ClinicalKey AI

Driving clinical confidence, workflow efficiency and enhanced patient care with *AI-powered decision support*

Insights on ClinicalKey AI implementation at Azienda Sanitaria Locale di Bari (ASL Bari), Italy

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Advancing human progress together

Navigating global challenges with responsible innovation

Healthcare systems worldwide are navigating an era of unprecedented complexity. Rising patient volumes, increasingly challenging clinical scenarios and persistent workforce shortages have placed immense pressure on clinicians and institutions.[1] These challenges are compounded by clinician burnout, that has the potential to impact both the quality of care and the sustainability of healthcare delivery.[2] Moreover, clinicians must contend with an overwhelming and rapidly expanding body of clinical evidence, making it difficult to stay current and reach timely decisions.

In order to address these challenges, there is an urgent need for solutions that help clinicians stay current with the latest scientific advancements, while strengthening confidence, streamlining workflows and enhancing patient care.

These concerns were especially evident by one of Italy's largest and most complex healthcare organizations, Azienda Sanitaria Locale di Bari (ASL Bari). To help address these concerns, ASL Bari partnered with Elsevier to implement ClinicalKey AI, an AI-powered clinical decision support tool designed to deliver evidence-based insights at the point of care.[3]

Clinicians' ability to access timely, evidence-based information is now more important than ever. By enabling rapid access to evidence-based clinical knowledge, AI has the potential to enhance clinical decision-making, streamline workflows and reduce the cognitive burden on healthcare professionals, ultimately helping clinicians to improve patient outcomes.[4] However, the promise of AI must be balanced with responsibility. Unvetted AI tools not suitable for healthcare use may introduce new inefficiencies, erode trust and compromise patient safety. For AI to succeed in healthcare, it must be transparent, ethical and verified.

This white paper explores the implementation of Elsevier's ClinicalKey AI at ASL Bari. It examines why and how ClinicalKey AI was introduced to address local challenges, evaluates its impact on clinical confidence, workflow efficiency and patient care delivery and provides actionable insights for healthcare leaders seeking to adopt responsible AI.

ClinicalKey AI: Local solutions for global pressures in healthcare

Serving the Province of Bari in Italy's Puglia region, ASL Bari provides care to over 1.2 million residents through an extensive network of hospitals and territorial services.

With a workforce of approximately 5,000 clinicians, including physicians, nurses and pharmacists spread across hospital and community settings, the organization encountered many of the same pressures facing healthcare systems worldwide. These challenges also opened the door to meaningful transformation, creating an opportunity to reimagine care delivery through smarter, more efficient solutions.

> *"Managing the growing number of patients, many with complex cases, was becoming very difficult. With limited time and resources, finding reliable information often meant searching across multiple sources, which slowed down our work and added stress. This made it harder to maintain the quality of care we wanted to provide."*
>
> **Dr. Vincenzo Defilippis**
> Head, Safety and Quality Department

Turning challenges into opportunities for elevated care

Challenges at ASL Bari	Opportunities for AI-powered support
Information overload Clinicians need rapid access to evidence-based insights at the point of care, along with tools that help them synthesize and stay current with evolving research and best practices.	Enhances speed and quality of clinical decision-making
Complexity of care is increasing Managing patients with complex conditions or language barriers requires tailored, precise and easily accessible clinical information.	Empowers clinicians to address complex cases with reliable, updated clinical information
Workflow inefficiencies cause delays New solutions must integrate seamlessly into existing systems and be intuitive to use, rather than creating added bottlenecks or barriers for healthcare professionals.	Improves efficiencies across the health system by integrating easy-to-use technology at the point of care
Desire for responsible AI With technology rapidly evolving across all sectors, clinicians expressed the desire to adopt new AI technology into their practice.	Drives innovation in healthcare

Measuring the impact of ClinicalKey AI adoption

To evaluate the impact of ClinicalKey AI at ASL Bari, a quasi-experimental pre-post study was conducted to measure clinician experience and reported efficiency. ClinicalKey AI was implemented at the organization, following a structured rollout that included a pilot phase, onboarding campaigns and in-person training sessions. Clinician experience and perceived efficiency of the tool was assessed after implementation. Outcomes measured included **time to access diagnostic information, confidence in clinical decision-making, ability to manage patient care effectively and likelihood of continued tool use,** providing a hospital-specific perspective on AI integration.

