ZOOMRX

A WHITEPAPER ON

Pharmaceutical Message Optimization

THE SCIENCE OF INFLUENCE

How Real-world Benchmarks + Human Ingenuity is Transforming Pharmaceutical Messaging

Content

Executive Summary

Pharmaceutical brands face unprecedented challenges in communicating effectively with healthcare professionals (HCPs). The proliferation of channels, increasing time constraints on physicians, and the sheer volume of scientific information create a perfect storm where even scientifically sound messages often fail to resonate. We explore a novel way of pharmaceutical message optimization—a data-driven approach from real-world promotional benchmarks that transforms how life science companies measure, optimize, and communicate with healthcare providers.

Drawing on quantitative effectiveness metrics, linguistic analysis, behavioral science principles, and iterative optimization through longitudinal tracking, we present a novel, comprehensive way for developing promotional communications that not only reach HCPs but genuinely influence decision-making.

The approach moves beyond traditional message testing to establish a continuous measurement and improvement cycle where communications evolve based on real-world performance tracking of promotional data. We deploy message benchmarks to integrate behavioral science heuristics—such as authority, social proof, and novelty bias—with rigorous linguistic analysis, pharmaceutical brand teams can craft and optimize messages that balance scientific accuracy with persuasive impact. The approaches presented offer a blueprint for brands seeking to elevate their communications from merely informative to genuinely influential.

SECTION 1:

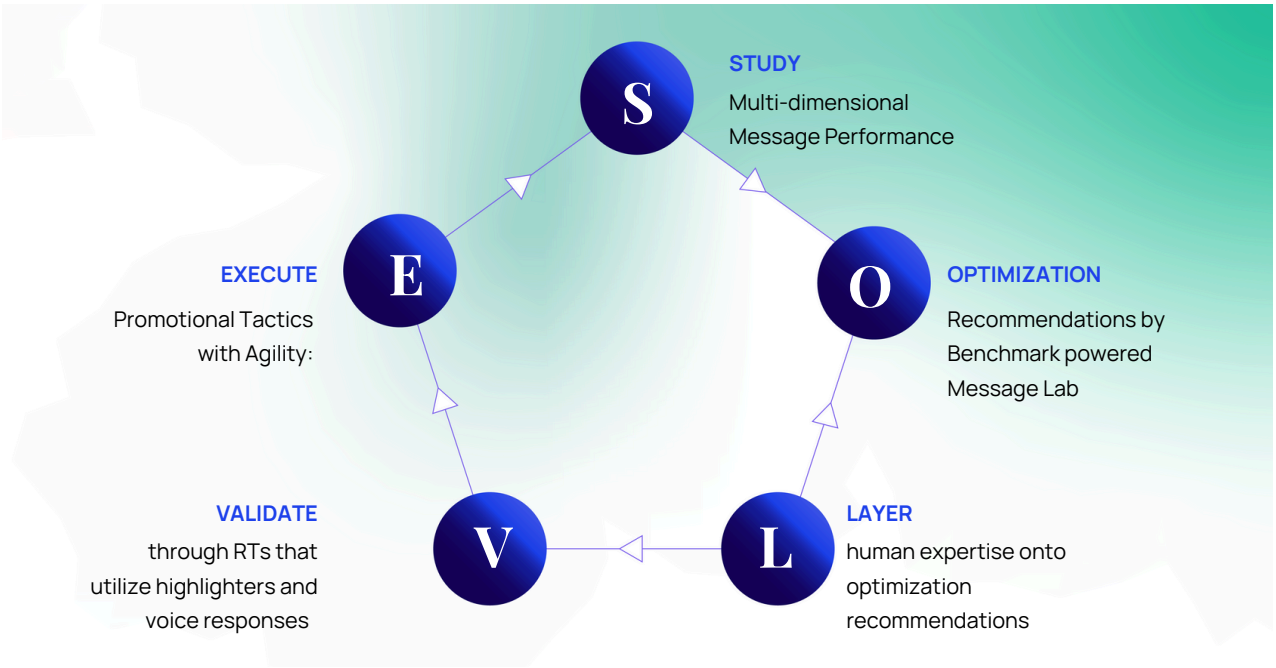
The Message Optimization Puzzle

From Art to Science: The Evolution of Message Development & Refinement

Traditionally, pharmaceutical message development has been treated largely as an art form—relying on creative intuition, judgment solely relying on heuristics, and delayed market testing. While creativity remains essential, message optimization needs to be more systematic, data-driven discipline that combines art with science at high-pace.

