

Artificial intelligence, molecular diagnostics, and their role in optimizing disease management

Authors: Lawrence Hill and Iona Kininmonth, Ipsos Advisory



Artificial intelligence (AI) has the transformative potential to improve healthcare outcomes. Through maturation of AI algorithms the applications across healthcare have increased significantly. Algorithms gained more traction through Covid-19 and AI was an accelerator for digital healthcare¹.

AI can drive efficiency, cost saving and personalised medicine with early diagnoses. We are already seeing higher adoption and investment in AI. It offers the possibility for healthcare to be more accessible and will proactively progress systems to more equitable outcomes². However, there are ongoing concerns around robustness, security, transparency and safety.



AI evidence requirements of Regulators and Payers are constantly evolving

Accuracy and robustness are key determinants and must be proven to demonstrate improvement of outcomes for patients. At the moment, there are multiple other metrics relevant in the evaluation of AI for use in healthcare, such as: fairness, interoperability, traceability, usability, robustness and explainability⁴.

However, some countries are starting to adopt evidence requirement frameworks for AI and data-driven technologies, e.g. the UK published their NICE evidence standards framework in August 2022⁵.



Pricing AI is a challenge as it's a non-medical intervention

AI software companies must adopt a holistic approach to pricing strategies regarding implementation as each market have local nuances and individual requirements. See Ipsos 'The Power of Holistic Insight' POV⁶.

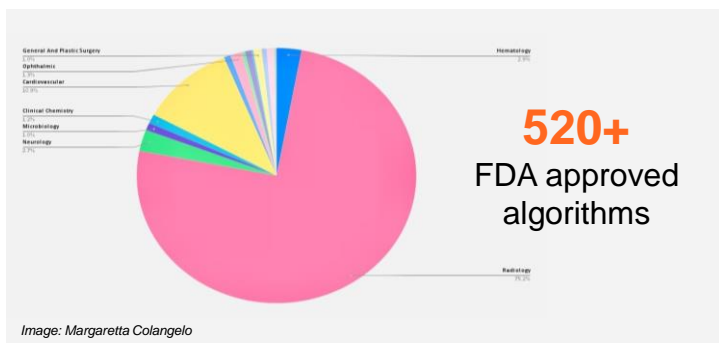
In 2020, a review of literature discerning AI in healthcare⁷ concluded that the cost-effectiveness of AI in healthcare was unknown, the ROI of AI is also challenging due to set-up and maintenance costs. However, it is showing benefits in the areas of Population health, supply chain and utilisation and reimbursement management.



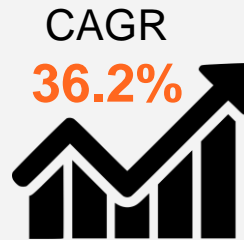
Adoption of AI is slow due to market access considerations

Adoption of AI algorithms are slow at due to inadequate regulation to establish appropriate evaluation frameworks at current, they are potentially misclassified as medical devices in many markets. AI may speed this process up as evidence generation will be faster.

In addition, the procedural regulation landscape is slow to change and HCPs are reluctant to adopt new tech as the necessary approvals and guidelines aren't in place⁸.



Market for AI in medical diagnostics³



To a market value of **\$9.38 bn** by 2029

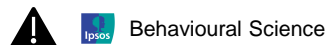
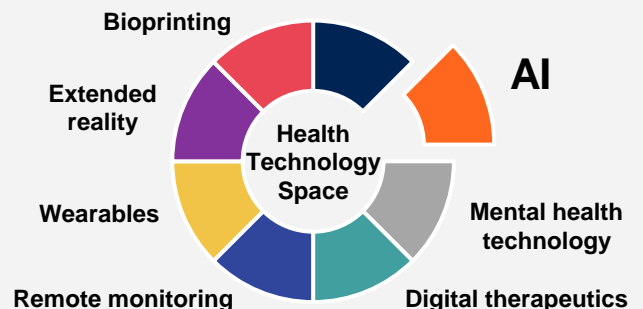


AI opens a world of possibilities

Healthcare systems across the world are facing recurring issues that may be alleviated, in part, by implementing AI. By automating workstreams many of the following issues can be addressed in a more efficient way to allow HCPs to perform more urgent tasks:

- Research
- Administration
- Early detection
- Digital biomarkers
- Diagnosis
- Ongoing care
- Monitoring
- Prevention

AI is one part of the puzzle



AI does have it's limitations, and requires increased scrutiny and evidence

A lot of the current interest in AI is still hype, see Ipsos 'Beyond the Hype', POV⁹. There is still much scepticism in the medical field around the use of AI due to the need for human oversight and regular updates to programming.

In addition, the potential to perpetuate bias and worsen outcomes based on incorrect programming. There is also the potential for security and data breaches or misuse reinforce the need for trust and transparency in these algorithms.

Finally, the interoperability and integration with systems across the world offer a barrier to adoption for many Ais.