The tool was offered voluntarily to all clinical staff, ensuring that participation reflected genuine interest and real-world usage patterns. During the evaluation period, more than 300 physicians engaged with the platform, submitting over 10,000 clinical queries, signaling strong adoption across specialties.

More information about the study design can be found in Appendix 1.

Results: A significant improvement in clinical confidence, workflow efficiency and patient care

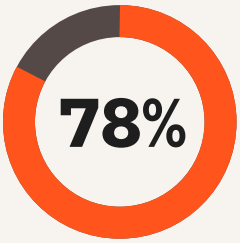
The adoption of ClinicalKey AI at ASL Bari was designed to address pressing challenges in clinical practice, such as information overload, rising complexity and time constraints, while supporting clinicians with reliable, evidence-based decision support.

After implementation was complete, the results revealed self-reported improvements in **clinical confidence, workflow efficiency** and **patient care delivery**, alongside strong usability ratings and a high likelihood of continued use compared to other tools used.[3] These findings highlight the tool's potential to support clinicians in real-world settings without disrupting established workflows.

Empowering effective patient care delivery

As part of the survey, physicians were asked to assess their effectiveness in managing patient care – first while using other AI tools and then, specifically whilst using ClinicalKey AI.

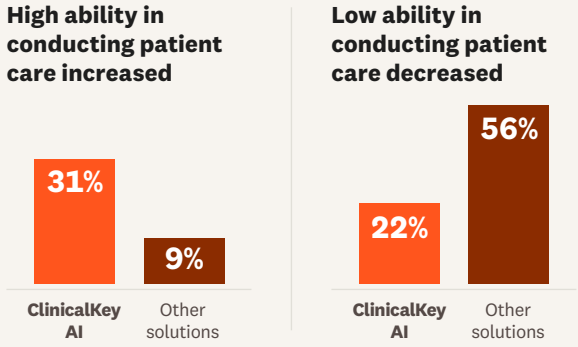
A significant finding was the improvement in clinicians' perceived ability to conduct patient care. After adopting ClinicalKey AI, 78% of clinicians reported medium to high ability in delivering patient care, which was a 35% increase compared to other solutions.[3]



of clinicians reported *medium to high ability* in conducting patient care after using ClinicalKey AI.

A 35% increase compared to other solutions.

When using other AI tools in their clinical practice, only 9% of clinicians rated their ability to deliver patient care as highly effective, while more than half (56%) reported low effectiveness.[3] After the implementation of ClinicalKey AI, that perception shifted. Ratings jumped to 31% of clinicians reporting high effectiveness in their ability to conduct patient care and low effectiveness ratings more than halved, dropping down to 22%.[3]



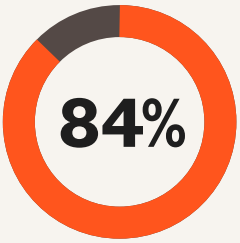
Clinicians attributed these gains to faster access to validated information and clearer guidance. These results highlight the positive outcomes that are made possible when clinical expertise and AI-powered tools intended for healthcare are safely implemented.

"Has my way of managing the patient changed? No, but it definitely makes me feel sure and more confident [...] because I have access to a source of education. It kind of supports me."