The "SOLVE" Optimization Methodology Powered by Message Labs

Effective message optimization follows a structured methodology that transforms subjective impressions into objective improvements. This process typically includes five key phases:



Study Multi-dimensional Message Performance

Using Promotional tracking tools, the current performance of a message are objectively measured. This assessment establishes a clear starting point against which improvements can be evaluated. The baseline assessment includes:

- Effectiveness scoring across believability, uniqueness, and motivation dimensions
- Readability and cognitive processing analysis
- Behavioral science principle application evaluation
- Linguistic marker identification
- Benchmark comparison within relevant categories

Once multi-dimensional performance is established, specific improvement opportunities can be identified through gap analysis. This process pinpoints exactly where and how a message falls short of its potential:

- Dimension-specific weaknesses (e.g., strong believability but weak motivation)
- Structural elements that impede comprehension or retention
- Missed opportunities to leverage relevant behavioral science principles
- Suboptimal linguistic patterns or data presentation
- Performance gaps compared to category benchmarks

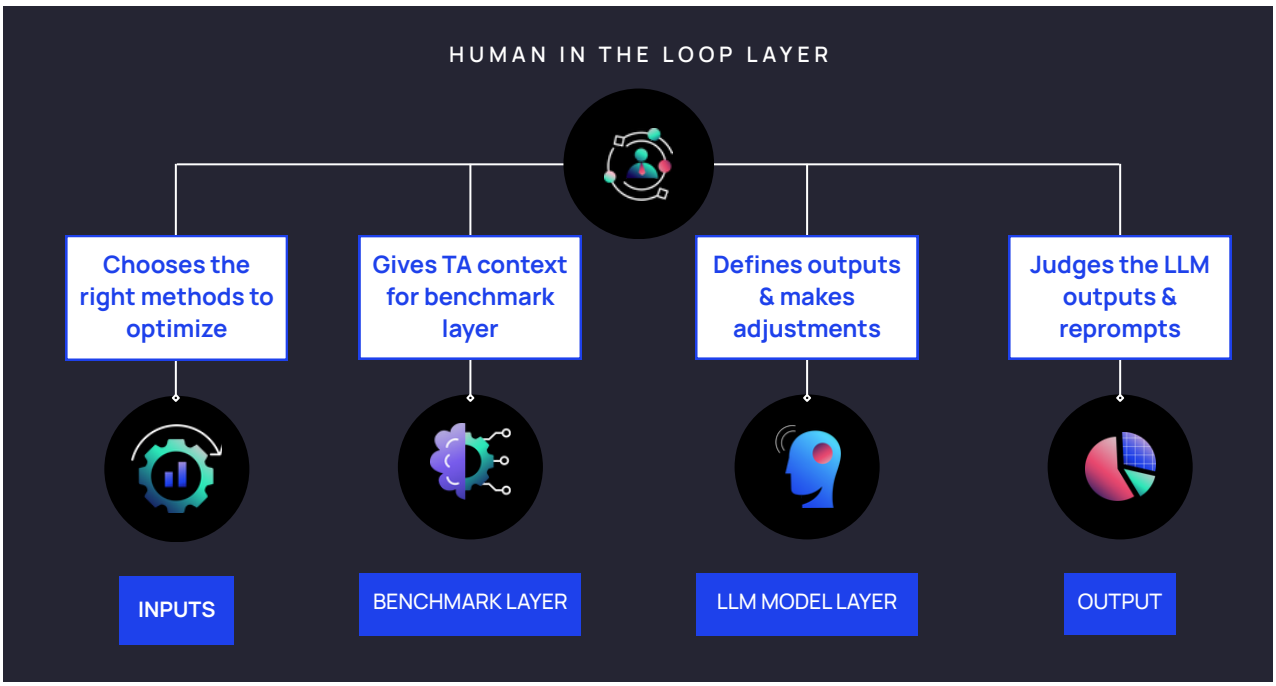
Optimization Recommendations by Benchmark powered Message Lab:

With specific improvement opportunities identified, strategic optimization applies targeted enhancements based on evidence-based principles:

- Restructuring information hierarchy to emphasize key points
- Recalibrating technical density for the specific audience
- Incorporating relevant behavioral science principles
- Enhancing linguistic markers associated with higher performance
- Refining data presentation for improved comprehension

Layer human expertise onto optimization recommendations:

With human-augmentation, we can layer in our creativity combined with robust benchmarking to come up with optimized messaging for brands.



