

HAI to AI

**Beyond Human-in-the-Loop:
Why AI in Pharma Needs
Human-Aided Intelligence (HAI)**

[MLR as a Case in Point]





Beyond Human-in-the-Loop: Why AI in Pharma Needs Human-Aided Intelligence (HAI)

A recent post from Boston Consulting Group caught my attention.

“Human in the loop” is emerging as one of the fastest-rising AI leadership topics as CEOs think about how to maintain effective human oversight while scaling AI.

For life sciences, this is more than an AI governance discussion.

It goes to the heart of how AI should be deployed in an industry where scientific integrity, patient safety and regulatory compliance cannot be compromised.

And it made me think:

Perhaps the conversation should move beyond keeping humans “in the loop” to making humans better equipped to navigate the loop.

That is where I see an opportunity for what I call: **HAI - Human-Aided Intelligence**

Human-in-the-Loop is necessary. But is it enough?

Human-in-the-Loop has become an important principle for responsible AI.

The idea is straightforward: AI can assist with tasks or generate recommendations, but humans retain oversight, judgment and accountability.



AI assists with tasks



Generates recommendations



Humans retain oversight, judgment and accountability

From oversight to augmentation



A fundamental shift in thinking



Human-in-the-Loop

Where should the human intervene?



Human-Aided Intelligence

How can intelligence continuously assist the human before, during and after the decision?

THE KEY DIFFERENCE

From occasional oversight to continuous augmentation.

It is a subtle shift, but potentially a significant one.

The objective is not to replace human expertise. It is to ensure that human expertise is applied where it creates the greatest value.

AI can deal with scale, pattern recognition and repetitive cognitive tasks.

Humans bring context, experience, accountability, judgment and the ability to deal with ambiguity.

Intelligence that works alongside people

HAI deliberately combines the strengths of AI and human expertise.



What AI brings

- Scale and speed
- Pattern recognition
- Repetitive cognitive tasks



What humans bring

- Context and experience
- Judgment and accountability
- Handling ambiguity

Human + AI = HAI

Complementary capabilities. Better-informed decisions.

MLR is a Perfect Example

Consider Medical, Legal and Regulatory (MLR) review in pharmaceutical commercial organizations. Every promotional asset must go through a rigorous review process.

Claims need to be supported. References need to be accurate. Benefit-risk communication needs to be appropriate. Content needs to remain within approved boundaries.



Medical

The Medical team needs to ensure scientific accuracy and appropriate substantiation.

- Validate scientific content and data interpretation
- Ensure claims are evidence-based and balanced
- Confirm appropriate disease and product information



Legal

Legal needs to assess the relevant legal considerations.

- Assess claims for legal risk
- Ensure fair balance and appropriate disclosures
- Review for compliance with local and global legal requirements



Regulatory

Regulatory needs to ensure compliance with applicable requirements.

- Verify alignment with regional regulatory guidelines
- Ensure required labeling and safety information
- Confirm adherence to promotional and communication regulations

There is no question that human expertise is essential.

But there is also a significant amount of effort involved in reviewing content systematically and repeatedly. And the challenge is only likely to increase.

Generative AI is making it possible for organizations to create, adapt and personalize content at an unprecedented speed.

AI Should Prepare the Human, Not Just Replace the Human

The goal is not for AI to make the decision on its own, nor simply to pass an output to a human at the end. AI should prepare the human with relevant information, highlight what is important, bring in the right context, and surface potential issues before the human reviews the content.