Neurologist
Department of Physical Medicine and Rehabilitation

Enhanced confidence in clinical decision-making

Confidence in care delivery, backed by evidence-based sources, supports clinicians managing patients in a safe and effective manner. Post-implementation of ClinicalKey AI at ASL Bari, 84% of clinicians reported medium to high confidence in clinical decision-making, which is a 25% increase compared to other solutions.[3]

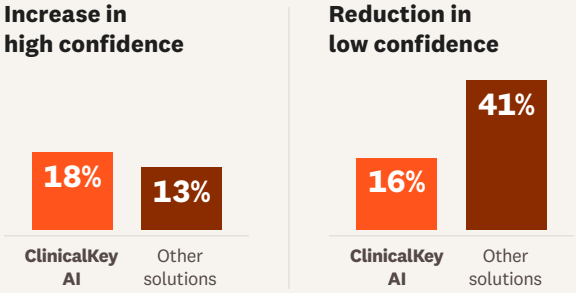


After using ClinicalKey AI, 84% of clinicians reported *medium to high confidence* in clinical decision-making.

A 25% increase compared to other solutions.

Specifically, confidence in clinical decision-making was the highest rating that increased when using ClinicalKey AI compared to other AI tools.

An increase of confidence in clinical decision-making from 13% to 18% was seen, while low confidence ratings fell sharply (from 41% to 16%).[3] This shift reflects the value of AI as a reliable tool to support professional judgment rather than replacing it. By embedding evidence-based insights into everyday workflows, ClinicalKey AI helped clinicians feel supported, empowered and better equipped to navigate uncertainty with clarity and assurance.



"ClinicalKey AI helped me approach [treatment options] more systematically. In some ways, it felt like having a guide. I could ask: 'I exclude this, I exclude that — what else should I consider?' It helped me reason through the case and feel more confident in my decisions"

Physician
Department of Internal Medicine

Delivering workflow efficiency and time savings

Clinicians' perceptions on time savings were equally compelling. 86% of clinicians reported finding diagnostic information using ClinicalKey AI in 10 minutes or less, which was a 16% improvement compared to other solutions.[3] Nearly half (46%) received responses to their clinical queries in under five minutes.[3]

These time efficiencies can translate into more bandwidth for patient interaction and care planning. In resource-limited, time-constrained environments where clinicians are seeing more patients than ever, these efficiencies are invaluable, helping to preserve time for meaningful patient interaction and care planning.

Nearly half of clinicians received responses to their clinical queries in under five minutes

46%
ClinicalKey AI

36%
Other solutions

When reporting finding diagnostic information using ClincialKey AI in 10 minutes or less, there was a

positive increase in time saved when using ClinicalKey AI compared to other solutions.

"A case that before could require a week of work, now could require three days, including writing our report."

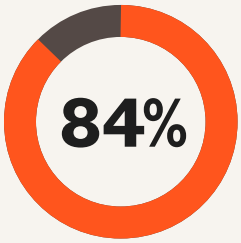
Physician
Department of Quality and Safety

Adoption approach and usability

ClinicalKey AI was made available to physicians on a voluntary basis, allowing them to adopt the tool at their own pace. This flexible approach, along with in-person training sessions and ongoing communication on the tool, contributed to a steady increase in usage over time and helped foster engagement without the resistance often associated with mandated technology rollouts. Importantly, clinicians cited speed in finding answers and clarity of responses as key reasons for the improvement in their experience.

Usability metrics reinforce this success: 84% of clinicians expressed medium to high likelihood of continuing tool use, which is a **16% increase compared to other solutions,** with high likelihood ratings jumping from 34% to 56%.[1]

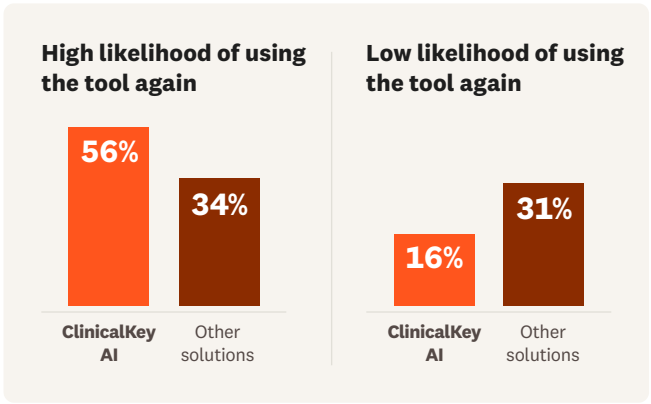
When asked if they were likely to use the tool again;



of clinicians rated their likelihood of continuing to use ClinicalKey AI as *medium to high*.