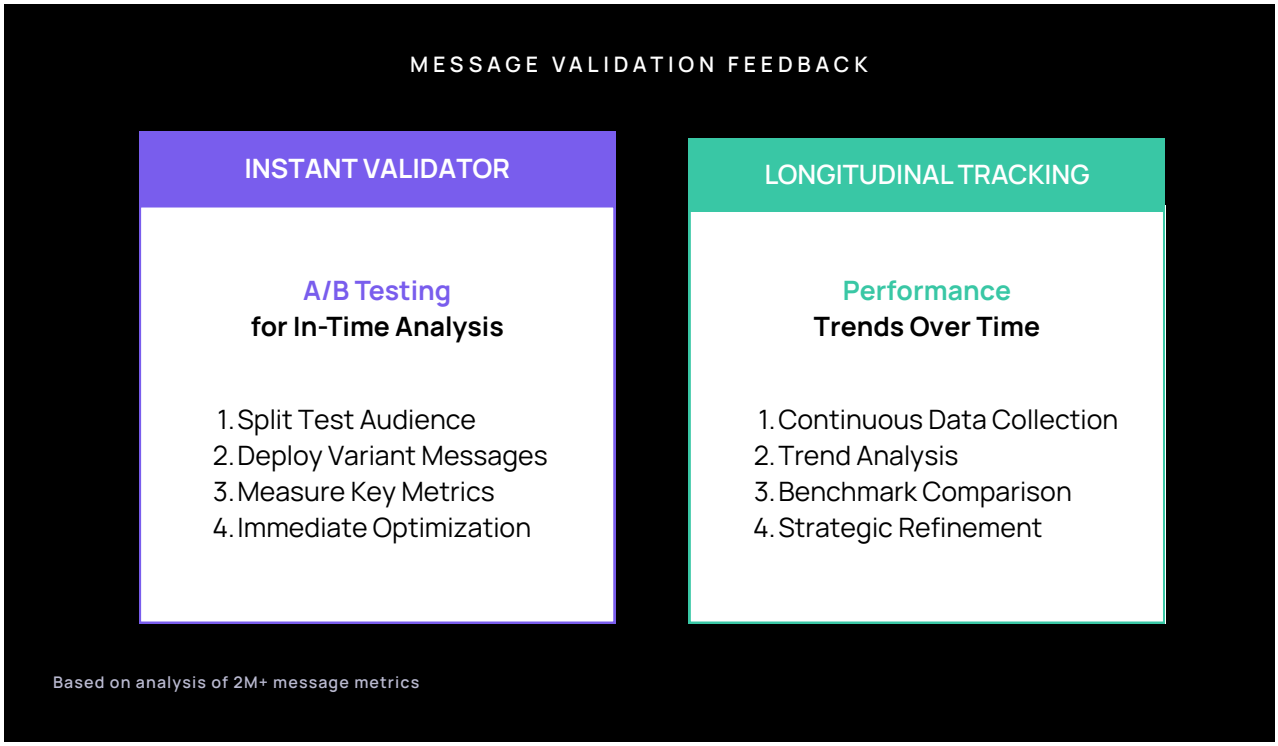
Validation

The optimization process concludes with performance validation—measuring the enhanced message against the original baseline to quantify improvements:

- Comparative effectiveness scoring using benchmarks
- Side-by-side readability analysis
- HCP feedback on specific enhancements through highlighters and open-ends
- Projected performance against category benchmarks

This structured methodology transforms message optimization from a heuristic and intuition driven exercise into a systematic process with measurable outcomes.

The most effective approach involves iterative testing and refinement—a continuous improvement process that progressively enhances message performance through multiple cycles of assessment, modification, and validation. Several approaches support this iterative process, a couple are:



These iterative approaches recognize that message optimization is not a destination but a journey of continuous improvement guided by data and validated through systematic testing.