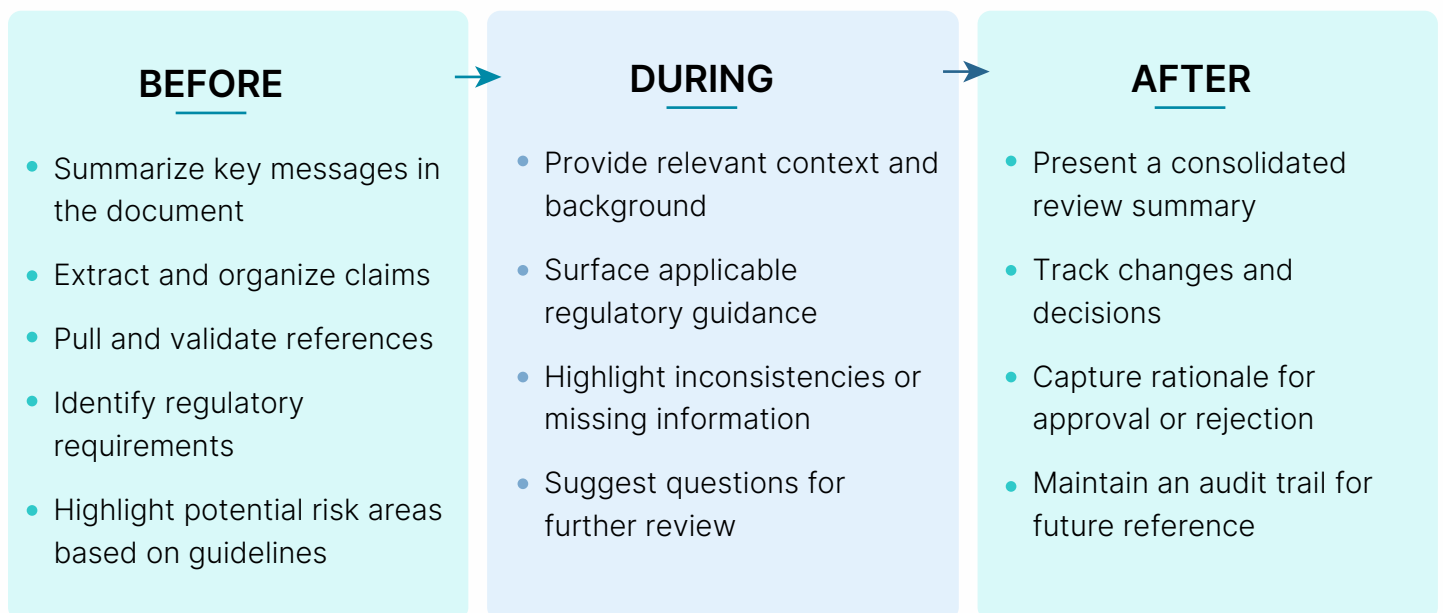
This shifts the human role from reacting to AI output to engaging with a more complete and structured view of the information.

The human can then focus on applying judgment, considering nuances and making the final decision with greater confidence.

“ AI should act as a force multiplier for human expertise, not as a replacement.

An example in MLR review

Instead of reviewing a full document from scratch, the reviewer receives a structured package prepared by AI, including:



In this way, AI enables the human to spend less time on routine information gathering and more time on higher-value judgment, discussion and decision-making.

The Scarce Resource Is **Expert Human Attention**

In life sciences, the most valuable human resource is often not time in general, but the attention of experienced experts. Senior medical, regulatory and scientific experts have limited bandwidth. Their attention is needed for complex judgments, nuanced assessments and decisions with real consequences for patients, regulators and the business.

When humans are used primarily to review AI outputs at the end of a process, this scarce attention is consumed by lower-value tasks such as checking format, verifying basic information or reviewing content that could have been prepared earlier. A Human-Aided Intelligence approach seeks to protect and prioritize expert attention by getting AI to do more of the preparation, analysis and synthesis upfront.

“ The objective is not to reduce human involvement, but to ensure that expert attention is focused where it matters most.

How HAI helps preserve expert attention

By shifting routine work to AI and surfacing the right information at the right time, HAI helps experts focus on higher-value activities.

Prepare and organize



AI can gather, summarize and organize relevant information from multiple sources before the expert reviews it.

Highlight what matters



AI can identify key claims, potential risks, inconsistencies and areas that need expert judgment, rather than asking the expert to read everything in detail.

Provide context



AI can surface relevant regulations, guidelines, precedent content and past decisions to give experts the right context for their evaluation.

Enable better decisions



With more complete and structured information, experts can spend more time on complex analysis, nuanced discussions and final decision-making.

In a world where the volume, variety and speed of content are increasing, preserving and effectively using expert human attention is critical. HAI is one way to make that possible.

HAI Is Not Another Name for Human-in-the-Loop

It is easy to view Human-Aided Intelligence as simply a new label for Human-in-the-Loop. But the two concepts are fundamentally different in intent and in how the work is designed.

Human-in-the-Loop typically focuses on human oversight. AI produces an output, and a human reviews it, checks for errors and approves or rejects it.

Human-Aided Intelligence goes further. It is about actively augmenting the human throughout the process, from understanding the problem and gathering relevant information to analyzing options and preparing for a decision.

“ Human-in-the-Loop keeps the human in the process. Human-Aided Intelligence makes the human more effective throughout the process.

Key differences

While both approaches involve a human, they differ in scope, timing and the value they create.

Human-in-the-Loop

- 01 Focuses on review and oversight at the end of the process.
- 02 Human checks AI output for accuracy and compliance.
- 03 Often limited to error detection and approval.
- 04 Does not significantly change how the work is done.
- 05 Human involvement is reactive.

Human-Aided Intelligence

- 01 Augments the human throughout the entire process.
- 02 AI helps gather, analyze and organize relevant information.
- 03 Surfaces key insights, risks and options for the human to consider.
- 04 Changes how the work is done by integrating AI into the workflow.
- 05 Human involvement is proactive and value-driven.

HAI is not about reducing the human to a final checkpoint. It is about redesigning the work so that AI and human expertise complement each other, with the human focused on the judgment, nuance and decisions that truly require their attention.