The development of AI technology with clinicians in mind is increasingly seen as important for successful healthcare AI implementation. This success reflects Elsevier's commitment to working closely with ASL Bari, providing tailored support and resources to ensure the tool integrated smoothly into clinical workflows and delivered meaningful value for both clinicians and patients.

As health systems worldwide contend with severe workforce shortages and mounting pressure to modernize care delivery, the experiences at ASL Bari demonstrate that technology designed for clinicians can deliver meaningful improvements in both clinical outcomes and workforce perceptions.



"Not a week goes by without me using it… and I think it will become increasingly necessary to work quickly."

Physician
Director of Territorial Services

Broader implications and future learnings

Clinical perceptions from ASL Bari offer insights into how AI adoption can transform clinical workflows while preserving clinician autonomy. The observed self-reported improvements in confidence, efficiency, patient care and clinician satisfaction underscore the potential of AI tools to complement, not replace clinical expertise.

Healthcare organizations must balance innovation with ethical considerations, ensuring transparency, bias mitigation and patient safety. As global health systems confront mounting pressures, AI developed with rigorous evaluation frameworks that assess AI responses for helpfulness, comprehension, correctness, completeness and clinical harmfulness will be indispensable for scaling AI adoption responsibly and sustainably.

Turning insight into action

Healthcare transformation is underway. Clinicians may be more comfortable integrating AI-based retrieval tools into their workflows. For this to be done safely, solutions must meet stringent guardrails, to ensure transparency, reliability and trust. By implementing tools such as ClinicalKey AI, health leaders can ensure these innovations serve clinicians and align with organizational priorities for quality and safety.

Steps to drive effective AI adoption in healthcare

Explore clinician-in-the-loop AI models that align with global best practices and address workforce challenges.

Promote ethical and transparent AI governance, helping to ensure bias mitigation, accountability, and continuous feedback loops.

Invest in evidence-based solutions that enhance decision-making without compromising human oversight.

At ASL Bari, one of Italy's largest health authorities, the integration of ClinicalKey AI empowered clinicians to make faster, more confident decisions, saving time and elevating care delivery. This success was supported by strong leadership engagement, including C-suite involvement in shaping policies that guided safe adoption. Their role was critical in aligning AI use with quality and safety processes. What worked at ASL Bari can serve as a model for others: voluntary adoption, in-person training, ongoing communication and a partnership approach that prioritized clinician needs and workflow integration.

Embracing these principles and fostering collaboration between technology partners and healthcare leaders will allow organizations to leverage AI as a way to increase efficiency and workforce empowerment. Prioritizing clinician needs, workflow integration, rigorous evaluation and iterative refinement, ensures healthcare systems can leverage responsible AI as a catalyst for efficiency and workforce empowerment while advancing patient care. By combining evidence-based content, critical insights and innovative solutions, we can advance human progress together, helping clinicians improve patient outcomes and building a more sustainable future for healthcare.