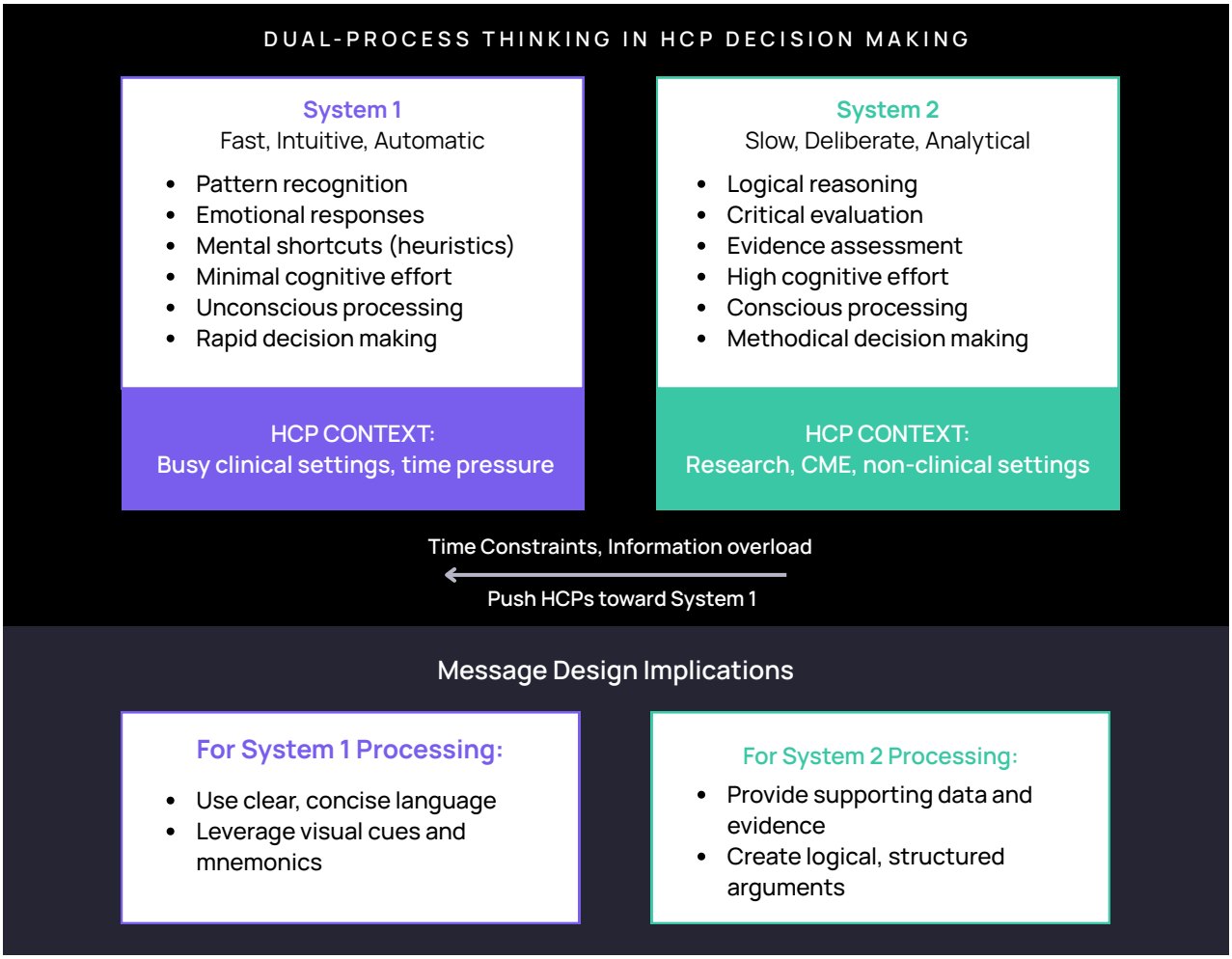
SECTION 2:

Behavioral Science Layer

The Science of HCP Decision-Making

HCPs operate in environments characterized by information abundance and time scarcity. This reality fundamentally shapes how they process communications. Contrary to the traditional view of clinical decision-making as a purely rational process, substantial evidence now points to the role of dual-process thinking—where both deliberative reasoning and automatic cognitive processes influence decisions.

The work on dual-process thinking, pioneered by researchers like Kahneman and Tversky, suggests that even highly trained professionals rely on mental shortcuts (heuristics) when making complex decisions under time constraints. For healthcare professionals, these constraints are particularly acute, creating both challenges and opportunities for pharmaceutical communicators. Messages that align with how HCPs naturally process information stand a significantly higher chance of breaking through the noise and influencing clinical practice.



Key Behavioral Principles in Healthcare Communications

Several behavioral science principles have demonstrated particular relevance to healthcare communications:

Authority Heuristic: Healthcare professionals show preference for information validated by recognized experts or institutions. This principle suggests that communications citing respected academic institutions or key opinion leaders may achieve higher believability scores than those without such validation. The authority must be contextually relevant and credibly integrated into the message.

Social Proof: The concept of social proof, extensively studied in behavioral economics, suggests that people look to the actions of others to determine appropriate behavior. In healthcare communications, this principle suggests that messages highlighting adoption patterns among similar practitioners may show higher motivation scores, particularly when the reference group is specific and relevant to the recipient.

Loss Aversion: A fundamental principle in prospect theory is that people tend to prefer avoiding losses over acquiring equivalent gains. Applied to healthcare communications, this suggests that messages framed around reducing negative outcomes may resonate differently than those focused solely on positive outcomes. This principle must be applied ethically, presenting balanced information while acknowledging the cognitive impact of different framing approaches.

Cognitive Fluency: Research in cognitive psychology indicates that information that is easier to process is generally perceived more favorably. For healthcare communications, this suggests that messages with clear structure, appropriate technical density, and visual organization may demonstrate better comprehension and recall rates without sacrificing scientific accuracy.

