

The Bias of “Therapeutic Illusion”: Do We Have to Curb It?

El sesgo de la “ilusión terapéutica”. ¿Es necesario refrenarla?

Don't compromise yourself.

You are all you've got

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(1943-1970)

INTRODUCTION

The “illusion of control” is a cognitive phenomenon that has been studied by experimental psychologists. An example is a housewife going to a casino to play in a typical slot machine: when she wins, she attributes it to her experience and her discovery of a winning formula; when she loses, she blames it on bad luck.

In fact, the slot machine is a perfect device for random results of the uncontrollable, and we tend to believe that we can infer causality where none exists and thus exert control on the desired event that, in this particular case, is to have control so that coincidence occurs and we win a lot of money. (1)

Players consistently overestimate their control over the effect of their actions, not only in games but also in daily life.

In medicine, “illusion of control” should be called “therapeutic illusion”, a label first applied in 1978 to “the unjustified enthusiasm for treatment on the part of both patients and doctors”.

(2) The therapeutic illusion is “one manifestation of the ‘confirmation bias’ that leads us to seek only evidence that supports what we already believe to be true. Physicians may be particularly susceptible to that bias when caring for a patient with a complex illness”.

“However, physicians also overestimate the benefits of everything, from interventions for back pain to cancer chemotherapy, and their therapeutic illusion facilitates continued use of inappropriate tests and treatments.” (3)

Since we physicians are people like any other, we are all subject to the “illusion of control”. Thus, we physicians are vulnerable to the “therapeutic illusion” long before we see our first patient.

The “therapeutic illusion” is not the only factor driving overtreatment or excessive, inefficient or harmful therapy; for instance, it is also influenced by the desire of non-confrontation with certain reimbursement pressures of medical practice, quality measures from healthcare insurances, fear of litigation, and patient or family expectations.

But, “for instance, perhaps it contributes to the psychological well-being of physicians and other

health care providers by bolstering their confidence and sustaining their belief in the value they offer to patients. It might also be a necessary ingredient in medical decision making.” (3)

Physicians should be aware that in certain situations and due to the “therapeutic illusion” –as reads the epigraph of the first female rock singer Janis Joplin–:

“Don't compromise yourself. You are all you've got.”

PATIENTS' AND PHYSICIANS' EXPECTATIONS REGARDING THE RISK AND BENEFIT OF TREATMENT

Is it possible that patients have unrealistic expectations of the benefits and harms of interventions, and that it may influence decision making? And what about physicians?

Patients' expectations

In 2015, a systematic review was published of all studies that quantitatively assessed patients' expectations of the benefits and/or harms of any treatment, test, or screening test (breast, cervical, prostate, and intestine cancer). (4)

Thirty six articles involving a total of 27,323 patients were selected. Among the 36 studies, 15 focused on treatment, 14 on a screening test, 3 on treatment and screening, and 3 on a test only.

Many more studies assessed only benefit expectations [22 (63%)] than benefit and harm expectations [10 (29%)] or only harm expectation [3 (8%)].

The effect of “therapeutic illusion” is remarkable since most patients overestimated the benefits (65%), and it is also remarkable that participants overestimated the benefits in almost all cancer treatments. Conversely, assessment of harm expectations revealed that, of the 15 outcomes available, the majority of participants underestimated harm (67%),

A correct estimation by at least 50% of participants only occurred for 2 outcomes about benefit expectations and 2 outcomes about harm expectations.

The authors claim that “this is the first systematic review to pull together evidence on patient and public expectations of the benefits and harms of medical interventions. Participants are rarely certain about their expectations of benefits and harms, and they tend to overestimate benefits and underestimate harms in many interventions –either treatments, tests or screening.” (4)

These over-optimistic expectations of patients and

public undoubtedly contribute to increasing the problem of overdiagnosis and overtreatment. If patients believe that the interventions are effective, they are likely to ask their physicians for those interventions.

At the same time, clinicians may fail to detect and correct that “therapeutic illusion” of patients, either by omission or active reinforcement, with the best of intentions, with over-optimistic expectations about the benefits of interventions and poor medical knowledge of the harms.

