


jvion



Guide to Finding the Right Clinical AI Solution to Prevent Harm





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OVERVIEW

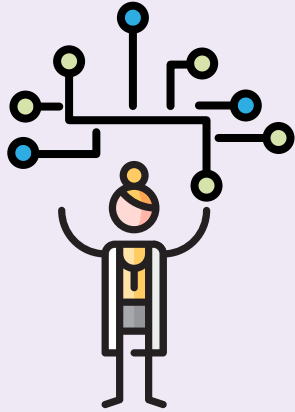
Why AI Now?

The Artificial Intelligence (AI) health market is set to explode over the next five years. According to a recent Accenture report, acquisitions of AI startups are rapidly increasing while the health AI market is set to register an explosive CAGR of 40% through 2021.

This growth is expected to reach \$6.6 billion [3]. As the healthcare industry continues to shift from historic and evidence-based care to real-time, outcome-based care, preventive care models are moving to the forefront with AI solutions aimed at improving patient outcomes and reducing healthcare costs increasingly gaining traction. Preventing harm is a primary focus.

The ubiquity of efforts to use AI technologies to accelerate processes, improve accuracy, increase access, increase bandwidth and offer precise care indicates that we are at a critical juncture within the industry [1].

80%



of health executives agree that within the next two years, AI will work next to humans in their organizations as a “coworker, collaborator and trusted advisor.” [2]



Preventing Harm with Clinical AI

For clinicians, AI offers a path to driving clinical meaning out of data and improving outcomes for preventable harm.

Electronic Health Records (EHRs), which have become commonplace in large part because of government mandates, aren't seen as powerful clinical tools; their primary value, according to Primary Care Physicians, is data storage (44%) [4]. Additionally, EHRs are often limited to the data available within their system, leaving valuable data outside of the system that could impact AI models.

It is estimated that AI has the potential to improve health outcomes by 30 percent to 40 percent and will help reduce healthcare costs by as much as 50 percent. [2] AI also has the capability to alleviate the potential increased

burden on clinicians and provide care givers tools to ensure quality and improved health outcomes. For many providers, AI is positioned to address an estimated 20 percent of unmet clinical demand.

The time to explore AI solutions for preventable harm and their potential impact is now. A recent Optum survey found an 88% increase in the number of healthcare leaders that are implementing an AI strategy compared to 2018, and 62% have already implemented a strategy. [5] This guide will help you start exploring your clinical AI for preventable harm options.

Finding the Right Clinical AI Solution

In this changing landscape, it can be challenging to compare solutions and evaluate the suitability of an AI tool to meet an organization's goals and needs.

Through our work across providers and our position as the leader in clinical AI for preventable harm, we identified the core evaluation criteria that will help providers facilitate a more meaningful comparison of AI solutions. These include:

Patient impact: does the solution have a proven track record of improving outcomes and lowering cost?

Breadth of capability: is the solution capable of quickly scaling to new areas of clinical application and need?

Assurance of success: does the solution maintain its performance across use cases, populations, and technology environments?

Ease of implementation: does the solution minimize impacts to clinical and technical resources across all aspects of solution operationalization (from initial implementation to future clinical application)?

While this guide does not include all aspects of implementation or technology evaluation, it provides a strong baseline for comparison across AI solutions regardless of underlying methodology or approach.



This guide offers essential questions for consideration that are critical to the criteria, including an overall “top 10” list.

The Top 10

To help prioritize the questions that are critical to the core evaluation criteria, we identified a list of “top 10.” While these do not include all aspects of implementation or technology evaluation, they provide a baseline for comparison across AI solutions regardless of underlying methodology or approach.

Patient Impact

1. Explain how your solution addresses the total cost of care for a patient including:
 - a. Breadth of clinical application
 - b. Approach to population variations
 - c. How your solution supports primary, secondary, and tertiary prevention
2. Provide three clinical examples of solution application within a live client environment including:
 - a. The adverse event targeted
 - b. Implementation timeline
 - c. Workflow integration
 - d. Patient impact/Return on Investment (ROI)

Breadth of Capability

3. Explain how your solution adapts to new areas of clinical application.
4. Explain the process required to use your solution on new patient populations and geographies.
5. Explain how your solution adapts to different data as well as missing or inconsistent data.