> For example, consider the following pharmaceutical message:
> "The only FDA approved [MOA] with 10+ years of experience in patients with [INDICATION], prescribed by 3200 HCPs and treated 5000+ patients since 2013"
> The reference to "FDA approved" invokes regulatory authority, establishing the treatment's legitimacy and compliance with official standards while the "prescribed by" numbers provide concrete social proof that many healthcare professionals trust this treatment and many patients have received it.

Translating such behavioral science principles into effective healthcare communications requires both scientific rigor and creative application.

Behavioral Science Framework for Message Analysis

A systematic approach to applying behavioral science in pharmaceutical communications involves analyzing messages across multiple dimensions:

- **Heuristic Presence:** Identifying which behavioral principles are present or absent in a given communication
- **Framing Structure:** Analyzing how information is presented and organized
- **Cognitive Load:** Assessing the mental effort required to process the message
- **Decision Architecture:** Examining how the message guides the recipient toward clinical considerations

This framework provides a structured approach to understanding why certain messages resonate with healthcare professionals while others fail to make an impact, without making specific claims about effectiveness without supporting data.

SECTION 3:

What makes Messages Effective?

The Power of Precision in Healthcare Language

Words matter. Numbers matter. In healthcare communications, they both matter profoundly. The specific language & data presentation choices in pharmaceutical messaging can dramatically alter comprehension, retention, and ultimately, clinical decisions. Yet finding the right balance presents a unique challenge: communications must be scientifically precise while remaining cognitively accessible to busy healthcare professionals.

Linguistic foundations of effective healthcare communications—how specific language choices, structural elements, and presentation formats influence message performance across different healthcare professional audiences.

Appropriate Complexity: A common misconception in healthcare communications is that simpler is always better. The reality is more nuanced. Healthcare professionals possess specialized knowledge and vocabulary that allows them to process complex information efficiently—when that information is presented appropriately. The concept of "appropriate complexity" recognizes that different audiences require different approaches.

Specialty-Specific Language Considerations: Communications targeting specialists can—and often should—employ technical terminology relevant to their practice area. This

specialized language serves as cognitive shorthand, allowing complex concepts to be communicated efficiently. However, even among specialists, technical terms outside their immediate specialty may create unnecessary cognitive barriers.

Technical Density Optimization: Rather than minimizing technical language across the board, effective communications optimize "technical density"—the proportion and distribution of specialized terminology. Strategic placement of technical terms at key points in the message can enhance credibility while maintaining readability.

Contextual Scaffolding: Complex concepts become more accessible when properly contextualized. Providing appropriate framing before introducing complex information—whether statistical data or mechanistic details—significantly improves comprehension without sacrificing scientific precision.

How do these concepts play out in a real-world scenario?

"[PRODUCT] demonstrated a 30% reduction in disease progression compared to standard of care in patients with advanced disease."

If this message was used as-is, it would achieve a mediocre effectiveness score across specialties. However, if we are to make the following modifications:

"In the phase III [CLINICAL TRIAL], [PRODUCT] demonstrated a statistically significant 30% reduction in disease progression compared to standard of care in patients with advanced disease, including those with ECOG PS 0-2." – For Oncologists

"[PRODUCT] reduces progression for advanced disease patients by 30% compared to standard of care – helping your patients maintain quality of life. Consider [PRODUCT] for your next eligible patient." – For Non-Oncologists

Each of these modifications would potentially provide a 15-point increase in message effectiveness amongst relevant specialties.

The goal isn't to simplify at the expense of accuracy but to present information at the optimal level of complexity for the specific audience and communication objective.

Linguistic Markers of Effectiveness

Certain linguistic patterns consistently appear in high-performing healthcare communications. These patterns serve as markers that can be identified, measured, and optimized:

Action-Oriented Language: Messages that clearly connect information to clinical action tend to demonstrate higher motivation scores. This connection can be explicit or implicit through language that naturally leads to clinical application.

Concrete vs. Abstract Terminology: While abstract concepts have their place, concrete language typically enhances comprehension and retention. This is particularly important when describing mechanisms of action or patient outcomes.

Balanced Qualification: The degree of certainty expressed in healthcare communications—from definitive statements to carefully qualified claims—significantly impacts believability. Finding the appropriate balance between confidence and proper qualification is essential for maintaining credibility.

Narrative Elements: Even in scientific communications, narrative elements that create a coherent story improve information processing. These elements might include patient journeys, problem-solution frameworks, or cause-effect relationships that help HCPs place new information within familiar contexts.

These linguistic markers provide a framework for analyzing and optimizing the language of healthcare communications in systematic, evidence-based ways.