“Ironically, one of the factors influencing clinicians’ decisions for interventions (even with limited or no benefit) is patients’ expectations. In turn, patients’ assumption that interventions are beneficial and necessary is reinforced by the fact that intervention requirements are usually accepted. To break that positive feedback cycle is crucial.” (4)

Physicians’ expectations

The same authors later published a systematic review of all studies that quantitatively assessed physicians’ expectations of the benefits and/or harms of any treatment, test, or screening test. (5)

Forty-eight articles were selected involving a total of 13,011 clinicians. Among the 48 studies, 20 focused on treatment, 20 on medical imaging, and 8 on screening.

Many more studies, [30 studies (67%)] assessed only harm expectations, 9 (20%) evaluated only benefit expectations, and 6 (13%) assessed both benefit and harm expectations.

Benefit expectations were assessed in 11 studies (total of 22 outcomes); the participants’ responses were compared with the correct estimation of the authors. Most participants ($\geq 50\%$) provided correct estimation for only 3 outcomes (11%). The effect of the “therapeutic illusion” was similar in physicians and in patients, since they overestimated benefit for 7 (32%) and underestimated benefit for 2 (9%) outcomes.

Harm expectations were estimated in 26 studies (69 outcomes). Most participants underestimated harm for 20 outcomes (34%), correctly estimated harm for 9 (13%), and overestimated harm for 3 (5%).

The authors conclude: “Clinicians rarely have accurate expectations of benefits or harms, with inaccuracies in both directions, though more often they overestimated rather than underestimated benefits and underestimated rather than overestimated harms.” (5)

Inaccurate perceptions about the benefits and harms of interventions are likely to result in suboptimal clinical management choices.

Discussion on patients’ and physicians’ expectations

The finding of more instances of patients and clinicians underestimating harms and overestimating benefits than the opposite provides support for the existence of therapeutic illusion (“an unjustified enthusiasm for treatment” on the part of both physicians and patients).

In the decision-making process, patients’ expectations are only an influence, but patients cannot be assisted in making informed decisions if clinicians are not convinced of their expectations about the benefits and harms of interventions.

If clinicians’ expectations are too optimistic or if their knowledge of harms is not accurate, they may contribute to over-recommend and overuse inappropriate interventions.

Conversely, when clinicians underestimate the likely benefits or overestimate harms, they may not provide adequate interventions. None situation is desirable, and in both cases, there is a gap between evidence and medical practice.

Many asymptomatic patients demand more screening and testing, influenced by the media and the environment. Unless such a trend is counteracted by balanced and reliable information, it will continue to be a trigger for more interventions.

Providing patients with trustworthy information about benefits and harms of interventions can play a key role in dampening their enthusiasm for some inadequate interventions. Different studies have reported that many participants expressed they would not undergo screening if they knew that the harm is greater and outweighs the benefit.

Sometimes, clinicians show cognitive biases, and in the aim of reassuring their patients (and themselves), they may overlook evidence. There is cognitive bias for fear of losing something if they reject the patient’s request and bias by commission, which is the tendency to action rather than inaction in conflicting situations.

Given the patients’ demand for interventions that do not provide benefits, Brett and McCullough state that: “Patients frequently express strong preferences for medical tests or treatments of their own choosing, even when physicians believe that those interventions are not beneficial. Physicians grant such requests for various reasons. One compelling reason is to avoid confrontation: patient-physician relationships flourish in an atmosphere of trust and goodwill, and physicians rightly worry that disagreement will threaten those relationships. Moreover, explaining why an intervention is not beneficial takes time. For patients with a common cold, granting requests for antibiotics is far less time-consuming than discussing viral microbiology and harms of antibiotic overuse. Although patients’ preferences are key factors in clinical decision making, a patient’s preference for a diagnostic or therapeutic intervention is not decisive unless a modicum of potential benefit, viewed from a conventional medical perspective, is present. When diagnostic or therapeutic choices are consistent with such a modicum of benefit, patients’ preferences should drive decisions. In contrast, physicians should not provide interventions that do not meet this criterion.”

“... When recommendations in guidelines are against a requested intervention, physicians can rely

on them as an external source of authority and depersonalize the potential conflict with the patient.” (6)

The physicians' moral stand is to protect the health of patients as a primary interest, and to consider their own as secondary interests. Therefore, it involves challenging the requests of non-beneficial interventions. Therefore, patients' autonomy cannot be considered an unlimited right to choose. One of the physician's obligations is to promote a coherent debate and not simply provide anything the patient wants.