Assurance of Success

6. Explain your approach to measuring and communicating ROI.
7. Explain how you ensure the performance of your solution across areas of clinical application, populations, and technology environments.

Ease of Implementation

8. Explain how the outputs of your solution are communicated to clinicians/end-users. Explain how end-users provide intervention inputs back into the solution and how those inputs impact solution performance.
9. Provide an overview of the provider’s clinical and technical resources required to implement and support your solution.
10. Describe the workflow adjustments required to action your solution.

A Deeper Dive: Building an RFP

The following questions provide an expanded list of questions beyond the “top 10” listed above. While there is some overlap across the questions included here and those compiled as part of the “top 10,” the questions listed below are provided as an addition to the “top 10” to help you craft an RFP or gather more detailed requirements for your solution.

General AI

- What types of modeling techniques do you use within your solution?
- How do you measure solution performance?
- How is the performance of your solution maintained?
- How does your solution handle missing or inconsistent data?
- Does your technology utilize outside content to help drive model performance?
- What is the process for training your models to new patient populations?
- Please describe how the solution scales with increased usage and peak workloads?

Clinical Use Cases & Workflow

- What is your approach to workflow integration?
- What clinical use cases are addressed by your solution? (Readmissions, HAIs, LOS Outliers, etc.)
- For each patient, what are the outputs delivered by your solution?
- Does your solution provide visibility into the factors driving a patient’s risk?
- How are solution outputs communicated to a clinician/end user?
- Can the outputs of your solution be customized to different end users? Please explain.
- Is there a feedback mechanism in your solution to capture the interventions applied to a specific patient? If so, how is this information used to inform the underlying machine learning models?

Customer Success & ROI

- What is your methodology for ROI?
- How is intervention compliance measured and reported as part of ROI?
- How does your approach to ROI change with clinical use case?
- What assumptions are included in your ROI calculation?

Enterprise Asset & Enablement

- What is the process for adapting your solution to new areas of clinical application?
- What provider resources are required to build, test, and deploy the solution for new areas of clinical application?
- Do data requirements change with every new area of clinical application? If so, how do they change and what is the impact to the implementation timeline?
- What is the process for incorporating new data into your solution including:
 - Timeline
 - Provider resource requirements
 - Technical requirements
- What is the incremental work effort to adapt your solution from one facility to the next?
 - How is this work effort impacted by variations in geography?
- What is required to go live with your solution at new facilities as they are brought onto the platform?
- What provider resources are required to maintain your solution?

Activation / Implementation

- What services and processes do you provide to ensure insights are delivered at the correct clinical point of care? Please describe your implementation strategy.
- How long does initial implementation typically take? How quickly do current clients realize production value from project kickoff?
- Please describe the resources that you make available to ensure a successful implementation.
- Please describe how you support the long-term growth and success of your solution.
- What stakeholders and project participants are needed from the hospital to ensure project success? Please provide estimates of effort required from key project participants.
- Please describe the process for reporting initial implementation and long-term program success.
- What technical offerings does vendor provide for delivery of solution insights? (e.g. Portal, API, EMR integration)
- Can solution results be delivered via HL7 2.x, or HL7 FHIR, or both?



Data

- How does your technology aggregate data?
- Please describe your overall solution architecture, (please include the front end, mid-tier and back end tiers as applicable) including:
 - Architecture diagrams
 - Data flow diagrams
 - Process flow diagramsNote: redacted or deidentified diagrams are acceptable
- What database technologies (DBMS) are used by the solution? (e.g. DB2, Oracle, MySQL, NoSQL, Hadoop, etc.)
- Does your solution use any cloud infrastructure? Please provide name of cloud provider(s).
- Where geographically is the provider's data stored? If hosted by a 3rd party vendor, please supply details on the vendor.
- How is patient data protected while it is stored?
 - Is it encrypted in transit and at rest?