These elements work together to create communications that flow naturally through the mind of the healthcare professional, minimizing cognitive friction and maximizing information transfer.

Data Presentation: The Language of Evidence

In evidence-based healthcare communications, data presentation constitutes its own specialized language. How statistical information is framed and presented significantly impacts comprehension, retention, and ultimately, clinical application.

Several principles guide effective data presentation in healthcare communications:

Contextual Framing: Numbers without context have limited meaning. Effective data presentation establishes relevant benchmarks / comparisons that help HCPs interpret the significance of statistical findings.

Absolute and Relative Measures: The choice between absolute and relative measures (such as absolute risk reduction versus relative risk reduction) significantly impacts how information

is perceived. Balanced presentations that include both perspectives provide more complete understanding.

Statistical Literacy Alignment: Communications should align with the statistical literacy of the target audience. While most HCPs have training in research interpretation, the depth of statistical sophistication varies across specialties and practice settings.

The language of data extends beyond the numbers themselves to include how those numbers are contextualized and integrated into the broader narrative of the communication.

The contrast between effective and ineffective data presentation becomes clear when examining real-world examples. Consider a message that achieved exceptional performance across all metrics:

"Primary PFS analysis (14.5 months median follow-up) shows 16.8 months median PFS for [PRODUCT] versus 5.6 months median PFS with placebo."

This communication succeeds by establishing context upfront, presenting a meaningful absolute difference (11.2 months), and focusing on a clinically relevant endpoint that resonates with prescribers.

Contrast this with a lower-performing message:

"The Hazard Ratio in the Hormone Receptor–negative subgroup was 0.76 (3yr iDFS was 92.8% for [PRODUCT]-based therapy vs. 91.2% for Placebo and [PRODUCT]-based therapy)."

Despite containing potentially valuable data, this message falters through statistical overload, emphasis on a minimal percentage difference (1.6%), and failure to translate findings into clinical significance.

SECTION 4:

Quantifying Messages

The Challenge of Measurement

Effective communication in healthcare isn't simply a matter of intuition or creative inspiration. Like any business process, it requires systematic measurement and analysis. Yet quantifying something as seemingly subjective as "messages" presents unique challenges. How do we transform the qualitative aspects of communication into measurable metrics that drive business decisions?

The answer lies in developing a robust framework that captures the multidimensional nature

of healthcare communications while providing actionable insights for optimization. This section explores how message effectiveness can be systematically measured and benchmarked.

The Three Pillars of Message Effectiveness

Message effectiveness in healthcare communications rests on three fundamental pillars, each capturing a distinct dimension of how HCPs interact with information:

Believability: At its core, healthcare communication must establish credibility. Believability measures the extent to which HCPs accept the claims presented as valid and trustworthy. Without this foundation, even the most compelling message will fail to influence clinical decisions. Believability encompasses not just the factual accuracy of claims but also how they are supported, contextualized, and aligned with the HCP's existing knowledge framework.

Differentiation: In an environment saturated with similar messages, uniqueness is crucial. Differentiation measures how distinctly a message stands out from competing communications. This dimension captures the message's ability to present information in ways that feel novel, memorable, and worthy of attention.

Motivation: Ultimately, effective healthcare communications should inspire action. Motivation measures the message's ability to influence clinical behavior, whether that means considering a treatment option, seeking additional information, or changing practice patterns. This dimension reflects the message's relevance to clinical challenges, its alignment with HCP priorities, and its ability to overcome inertia in established practice patterns.

These three dimensions work in concert. A message might be highly believable but so similar to others that it fails to register. Another might be unique but lack credibility, undermining its ability to motivate. The most effective messages perform well across all three dimensions, creating a solid foundation for influencing clinical decisions.

The Effectiveness Score Methodology

To create a holistic and well-rounded measure of message effectiveness, these three dimensions must be integrated into a single metric that accurately reflects their interdependent nature. This is where the Effectiveness Score methodology comes into play.

Rather than using a simple average of the three dimensions, the Effectiveness Score employs a geometric mean approach. This mathematical technique captures an important reality of healthcare communications: weakness in any single dimension significantly undermines overall effectiveness. The geometric mean is particularly sensitive to low values in any component, reflecting how a serious deficiency in believability, for instance, cannot be compensated for by high differentiation.