Designing Work for Human-Aided Intelligence

Realizing the value of Human-Aided Intelligence requires more than new tools. It requires a deliberate redesign of how work is done.

Many organizations start with pilots or isolated use cases, but continue to operate with the same processes, review cycles and role expectations. In these situations, AI is added on top of existing work, rather than being embedded into the workflow. A more effective approach is to design work from the start for human-AI collaboration, with clarity on what AI should do, what the human should focus on, and how the two work together at each step.

“ Human-Aided Intelligence delivers greater value when work, roles and processes are intentionally designed for collaboration, not simply automated in isolation.

Key design principles

Organizations can consider the following principles when designing work for HAI:

01	Define the outcome Start with a clear, well-defined outcome, rather than the tool or technology. This establishes the purpose of the initiative and helps determine where AI can add value and where human judgment remains essential.
02	Clarify roles and responsibilities Be explicit about what AI is expected to do and what the human is responsible for, including decision points, review criteria and escalation paths.
03	Integrate AI into the workflow Embed AI into existing processes in a way that is natural and reduces manual effort, rather than creating parallel processes.
04	Surface the right information Design AI to bring forward relevant data, context, risks and options, so that the human can focus on higher-value analysis and decision-making.
05	Learn and improve over time Use feedback from real work to refine prompts, workflows and decision support, and to continuously improve the human-AI collaboration.

From Concept to Real-World Impact in Life Sciences

Human-Aided Intelligence is not a theoretical idea. It can be applied to real work across the life sciences value chain, where teams deal with complex information, strict requirements and high-stakes decisions.

By combining AI's ability to process and organize information with human expertise, organizations can improve the quality, speed and consistency of their work, while keeping humans in control of critical decisions.

The examples below illustrate how HAI can create practical value in different areas.

Illustrative outcomes



Medical, Legal and Regulatory (MLR) Review

Support faster and more consistent review of promotional and scientific content.

- Structured summaries for faster review
- Early identification of potential risks and inconsistencies
- More time for expert judgment on complex or borderline cases



Clinical Development

Synthesize information across protocols, study reports and regulatory guidance.

- Faster access to relevant information
- Clearer view of key risks and dependencies
- More time for expert analysis and decision-making



Commercial and Market Access

Analyze market information, payer requirements and competitive insights.

- Consolidated insights from multiple sources
- Clearer view of key trends, risks and opportunities
- More time for strategic thinking and stakeholder engagement



Research and Scientific Strategy

Explore scientific literature, emerging data and external innovations.

- Structured synthesis of large volumes of information
- Identification of relevant evidence and knowledge gaps
- More time for expert interpretation and strategic decisions

“ HAI creates value when it is applied to real problems, with the right balance between AI capabilities and human expertise.

Conclusion

A More Effective Way Forward

Human-Aided Intelligence offers a practical and balanced approach for life sciences organizations that want to realize the value of AI without losing the critical role of human expertise.

It is not about replacing humans or simply adding a new label. It is about redesigning work so that AI and humans complement each other, with AI preparing, analyzing and surfacing the right information, and humans applying judgment, experience and accountability to make decisions.

When work is intentionally designed for this collaboration, organizations can improve the quality, speed and consistency of their decisions, while making better use of the scarce attention of their experts.

As AI capabilities continue to evolve, Human-Aided Intelligence provides a clear and pragmatic way to move from concept to real-world impact in the life sciences industry.

“ The future is not AI instead of humans, but AI working with humans to achieve better outcomes for patients, regulators and the business.

Key takeaways



Complementary strengths

AI brings scale and pattern recognition, while humans bring context, judgment and accountability.



From oversight to augmentation

AI should prepare the human, not just pass an output for review.



Protect expert attention

Design work so that human expertise is focused on complex, high-value decisions.



Design with intent

Clarify outcomes, roles and workflows from the start to enable effective human-AI collaboration.



Real-world impact

HAI can create meaningful value across medical, legal, regulatory, clinical, commercial and research functions.





About the author

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Prabhakar VS is a seasoned professional at the intersection of life sciences commercial domain expertise and digital technology innovation. With over 33 years of combined experience spanning the Indian pharma industry, Global pharmaceutical consulting, and IT delivery management, he helps organizations scale their commercial capabilities through strategic advisory and data-driven solutions.

Prabhakar blends commercial domain leadership with technology strategy, leveraging his extensive knowledge in marketing operations, sales operations and large-scale program governance to drive high-value client outcomes. He currently leads the Pharma Commercial Practice as an Associate Partner at Agilisium Consulting, where he is responsible for the overall practice strategy, building reusable consulting frameworks, and driving domain excellence across the opportunity lifecycle. Holding an MBA in Marketing, he brings a unique balance of deep commercial operational experience and applied digital innovation to every engagement.