The Cost of Pathway Mismatch in Chronic Pain

Why Patients Don't Fail Treatment — Pathways Fail Patients

EtioLinks White Paper

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Executive Summary

Chronic pain is one of the most costly and challenging conditions in healthcare, yet its management continues to be marked by variability, fragmentation, and inconsistent outcomes. It is also one of the leading causes of disability worldwide, with a substantial economic burden across healthcare systems and broader economies. [1,2,3]

The prevailing assumption is that chronic pain is inherently complex and resistant to intervention. However, a closer examination suggests a different explanation: many patients do not improve, not because effective treatments are unavailable, but because the care pathway itself is misaligned from the outset.

This paper introduces the concept of *pathway mismatch*—a misalignment between the processes maintaining a patient's pain and the interventions selected to address it. When early decisions do not reflect how symptoms are generated and sustained, care often progresses along trajectories characterized by escalation, repetition, and increasing cost without corresponding improvement.

Pathway mismatch is not a single error, but a cumulative process. Each subsequent decision builds on the previous one, reinforcing the initial misalignment and making

recovery more difficult over time. The result is not only suboptimal clinical outcomes, but patterns of care that are resource-intensive and difficult to reverse.

The greatest opportunity in chronic pain management lies not in developing new treatments, but in improving the decisions that determine how existing treatments are used. Early alignment of care pathways represents a high-leverage point for both improving outcomes and reducing cost.

1. The Hidden Cost Problem

Chronic pain accounts for a substantial proportion of healthcare utilization, including repeated primary care visits, specialist consultations, imaging, pharmacological treatment, and disability-related costs. In the United States alone, the total economic burden of chronic pain has been estimated at $560–635 billion annually when direct healthcare costs and lost productivity are considered. [1] Similar patterns are observed globally, with chronic pain representing a leading contributor to years lived with disability. [2,3]

Despite this investment, many patients continue to experience persistent symptoms and functional limitation, often engaging with the healthcare system over extended periods without clear resolution.

Much of the current response to this challenge has focused on expanding the range of available treatments. While this has increased therapeutic options, it has not consistently translated into improved outcomes. This suggests that the issue is not simply the availability of treatment, but how treatment is selected and applied.

Cost accumulates not only because care is delivered, but because it is delivered along pathways that do not adequately address the processes maintaining a patient's pain. When this occurs, care becomes iterative rather than directional, with each step responding to non-improvement rather than resolving the underlying drivers of symptoms.

2. Defining Pathway Mismatch

Pathway mismatch refers to a misalignment between a patient's underlying pain-maintaining processes and the interventions selected to treat them. It is not defined by a single incorrect decision, but by a pattern in which care is guided by factors that do not accurately reflect how symptoms are being generated and sustained.

This may occur when structural findings are used to guide treatment in the absence of clear pathology, when interventions are selected based on symptom location rather than underlying process, or when escalation occurs without reassessment of what is driving the condition. In many cases, multiple interventions are introduced over time without a coherent rationale linking them to a shared understanding of the patient's presentation.

At the level of individual decisions, these choices are often understandable. However, when they are not aligned with the underlying drivers of symptoms, they set in motion a pathway that becomes progressively more difficult to redirect.

3. The Accumulation of Mismatch Over Time

The effects of pathway mismatch are rarely immediate. Instead, they develop over time as each decision builds upon the last. An initial misalignment may lead to further investigation in an attempt to resolve uncertainty, followed by additional treatments in response to limited improvement. Patients may become increasingly focused on their symptoms, more concerned about their meaning, and more engaged in patterns of behavior that reinforce the persistence of pain.

Over time, these processes can stabilize into a pattern that is resistant to change. What began as a potentially reversible condition becomes embedded within a broader system of expectations, physiological responses, and healthcare interactions. At this stage, intervention is not only more complex, but also more costly and less predictable.

Evidence from low back pain care illustrates this pattern. Early imaging in the absence of red flags has been associated with higher downstream utilization, greater intervention rates, and increased cost without corresponding improvements in outcomes. [4,5,6]

4. Why Current Systems Reinforce Mismatch

Pathway mismatch is not primarily a consequence of individual clinician error. It reflects the conditions under which clinical decisions are made.

Clinicians often work within constrained timeframes, with limited opportunity to develop a detailed understanding of complex presentations. Decisions are shaped by the need to act in the face of uncertainty, the availability of investigations, and the structure of referral pathways. Care is frequently distributed across multiple providers, each contributing to a fragment of the overall picture. [7]

Within this context, there is rarely a consistent framework for identifying what is maintaining a patient's pain. In the absence of such a framework, care tends to follow familiar patterns, even when those patterns are not well matched to the underlying processes at play.

5. The Economic Consequences

The economic impact of pathway mismatch extends beyond individual treatment decisions. It is reflected in patterns of utilization that emerge over time.

Repeated investigations, ongoing pharmacological treatment, multiple specialist consultations, and escalation to higher-cost interventions all contribute to rising expenditure. These patterns are often accompanied by increasing levels of disability, reduced participation in work, and broader societal costs. [1,2]

These costs are not simply additive. Early misalignment increases the likelihood of further utilization, creating trajectories that are both resource-intensive and difficult to reverse. As a result, expenditure can increase substantially without a corresponding

improvement in patient outcomes, highlighting a structural inefficiency in how care is currently delivered.

Low-value care pathways, including unnecessary imaging and poorly targeted intervention, have increasingly been recognized as an important contributor to avoidable expenditure across health systems. [8,9]

6. The Opportunity: Early Alignment

If pathway mismatch is a central driver of cost and poor outcomes, then early alignment represents a significant opportunity for change. The initial stages of care are particularly influential, as decisions made at this point shape the trajectory that follows.

When care is aligned early with the processes maintaining a patient's pain, the need for escalation is reduced, engagement is improved, and outcomes become more predictable. This requires a shift in emphasis from treating symptoms in isolation to understanding what is driving them and selecting interventions accordingly.

Such an approach does not depend on new therapies. It depends on a more structured way of determining how existing therapies are used, and when they are most appropriate.

This direction is consistent with contemporary guideline trends that emphasize stratified care, non-pharmacological management, and reduction of low-value intervention. [5,10]

7. From Insight to Implementation

Translating this perspective into practice requires tools that support clinicians in making more aligned decisions at the point of care.

Previous decision-support efforts have demonstrated clinical value, yet many struggled to achieve routine adoption because they were difficult to integrate into everyday workflow and clinical systems. [11,12]

Structured clinical reasoning systems such as PainMAP have been developed to address this need. By integrating patient-reported information with models of pain-maintaining processes, these systems provide a clearer basis for understanding what is driving a patient's presentation and how care might be more effectively aligned.

In doing so, they offer a way to reduce pathway mismatch before it becomes established, supporting more coherent and efficient care trajectories.

8. Conclusion

Chronic pain is widely recognized as a major contributor to healthcare utilization and societal cost. What remains less well understood is why, despite this level of investment, outcomes remain so variable.

Pathway mismatch provides one explanation. It reflects not isolated errors, but the accumulation of decisions that are not aligned with the processes maintaining a patient's pain.

Addressing this challenge requires a shift in focus—from expanding treatment options to improving the decisions that determine how those options are used. The most meaningful gains in chronic pain care are likely to come not from new interventions, but from getting the pathway right, early.

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