The formula is expressed as:

EFFECTIVENESS SCORE = $\sqrt[3]{(\text{BELIEVABILITY} \times \text{DIFFERENTIATION} \times \text{MOTIVATION})}$

This approach creates a balanced metric that:

- Penalizes significant weaknesses in any dimension
- Rewards balanced performance across all three dimensions
- Provides a single, comparable metric for benchmarking
- Correlates more strongly with actual message performance than simple averages

"[PRODUCT] is an eye drop taken twice a day, morning and night, approximately 12 hours apart"

Believability: 61.5%
Differentiation: 7.7%
Motivation: 15.4%
Arithmetic Mean: 28.2%
Geometric Mean: 19.4%
Difference: 8.8 percentage points

Beyond the Score: Additional Effectiveness Metrics

While the Effectiveness Score provides a powerful holistic measure, additional metrics offer complementary insights:

Recall & Stickiness Metrics: Using our innovative multi-touchpoint approach, we measure what information HCPs remember from communications at various time intervals provides insights into message memorability and cognitive processing.

Readability Metrics: Analyzing how HCPs interact with communications—where they focus attention, how quickly they process information, which elements they skip—reveals opportunities to optimize message structure and presentation.

Outcome Metrics: Tracking how HCPs respond to messages—whether considering treatment changes, product's perception, impact of the interactions—connects communication effectiveness to actual outcomes.

Association Metrics: Tracking how HCPs associate a message to a brand—when blinded messages are provided, are they able to clearly identify the message with the brand and which parts enable them to do that.

These additional metrics, when combined with the core Effectiveness Score, create a comprehensive measurement framework that captures the full spectrum of message performance.

SECTION 5:

Real-world Message Benchmarks

The Strategic Imperative of Message Benchmarking

In today's complex healthcare landscape, pharmaceutical companies can no longer rely on intuition alone to guide their communication strategies. Message benchmarking provides the essential foundation for evidence-based decision making, transforming promotional message development from a creative endeavor into a data-driven science. By establishing objective standards against which new messages can be measured, benchmarking eliminates internal debates and builds organizational confidence in messaging decisions. The true value of message performance metrics emerges only through proper contextualization—a message achieving 65% believability may appear successful in isolation, but benchmarking reveals whether this truly stands out or merely meets category expectations.

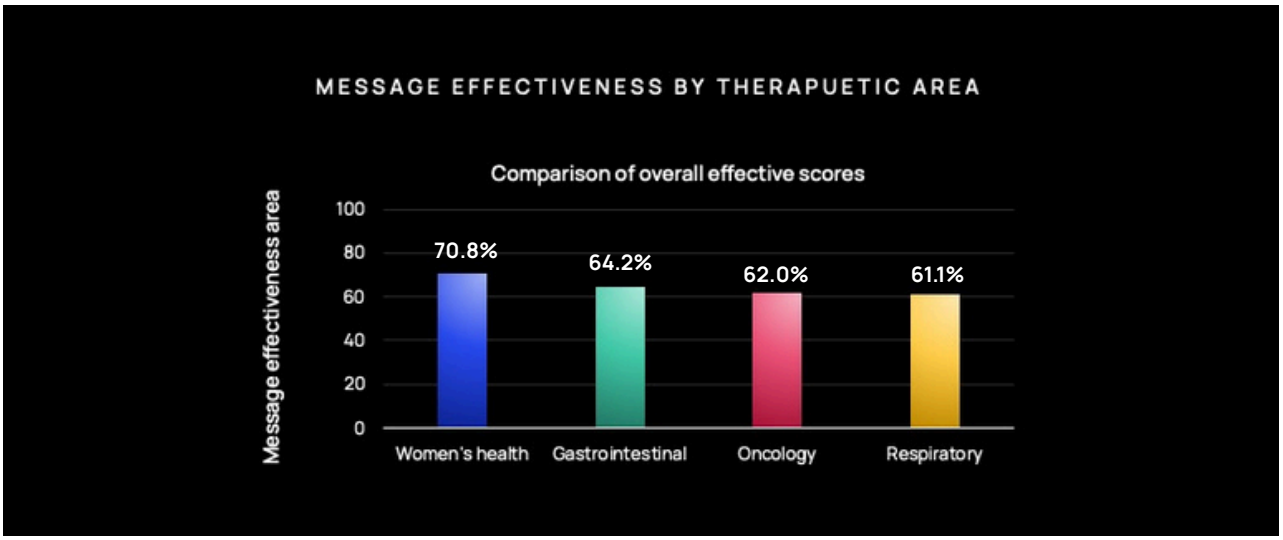
> *Message benchmarking provides the essential foundation for evidence-based decision making, transforming promotional message development from a art into a data-driven science.*

Message benchmarking delivers critical competitive intelligence while establishing a continuous improvement framework that transforms message optimization from a point-in-time activity into an ongoing process. By analyzing message performance patterns within therapeutic categories, companies can identify gaps in the communication. This approach acknowledges the dynamic nature of HCP preferences and ensures messaging strategies remain responsive to changing market conditions, competitive activities, and emerging clinical evidence. The most sophisticated pharmaceutical communicators leverage benchmarking not just to evaluate current performance, but to establish trajectories for future message evolution and set appropriate performance targets over time.