Physicians should justify their stand when asked for non-beneficial interventions, resorting to practice guidelines when necessary and offering adequate medical options.

In the medical encounter, the physician plays a crucial role as educator to facilitate deliberate decision making in collaboration with the patients; for that reason, medical care should be restructured, rewarding physicians who devote their limited time to explain the risks of non-beneficial interventions.

HOW CAN INFORMED CONSENT BE IMPROVED TO PROMOTE PATIENT PARTICIPATION?

Hoffman et al. believe that “after finding and appraising the evidence and integrating its inferences with their expertise, clinicians attempt a decision that reflects their patient's values and circumstances... These approaches, for the most part, have evolved in parallel, yet neither can achieve its aim without the other. Without shared decision making, authentic evidence-based medicine cannot occur.” (7)

How can we know whether clinicians encourage an informed decision in the routine consultation?

For that purpose, the recordings of 1,057 encounters among 59 primary care physicians and 65 orthopedic and general surgeons were analyzed; 2 to 12 patients were recruited for each private physician office in the community.

The analysis of the recorded discussions about informed consents varied in the decision complexity: basic (for example, lab tests), intermediate (for example, new medication), or complex (for example, procedures).

Surprisingly, only 9.0% of the decisions met the full-quality requirements for decision making. Basic decisions were certainly more fully informed (17.2%), whereas none of the intermediate decisions and only 1 (0.5%) of the complex decisions were fully informed. Among the elements of the informed discussion, the most common was the nature of the intervention, and the patient's understanding was the less common – only 1.5%. (8)

Almost all the informed consents of this group of primary care physicians and surgeons were incomplete, even in less extensive discussions for less complex decisions. Therefore, it is necessary to change the approach and increase the effort to encourage informed decision making in clinical practice

HOW TO BUILD A NEW ETHICAL FRAMEWORK?

In their editorial, Lin & Redberg say: “In another study in this issue, Rothberg et al. analyze data from 59 audio recordings of cardiologists discussing treatment for stable coronary artery disease with their patients. Records reveal that most consultations were brief, and percutaneous coronary interventions were usually suggested as the main form of treatment. In addition, physicians rarely fully discussed the harms, benefits, and alternative treatment for stable coronary artery disease with their patients; only 3% of consultations included all elements required for fully informed decision making, including discussion of the patient's role in decision making, the nature of the decision, and the alternatives, as well as the patient's preferences. The more elements of informed decision making that were fulfilled, however, the less likely patients were to choose an invasive procedure...”

This finding is consistent with what we learned when we conducted focus groups of internists and cardiologists concerning the decision making process for patients with suspected coronary artery disease. We found that cognitive biases such as anticipated regret for missing a diagnosis and commission bias –ie, the tendency toward action rather than inaction– invariably led to the recommendation for more testing and, ultimately, invasive treatment of coronary artery disease. In fact, physicians said that they would feel more regret about patients experiencing adverse events if they did not perform a procedure (cardiac catheterization with possible stent placement) than if the patient experienced harm from undergoing a procedure. ... even when cardiologists knew there was no benefit to percutaneous coronary intervention for a particular patient, 43% would still proceed with the intervention.” (9)

Even more, in a study of surgical patients, almost 70% did not read the informed consent form, and another study showed that, after reading the informed consent, many patients misunderstand the benefits and risks of their procedure.

It is necessary to improve this process: patients should be given a brief standardized and personalized informed consent document, as proposed by Harlan M. Krumholz, “detailing information in 5 key areas: risks, benefits, alternatives, experience, and cost –providing the minimal information that patients require to make challenging decisions and to facilitate meaningful discussion with physicians.”(10)

The box (Figure 1) shows an example of informed consent form for elective percutaneous coronary intervention (PCI) in patients without acute coronary syndrome, modified from the one published (10), including some standardized data from the article by Cylewright et al. (11).

ACCORDING TO PRIMARY CARE PHYSICIANS' VIEW, DO THEY PROVIDE TOO MUCH OR TOO LITTLE HEALTH CARE?

What do physicians who are in the frontline believe about unnecessary health care? Their views are little

Sample of informed consent document: Elective percutaneous coronary intervention (PCI)

Foundations

One of the blood vessels of your heart is partially blocked and causes some discomfort in the chest when it is very active, or alters the stress test with or without single-photon emission computed tomography (SPECT).

