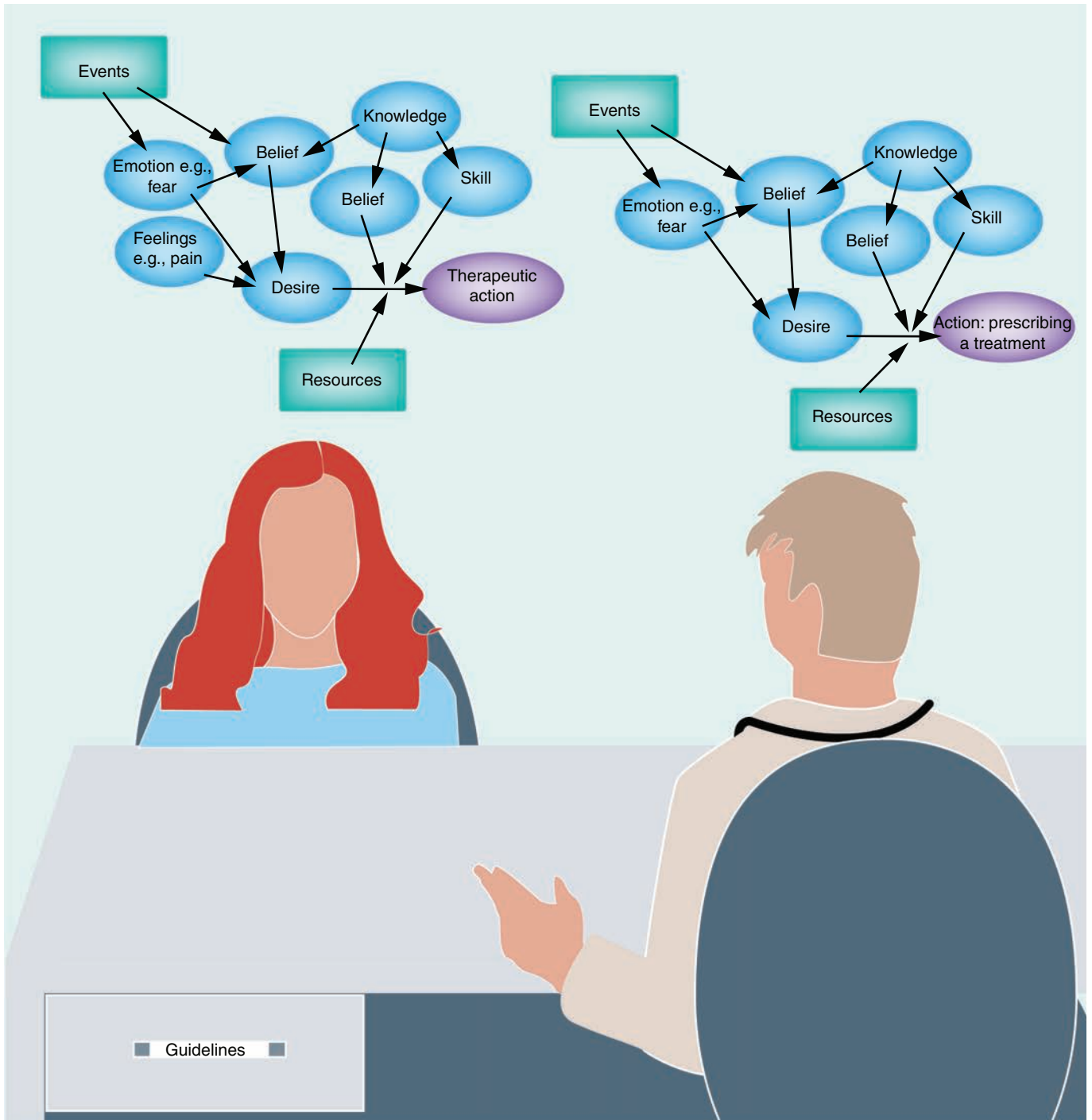


Figure 5. How patients and doctors decide. Note that the mechanisms are the same.

that we defined as an emotion that takes three criteria defined by philosopher Stephen Darwall in his book *Welfare and Rational Care* [92]: ‘responds to some apparent obstacle to an individual’s welfare, has that individual himself as object, involves concern for him, and thus for his welfare’, and adds a fourth condition, specifying clearly that the emotion involves concern for the

patient’s future. This last criterion is necessary to avoid myopia.