- How do you ensure that confidential data is not lost or destroyed?
- How do you ensure deleted data cannot be recreated?
- Who owns the provider's confidential data?
- How many copies (including backups) are made of the provider's data and where are these copies located?
- Do you replicate any data outside your primary solution environment?
- Will any provider data be stored offshore? Please explain why and how provider data will be stored offshore.
- Please describe how your solution provides client data segregation and/or isolation?
- Does your solution require any interfaces with current provider systems? Please provide details including transport mechanisms, data and formats, security controls, encryption, etc.
- Does your solution store or process Protected Health Information (PHI) data?
- Does your solution store or process Personally Identifiable Information (PII) data?
- Does your solution store or process Payment Card Industry (PCI) data?
- Does your solution store or process any data that the provider would consider confidential, sensitive or non-public? Please explain.



Security

- Do your data security standards and procedures comply with all applicable regulatory requirements (e.g. HIPAA, PCI, etc.)?
- Please supply a security whitepaper or other documentation outlining your security architecture, and your latest security risk assessment, from both internal and external parties.
- What are the physical security controls employed at the data center(s) storing data?
- Who has access to the systems providing the provider's data and services? How is this access controlled?
- What type of authentication and access controls are in place to ensure that the appropriate people have access to the provider's PHI?
- Do you have a privacy policy covering the provider's data?
- Do you use a provider's data for purposes other than for the provider's business?
- How do you detect and report a compromise to a provider's data? What is the incident response process to notify a provider?
- What insurance do you have to cover a data breach?
- What standards do you follow for hardening network equipment, operating systems, and applications?
- How do you monitor data flowing into your network for malware and other attacks? What technical controls are utilized?
- How do you separate a provider's patient data and services from your other customers?
- Do you perform vulnerability and risk assessments?
- Do you use external penetration testing for assessing infrastructure and application security?
- What is your patching process for servers, workstations and network components? Specifically, how many days after patch release are security patches installed on your systems, and how soon do you respond to release of out of band patches?
- Are technical controls implemented to prevent storage of data on unencrypted USB devices?
- Do you have a documented data classification policy?
- Are all components of the solution (including infrastructure) hardened (e.g. securely configured by removing un-needed files and disabling services that are not being used)? Please explain.
- Are system activities logged? Are log files monitored for security incidents?





See the Unforeseeable Change what can be Changed

Prevent harm with proven clinical AI that helps you reveal and change risk trajectories.

Learn more at: [jvion.com](https://www.jvion.com)

About Jvion

Not all clinical AI solutions are created equal, and if you are considering one, consider Jvion. Jvion does what simple predictive analytics and machine learning models cannot by cutting through the noise to identify impactable patients. Jvion goes beyond high-risk patient populations to identify those less obvious individuals on a trajectory to higher risk and recommends the patient-specific interventions that drive better patient outcomes, prevent harm and avoid unnecessary costs for hospitals and providers.

As the leader in clinical AI for preventable harm, Jvion has proven effective in clinical settings for nearly a decade, with hospitals reporting average reductions of 30% in avoidable harm incidents and avoidable cost savings of \$6.3 million a year. Proven at more than 70 hospitals across North America, Jvion is the most recognized prescriptive analytics vendor in healthcare.

For more information visit [jvion.com](https://www.jvion.com), email contact@jvion.com, or find us on social media @jvionhealth.

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- [4] Accenture, "Digital Health Tech Vision 2018: Intelligent Enterprise Unleashed," 1 January 2018. [Online]. Available: <http://www.accenture.com/insightdrivenhealth>. [Accessed 8 July 2018].
- [5] OptumIQ, "Artificial Intelligence Adoption and Investments Growing Rapidly Among Health Industry Leaders," October 2018.