Procedure

A PCI involves opening the obstruction with a device inserted through the blood vessels and into the arteries of the heart. In your case, we recommend the placement of a “stent – a small, metal mesh tube” – with medication to prevent recurrence of the obstruction. (See illustration.)

With the PCI, you will need to take clopidogrel or a similar medication for at least 6 months and up to a year.

Potential benefits

PCI added to optimal medical therapy (OMT) –in this clinical situation– DOES NOT reduce the risk of heart attack (e.g. myocardial infarction) or death.

PCI is likely to reduce chest pain immediately in 90 out of 100 patients (20 by OMT, difference 70), and at 6 months in 70 out of 100 patients (60 by OMT, difference 10). At one year, both of them equal to 60 out of 100 patients, both for OMT and OMT + PCI.

Potential risks

PCI with stent placement has a low risk of causing (1) death: –chances of dying as a result of the procedure are 1 in 1000; (2) a major complication, like heart attack, death, or stroke:–this complication occurs in 1 out of 100; or (3) major bleeding: –the risk is about 2 in 100 during the procedure and 3 in 100 during the first year taking clopidogrel or a similar medication. If you stop taking the medication, your risk of heart attack or death increases.

Other treatments available

Instead of PCI, medication can be added or changed. Many patients improve with this approach, and if medication does not work, a PCI can always be performed. Among those who choose to try the medication first, 14 out of 100 will undergo PCI the following year. PCI with non-medicated stent can also be performed; in that case, you will need clopidogrel (or similar medication) at least for 1 month and up to 6 months, but at a higher risk for recurrence of obstruction (15 in 100).

Experience of your health care team

Your doctor has performed ___ PCIs over the past year. Standards suggest that physicians should perform at least 75 PCIs per year. Your hospital has performed ___ PCIs over the past year. Standards suggest that hospitals should perform at least 300 PCIs per year.

Costs

Taking into account your health insurance plan, a PCI with drug-eluting stent may or may not require additional payment (Yes, \$___). Clopidogrel or a similar medication for 12 months would cost from \$___ to \$___ per month.

known, but they matter.

For that purpose, a mail survey of primary care physicians identified from a random sample of the American Medical Association Physician Masterfile was conducted—so that it was nationally representative of U.S. primary care physicians (general internal medicine and family practice)—; out of 627 surveys, the response rate was 70%. (12)

Respondents were mostly male (72%) and reported a median of 24 years of practice, and were fairly evenly divided between family medicine (54%) and internal medicine (43%).

Almost half (42%) of US primary care physicians believed that patients within their own practice were receiving too much medical care, and just 6% believed that their patients were receiving too little care.

Regarding more aggressive practices (e.g. ordering more tests and referrals), more than one-quarter (28%) said they themselves were practicing more aggressively than they would ideally like to. In an almost identical proportion, -more than one-quarter (29%) believed that other primary care physicians in their community were also practicing too aggressively.

Many physicians (45%) estimated that at least 1 in 10 patients they see on a typical day could be handled in ways other than a medical visit (e.g., by telephone, e-mail, or nonphysician staff such as nurses).

What were the reasons that led physicians to practice more aggressively? Physicians identified three factors causing them to practice more aggressively: inadequate time to spend with patients (40%), management evaluations of clinical performance (52%), and malpractice concerns (76%).

As for malpractice, 83% of physicians thought they could easily be sued for failing to order a test that was indicated, but only 21% thought they could be sued for ordering a test that was not indicated.

Physicians also believed that financial considerations influence aggressive practices: 62% said that diagnostic tests would be reduced if such tests did not generate extra revenue for the subspecialists. But almost all respondents (95%) believed that physicians vary in their testing and treatment decisions for similar patients; most (76%) would be interested in learning how aggressive or conservative their own practice pattern was compared with that of other physicians in their community. (12)

In conclusion, nearly half of all primary care physicians in the United States think that their own patients are receiving too much medical care, and more than one-quarter believe that they themselves are practicing too aggressively.

In addition, many primary care physicians believe there is substantial unnecessary care that could be reduced, particularly by increasing time with patients, reforming the malpractice system, and reducing financial incentives to do more studies and tests.

