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Costs Of Patient Noncompliance

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The No-Nonsense Summary
Costs Of Noncompliance

1. Characterizing the financial, physiological, and social costs patient noncompliance as catastrophic is neither hyperbole or hysteria, just fact.

2. Because the cascading effects of ongoing noncompliance can geometrically accelerate the costs of and number of people affected by a given case, prevention or, failing that, early recognition and intervention are vital.

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Direct Consequences & Costs

Inadequate implementation of treatment has devastating consequences, such as causing

- 10-25% of hospital and nursing home admissions, resulting in 340 deaths per day[1]
- 20% of unintentional pregnancies in the US at a cost of $2.6 billion[2]
- 3 times as many doctor visits and an additional $2000 of healthcare costs per year compared to patients who follow their treatment plan[3]
- 33-69% of all medication-related hospital admissions in the US at a cost of $100 billion[4]

It is especially revealing that estimates of the total annual healthcare costs in the US resulting from patient noncompliance vary from $100 billion[5] to $170 billion[6] to $300 billion[7, 8] First, this range (even after adjusting for the 11 year difference between the oldest and newest figures) points to the potential risk of false precision, the dramatic influence of assumptions and methodologies in such approximations, and the difficulty of computing cost-benefit ratios of efforts to enhance compliance. Second, even the most conservative figures delineate the tremendous fiscal impact of noncompliance, fully justifying The American Heart Association's summation that "the cost of noncompliance in terms of human life and money is shocking."[9]

Complex, Cascading, Cumulative Costs

Even calculations that take into account only such basics as the likelihood that noncompliance will result in treatment failure, the pervasiveness of noncompliance, and the expense of healthcare produce terrifying results. The total damage caused by patient noncompliance, however, is too complex, multivariate, intertwined, subjective, and extensive to quantify with a straightforward algebraic formula.

My contention, in fact, is that the central tragedy of patient noncompliance results from the fact that the effects of noncompliance rarely manifest in a straightforward *If-A-Then-B* algorithm; rather, they tend to cascade. A hypothetical case may be helpful in explaining this concept and its fundamental significance.

The Case Of Routine & Tragic Patient Noncompliance

A patient with an respiratory infection does not complete the full course of the antibiotic prescribed by his physician. When symptoms persist, the patient returns to his doctor but fails to report the noncompliance. The physician consequently believes that the original medication was somehow inadequate (e.g., the pathogen was resistant to the medication or not covered within the therapeutic range of the medication) and prescribes a different agent, one that is more costly & more prone to side-effects.

Already in this scenario, noncompliance has resulted in

- One unnecessary clinic visit
- Two medications in a situation in which one might have sufficed
- An increased risk of adverse medication effects, both because the second drug causes more side-effects than the first and because the patient is exposed to two medications instead of one

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- A deviation, based on misinformation, from the initial treatment plan which, by design, should provide the optimal combination of safety, affordability, and effectiveness for that patient. At best, the new treatment plan will be similar to but somehow less advantageous than the original therapy. At worst, the noncompliance-caused treatment failure will cause the clinician to mistakenly alter the diagnosis and treatment such that the actual problem is not addressed.

This example is, admittedly, oversimplified. Some disorders improve despite noncompliance with treatment. Some clinicians might have suspected noncompliance when the patient did not improve. Some patients do confess their failure to follow the treatment plan. Nonetheless, a plethora of evidence demonstrates that noncompliance clearly increases the risk of treatment failure, that clinicians rarely recognize or even suspect noncompliance, and that patients even more rarely reveal nonadherence to treatment. This example is, in fact, statistically condensed but conceptually accurate, and countless analogous cases occur every day throughout the healthcare system.

Little imagination is required to conjure up catastrophic conclusions and mournful denouements for our noncompliance story line:

- The patient has an autoimmune reaction to the second, unneeded medication and, despite emergency interventions, dies.
- The patient experiences a number of side-effects from the second medication, resulting in his unilateral decision to discontinue treatment with that agent. The respiratory symptoms worsen, necessitating invasive testing, an eight day hospitalization, IV drugs, and treatment for a secondary fungal infection before he recovers.
- Two weeks after starting (but not completing) the first drug regimen, the patient's disorder persists, and he unknowingly infects a friend who is taking immunosuppressive agents. The patient's friend succumbs to sepsis. The patient himself returns to normal after taking the second medication.

Of course, terminal autoimmune reactions and other such dire events take place infrequently, but they are statistical realities. One can consider an episode of patient noncompliance as a ticket for a lottery that offers pain, suffering, expense, and death as the prizes. No one ticket is likely to win, but the Law Of Large Numbers is implacable, i.e., the probability of any possible event (even an unlikely one) occurring at least once in a series increases with the number of events in the series. As the lottery ads put it, "The more you play, the more you win." (Also, "Hey, You never know.")

Perhaps a more ominous alternative conclusion to this case, precisely because it invokes no rare disorders or coincidental events and therefore cannot be dismissed as an improbable long shot, depends only on a persistence of both the patient's noncompliance and his pathogen's toxicity:

- The patient's symptoms cycle, exacerbating and subsiding in rough concordance with his adherence to treatment. Over the next several months, he requires many more outpatient visits, occasional trips to the emergency department, brief hospitalizations, and repeated laboratory tests, radiological exams, and invasive diagnostic procedures. His medication schedules evolve into complex, exotic, and

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expensive regimens. Several doctors now consult on his case, and his original doctor is becoming increasingly concerned, puzzled, and frustrated. His disorder and its treatment has had a deleterious effect on his work, his marriage, and his finances. His health insurer has become more and more restrictive and intrusive. After six months, the symptom gradually subside and finally appear to dissipate totally. His treatment team never reaches a definitive diagnosis and because of their concern about a recurrence, they insist on multiple follow-up visits and tests as well as prophylactic treatment with a broad spectrum antibiotic. His final out of pocket medical bill is just over $16,000 with his company-provided insurance covering the rest. During a business downturn, he is laid off; he suspects, accurately, that he was targeted because of the huge health insurance premium increase suffered by the small firm where he had worked because of his claims. His former employer also cuts healthcare benefits for its remaining workers to protect against another such disaster.

Because of the complexity and interdependent nature of the contemporary healthcare system, the impact of patient noncompliance is rarely limited to wasting one medical treatment that would have been successful if implemented. Instead, any treatment failure caused by noncompliance is subject to an array of multipliers, some obvious and some invisible, that can easily increase the potential fiscal, physiological, and social cost exponentially and connections, both direct and indirect, that distribute a similar range of losses to others. Moreover, the extraordinarily high value western culture places on both the individual and health heightens the stakes and further drives the process.

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