References

1. Kumar, P., Holt, T., Wong, Y., & Kimeu, M. (2025, May 14). Heartbeat of health: Reimagining the healthcare workforce of the future. McKinsey & Company. https://www.mckinsey.com/mhi/our-insights/heartbeat-of-health-reimagining-the-healthcare-workforce-of-the-future
2. Walsh, C. G., Long, Y., Novak, L. L., Salwei, M. E., Tillman, B., French, B., ... Embi, P. J. (2025). AI-driven clinical decision support to reduce hospital-acquired venous thromboembolism: A trial protocol. JAMA Network Open, 8(10), e2535137. https://doi.org/10.1001/jamanetworkopen.2025.35137
3. Defilippis, V. (2025, November 10). Enhancing medical decision making with responsible AI: a case study from Italy [Conference presentation]. AI and Medicine The Challenge of Human Dignity International Congress, Rome, Italy. https://www.aimedicine.va/content/dam/aimedicine/documenti/PROGRAM.pdf
4. Khosravi, M., Zare, Z., Mojtabaeian, S. M., & Izadi, R. (2024). Artificial Intelligence and Decision-Making in Healthcare: A Thematic Analysis of a Systematic Review of Reviews. Health services research and managerial epidemiology, 11, 23333928241234863. https://doi.org/10.1177/23333928241234863

Appendix 1: Study design and data collection

To assess the impact of ClinicalKey AI on clinical workflows at ASL Bari, the research team implemented a within-subjects quasi-experimental design, a practical alternative when randomized controlled trials are neither feasible nor ethical in real-world hospital environments. This approach was chosen to balance scientific rigor with operational feasibility, enabling meaningful insights without imposing additional burdens on clinicians.

The rationale for this study design includes:

- Addresses real-world and ethical constraints
- Enhances external validity and applicability
- Maintains control over individual differences
- Provides adequate statistical power with fewer participants
- Minimizes practical and ethical concerns while acknowledging potential threats to internal validity

The goal was to capture both measurable outcomes and the lived experiences of clinicians in a real-world hospital setting.

Study design and data collection

Mixed-methods approach:

1. 20 on-site interviews with physicians to capture nuanced perspectives
2. Development of a standardized questionnaire in collaboration with ASL Bari and Elsevier teams
3. Online survey administered to measure trends and validate findings
4. Physicians self-selected into both interviews and survey phases
5. All analyses were performed using R Statistical Software (v5.0.0; R Core Team 2025)

Before & After Comparison:

51 clinicians rated their experience with previous tools, then with ClinicalKey AI.

Key study outcomes:

- Time required to access information
- Confidence in clinical decision-making
- Ability to manage patient care effectively
- Reported time to form suggested patient management plans
- Likelihood of continued tool use

Example questions asked:

Q: How long does it take you finding diagnostic information?
<5min, 5-10min, 10-20min, >20min

Q: How would you rate your confidence in clinical decision-making?
Confidence rating: High (10-9); Medium (7-8); Low (1-6)

Q: How would you rate your ability in conducting patient care?
Effectiveness rating: High (10-9); Medium (7-8); Low (1-6)

This methodology was selected to balance scientific rigor with operational feasibility, providing actionable insights without imposing additional burdens on already time constrained clinicians.

While this approach involves some limitations, such as reduced internal validity, the design is well suited to the realities of a hospital environment. In routine clinical practice, it is neither practical nor ethical to dictate which tools clinicians must use. A within-subjects quasi-experimental design therefore provided a balanced and feasible method, allowing for rigorous evaluation while respecting clinical constraints and capturing the real-world impact of AI integration on workflow.

Appendix 2: Detailed results

Table 1: Pre- and Post-implementation comparison of ClinicalKey AI

Wilcoxon Signed-Rank Tests with Rank Biserial CIs

Measure	M Pre	M Post	p (raw)	p (Holm)	sig	Cohen's d	Magnitude
Your ability in conducting patient care	6.96	7.76	0.00	0.01	*	-0.46	small
Your confidence in clinical decision-making	6.98	7.82	0.00	0.01	*	-0.45	small
Satisfaction with the speed at which you can find information	7.31	8.20	0.02	0.08	ns	-0.34	small
The comprehensiveness of the information	7.33	7.84	0.08	0.08	ns	-0.25	small
Likelihood to continue using	8.02	8.73	0.03	0.08	ns	-0.31	small
How strongly do you believe enhances the quality of patient care	7.18	7.86	0.03	0.08	ns	-0.32	small
Your confidence that using enhances the standardization of care	6.73	7.69	0.00	0.01	*	-0.47	small