The authors conclude: “Our work shows that primary care physicians recognize the excesses of our

health care system, can point clearly to some of the causes, and may be open to changing their own practices to address them.”

In a comment on the same journal issue, Bale P Wickenden concludes: “Much science and technology, with associated expense, was used to eliminate conditions he didn’t have, while the art of listening well might surely have led to a faster, cheaper remedy.” (13)

DOES THE FRAMING OF RISK COMMUNICATION INFLUENCE THE PERCEPTION OF TREATMENT BENEFIT?

A randomized mail survey was used to determine which risk framing format corresponds best to comprehensive multi-faceted information, and to compare framing bias in doctors and in patients.

A total of 1,431 doctors (56% response rate) and 1,121 recently hospitalized patients (65% response rate) were included in the survey. (14)

Respondents were asked to interpret the results of a hypothetical clinical trial comparing an old and a new drug. They were randomly assigned to the following framing formats: absolute survival (new drug: 96% versus old drug: 94%), absolute mortality - (4% versus 6%), relative mortality reduction (6% - 4% / 6%, reduction by a third) or all three (fully informed condition). At the same time, the new drug was reported to cause more side-effects.

The main point was whether those who rated the new drug as more effective differed by risk presentation format. That was the case with doctors, who decreasingly considered it more effective with the relative mortality reduction format (93.8%), fully informed condition (71.2%), absolute mortality (68.3%), and absolute survival (51.8%) ($p < 0.001$).

None of the differences between doctors and patients were significant (all $p > 0.1$).

In comparison to the fully informed condition, the odds ratio (OR) of greater perceived effectiveness was 0.45 for absolute survival ($p < 0.001$), 0.89 for absolute mortality ($p = 0.29$), and 4.40 for relative mortality reduction ($p < 0.001$).

The authors concluded that: “Framing bias affects doctors and patients similarly. Describing clinical trial results as absolute risks is the least biased format, for both doctors and patients. Presenting several risk formats (on both absolute and relative scales) should be encouraged.” (14)

CONCLUSIONS

The “illusion of control”, a universal human condition, is a cognitive phenomenon that causes a bias that leads us to believe that we can control desired events, even when that is objectively impossible.

The “illusion of control” also exists among physicians and in medicine, and it is called “therapeutic illusion”, defined as “the unjustified enthusiasm for treatment on the part of both patients and doctors”.

The “therapeutic illusion” in patient, physician, and public expectations has been conclusively demon-

strated in two extensive reviews recently. The findings reveal overestimation of benefits and underestimation of risks both for patients and physicians. Those inadequate expectations contribute to over-recommend and overuse inappropriate interventions.

Although it is necessary to learn and categorize the different conditions causing it, in the meantime the “therapeutic illusion” contributes to overdiagnosis and overtreatment, and we physicians could try and think of strategies to manage them immediately. How? By evaluating our own medical practice, analyzing our beliefs, and using a simple, conscious heuristic, so that all physicians can contribute to a more rational evidence-based care. (3)

There is a bias in how the communication of benefits and risks is framed for patients and physicians; the least biased format is the presentation of risk and benefit findings as absolute risk (in how many patients out of 100 or 1000 the event occurs).

But if the patient does not participate in decision making, evidence-based medicine can turn into evidence tyranny, with all the biases considered before. We should at least provide the patient with information on 5 key areas: risks, benefits, alternatives, experience, and cost of the procedure.

If the patient is not fully informed for a shared decision making, the evidence managed by the physician is poorly transferred to medical practice and to outcome improvement.

But if shared decision making does not include the critical analysis of the body of evidence, patient’s preferences may not be based on reliable estimates of risk and benefits of the different options; therefore, the resulting decision will not be fully informed. (7)

Clinical guidelines should strongly encourage shared decision making when the evidence is uncertain and prevents the determination of a clearly superior approach, or when the different options are closely balanced in their advantages and disadvantages, or when the balance of risks and benefits depends on the patient’s action (such as the lack of adherence to medication).

Medicine cannot be practiced if updated evidences

are unknown or if patients’ informed preferences are unknown or ignored.

Today’s medicine requires physicians with enough knowledge to diagnose and treat accordingly, who know patients’ preferences, attitudes, and behaviors, and who provide full information to share the decisions they are going to make.

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