Selecting the Right Benchmark: A Framework for Relevance

The power of message benchmarking depends entirely on selecting appropriate comparative standards. Our research demonstrates that therapeutic area alignment and audience specificity represent fundamental considerations when establishing relevant benchmarks. The significant variation in message effectiveness across therapeutic categories—with Women's Health messages achieving motivation scores of 71% compared to 64% in Gastrointestinal—reflects unique communication norms and evidence standards.

Similarly, our data reveals substantial variation across healthcare specialties, with Physician Assistants within one specialty having differentiation scores of 71% compared to 63% for Physician Assistants another specialty, indicating that communication preferences are shaped by professional training and practice patterns unique to each specialty.



Message theme consideration, product lifecycle stage, and competitive position context further refine benchmark relevance. Innovation-themed messages achieve differentiation scores of 67.5%, significantly outperforming other thematic categories in this dimension. Early-lifecycle messages typically achieve higher differentiation scores but may struggle with believability, while market leaders, challengers, and niche players face fundamentally different communication challenges requiring distinct performance expectations. The most sophisticated benchmarking approaches account for these dynamics, ensuring that performance expectations reflect the specific challenges associated with the message theme, product stage, and market position rather than generic category standards.

From Measurement to Insight

The true value of quantifying message effectiveness is not in the numbers themselves but in the insights they generate. Effectiveness scores and their component dimensions provide a diagnostic framework for understanding precisely where and how messages succeed or fail.
Pattern analysis across large message datasets reveals important insights. Asking the right questions is crucial to get to them.

- Which message types consistently achieve higher effectiveness scores
- How effectiveness varies across different HCP specialties
- Which dimensions (believability, differentiation, motivation) present the greatest challenges in specific therapeutic areas
- How effectiveness correlates with specific message characteristics

These questions transform message optimization from intuition to a science driven by data. They allow communicators to identify specific improvement opportunities, set realistic performance targets, and measure progress over time.

> *Effectiveness scores and their component dimensions provide a diagnostic framework for understanding precisely where and how messages succeed or fail.*

Conclusion

Despite all the technological advances, we must remember that at its core, healthcare communication remains a human endeavor. The most sophisticated algorithms and data analysis cannot replace the fundamental need for messages that resonate on a human level, addressing the real needs, concerns, and motivations of healthcare professionals as they work to improve patient outcomes.

The most effective messages will continue to be those that balance scientific precision with emotional resonance, data-driven insights with clinical relevance, and technological sophistication with human understanding.

By adopting these practices, pharmaceutical brands can develop messages that not only break through the noise of information overload but genuinely support healthcare professionals in making informed decisions that improve patient outcomes. In doing so, they transform promotional communications from a necessary marketing function to a valuable service that advances the shared goal of better healthcare.

ABOUT THE AUTHORS

Akshay Kanna is a market researcher with 4+ years of specialized experience in pharmaceutical market research and promotional optimization. He has conducted comprehensive performance evaluations of pharmaceutical sales teams, developing optimization methodologies that enhanced client commercial strategies across multiple therapeutic areas. His research portfolio encompasses opportunity assessments, awareness tracking studies, and analyses spanning various stages of pharmaceutical product lifecycles from pre-launch through maturity.

Manoj Hariharaputhiran brings a decade of experience in pharmaceutical marketing and promotional strategy, combining strategic marketing acumen with deep industry insight to help brands navigate the unique challenges of healthcare promotions. His results-driven approach focuses on delivering measurable outcomes with accelerated timelines for commercialization teams. Having collaborated with multiple pharmaceutical companies, he has contributed significant value through diverse strategic projects that enhance brand positioning across therapeutic areas.

Sagan BY ZOOMRX

This whitepaper is written in collaboration with Sagan, an AI platform by ZoomRx. This whitepaper used Sagan's Message Lab capabilities that is focused on pharmaceutical promotional message optimization. With over 15,000 pharmaceutical promotional messages and data from more than 618,000 healthcare professional interactions, Message Lab provides evidence-based insights for optimizing healthcare communications. It evaluates message effectiveness across key dimensions including believability, uniqueness, and motivation to prescribe, while providing targeted optimization recommendations based on a comprehensive database of messages. With capabilities to benchmark against therapeutic area standards and suggest evidence-based improvements, Message Lab helps pharmaceutical teams craft communications that resonate with healthcare professionals and drive meaningful engagement.