

Activities

[1] 5 Feb. 2026

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### Clinical Decision Support Setting in Precision Oncology

To improve patient outcomes, increase efficiency, reduce medical errors, and support evidence-based practice, clinical decision support (CDS) systems play a significant role in modern healthcare. CDS refers to digital tools and health information technologies that are often integrated into electronic health records and provide clinicians, healthcare staff, and patients with specific, actionable information to enhance the quality of care [1] and oncologic therapy [2].

In oncology, the volume and complexity of information exchanged among clinicians, cancer researchers, and laboratory facilities are substantial. This information can be systematically structured into knowledge bases using inference engine algorithms and interoperable communication interfaces, potentially supported by AI-driven technologies.

AI-driven clinical decision support systems provide alerts, order sets, and diagnostic assistance, often in real time at the point of care. These systems help reduce the administrative burden on clinicians, facilitate shared decision-making with patients, and improve interpretability and trust among clinicians [3]. The workflow is illustrated below.

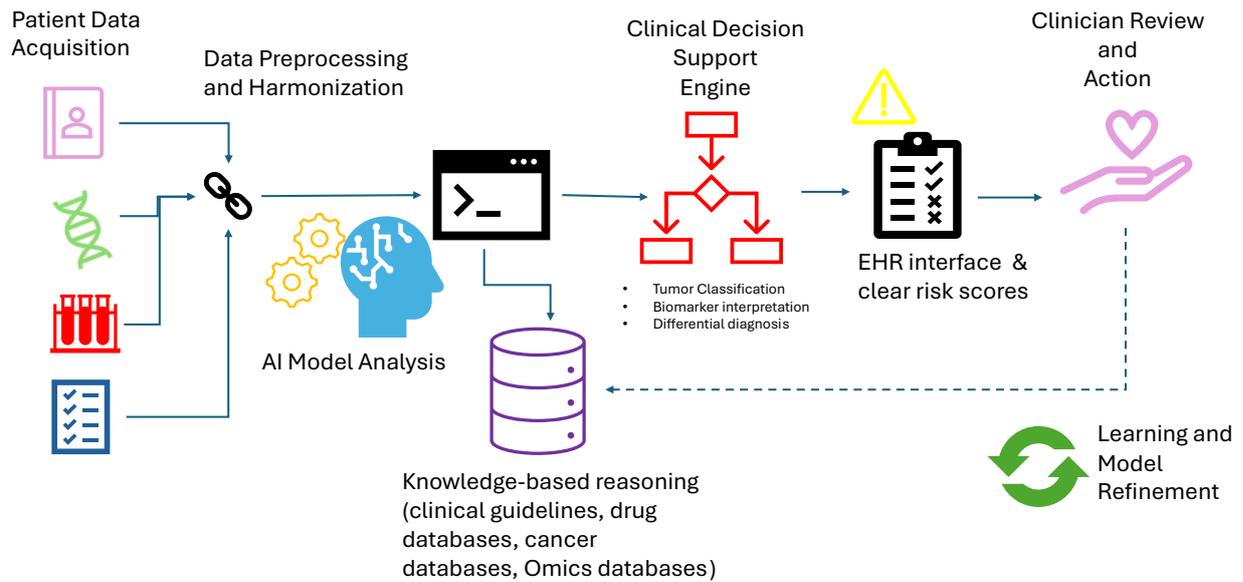


Figure 1. Workflow of AI-Driven Clinical Decision Support in Precision Oncology

A key function of AI is its ability to assess multiple aspects of communication both within hospitals and across external healthcare systems, integrating these components with one another. This integration connects multi-platform technologies as well as the people, processes, and organizational culture involved. When implemented successfully, AI can identify patient needs, enable precise, personalized treatment, and reduce future patient safety risks. Systematically defining and mapping these workflows allows healthcare providers to detect and address errors, including record duplication, misattribution, and commingling of data. Although explainable AI has the potential to improve clinical decisions and support patient safety, its real-world impact remains to be fully demonstrated.

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