Third, patients’ nonadherence and doctors’ clinical inertia may be frequent, simply because appropriate care in a chronic disease requires a continuous effort. Indeed, patients’ adherence to medication is dynamic process that consists of three elements: initiation, implementation and

persistence [93]. This may hold true for doctors' behavior as well: for instance, it is not enough to prescribe a statin to correct hypercholesterolemia (initiation); the dose of the statin must be increased until a target is met (implementation), and year after year the doctor must check that a normal level of blood cholesterol is maintained (persistence). A way to fight against the feeling of effort is to call on the force of habit [94]. However, the 'mindlessness' of habits can be perilous as well. Thus, habit facilitates the performance of repetitive tasks, but there is also the risk of a routine that can be dangerous for the tasks that require some attention. For instance, the routine injection of insulin creates the danger of forgetting that it is necessary to adjust one's insulin dose: Leventhal argued that neither habit nor deliberation ever does well as a strategy on its own, but must depend upon one another [95].

Finally, patients' nonadherence and doctors' clinical inertia can be seen as a breach in the naïve expectation by public health that patients and doctors will be compliant to guidelines, ignoring the difference that exists between cohort-based, evidence-based medicine and the individual psychology of real-world of individuals. This is why 'individualized' guidelines, such as those recently proposed in diabetes care, represent a welcome evolution in evidence-based medicine [96]. This had been clearly seen by Aristotle:

"So if a man has theory without experience, and knows the universal, but does not know the particular contained in it, he will often fail in his treatment; for it is the particular that must be treated."

– Aristotle, *Metaphysics*, A1, 981a

Maybe the worst mistake a doctor could make would be to think that medicine takes care of diseases, or even of 'patients', whereas it is supposed to relieve the suffering of a person. By person, we mean an autonomous person in the ethical sense of the term, having the competence to decide her destiny and the capacity to evaluate her preferences and possibly to change them [97]; but also a person as an individual, defined by a psychological continuity [49], formed of a past, a present and a future. Interestingly, in the recent DAWN2 study, the term 'diabetic patients' was opportunistically replaced by 'people with diabetes' [98].

In conclusion, the doctor–patient relationship shown in **Figures 1 & 5** of this article may

be seen as a conversation) between two persons, putting an end to what Jay Katz called 'the silent world of doctor and patient' [99] illustrated in **Figure 3**, picturing how "patients and physicians often collude in (implicit and unspoken) contracts to continue oral agents for as long as possible" [100]. We proposed that this is the real ethical meaning of patient education, which can be seen as an exchange clarifying how the therapy takes a sense and can be integrated in the patients' life project, helping him/her to exercise his/her autonomy [91]. As in any conversation, it is important, however, that each interlocutor understands what the other says and overcomes linguistic barriers, which exist even when they speak the same language [101].

It may also be important to talk about things other than the disease. Two words are important: 'what else?' [102]. This will show to the patient that his/her doctor considers him/her as a person. This will create the conditions of a trust-based relationship: among the factors that determine the trust the patient has in his/her doctor, there is not only, obviously, an evaluation of skills (the care taken in evaluating the situation and the quality of the treatment prescribed), but also the ability to understand the uniqueness of the patient's experience, the clarity of communication, the ability to build a true partnership and to show respect [103]. One study attempted to prioritize the importance of the determinants of trust. Within these, there was the importance of the quality of communication in both of its aspects, verbal and nonverbal [104]. A study showed that the ability of doctors to have complete knowledge of their patients on the one hand, and the trust of patient in their doctor on the other hand were the variables most strongly associated with adherence: patients with high trust in their doctor engaged in eight health behaviors more often, including exercise, quitting smoking and protected sex [105]. Another study showed that trust in the doctor was an independent determinant of the ease with which patients accept their doctor prescribing them another tablet [106].

In this article, a number of examples were purposely taken from diabetes care, the author being a diabetologist. However, concepts delineated herein are obviously relevant to the care of any chronic disease. Almost 40 years after George Engel's proposal of a biopsychosocial model of diseases [107], the very existence of patients' non-adherence and of doctors' clinical inertia pleas for the coming of a person-centered medicine.

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