Collaboration between multiple stakeholders will be vital to the development of AI¹⁰

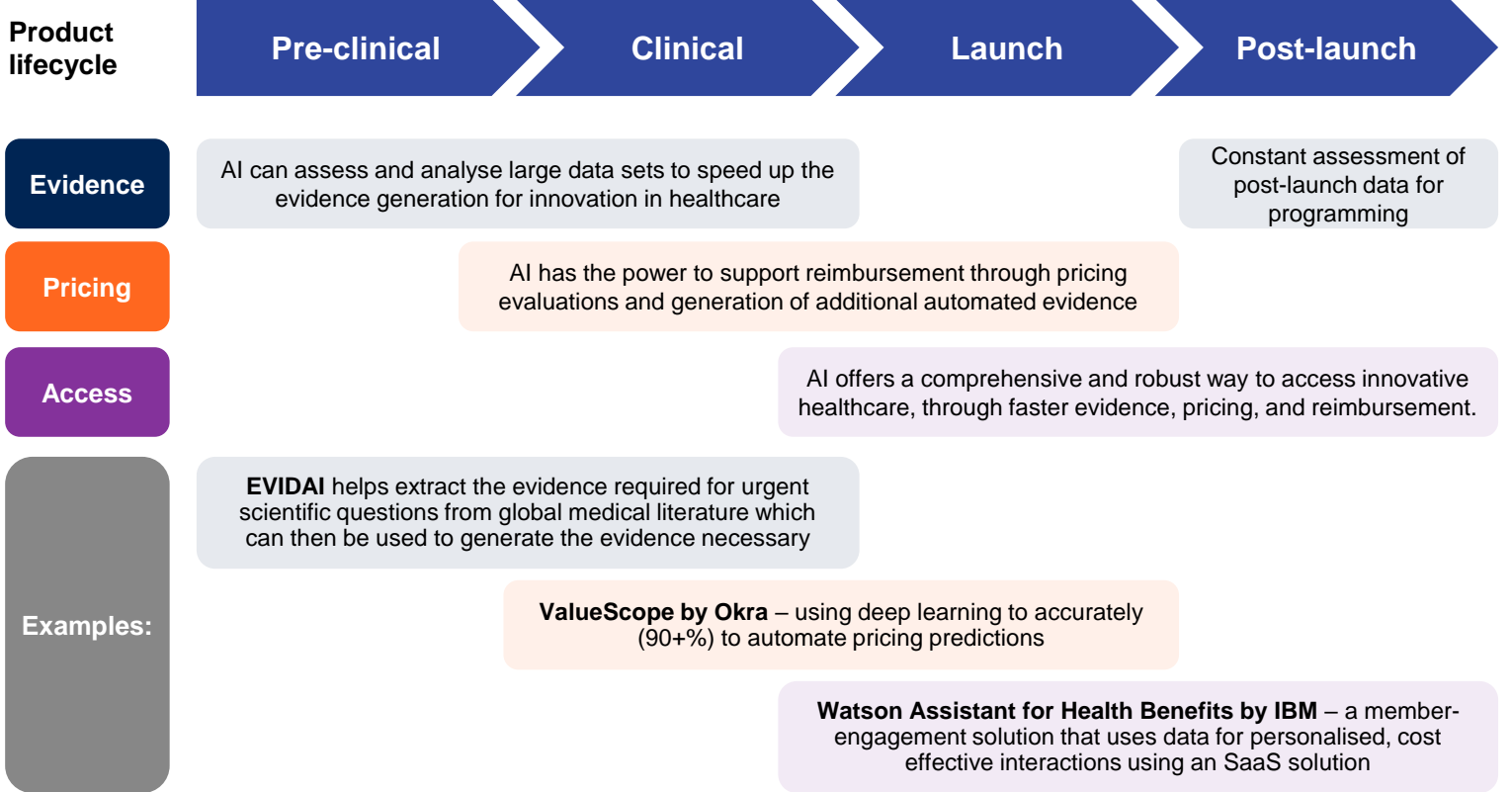
Collaborations and mergers offer the ability to capitalise on different capabilities, skillsets and expertise when creating AI algorithms. Through access to larger datasets, economies of scale and programming capabilities, partners can develop more representative and robust AI models and increase the trust in their use. Examples of successful collaborations include:



Brave New World

The future outlook with AI as a catalyst for healthcare evaluation pricing and delivery

Ipsos Market Access



\$150 bn

could be saved through efficiencies created by AI by 2026¹¹

There is a need to identify where the true value of AI lies. This needs to be evaluated and frameworks created to properly scrutinise the role AI could have on disease diagnostics and management¹².

Ipsos Trends and Foresight

Additional discussion around AI

- Large language models
- Natural language processing
- Sentient AI
- Predictive care outputs
- Connected infrastructure
- Augmented and virtual reality

Sources:

1. "Healthcare AI Trends to Watch" CBInsights 2020
2. "Ensuring Fairness in Machine Learning to Advance Health Equity" A. Rajkomar et al. 2018
3. "Artificial Intelligence in Medical Diagnostics Market - Global Forecast to 2029" Meticulous Research 2022
4. "Artificial intelligence in healthcare - Applications, risks, and ethical and societal impacts" EPRS 2022
5. "The unrealised potential of digital therapeutics in the UK" Teale and Sooch. Dec 2022
6. "The Power of Holistic Insight" Ipsos POV Nov 2022
7. "The Economic Impact of Artificial Intelligence in Health Care: Systematic Review" J. Wolff et al. 2020
8. "Why is AI adoption in health care lagging?" A. Goldfarb and F. Teodoridis 2022
9. "Beyond the hype" Ipsos POV July 2022
10. "Address the Top 10 Evidence Pricing Access Challenges 2023-30" EPA 2023
11. "AI: Healthcare's new nervous system" Accenture 2020
12. "The Monitor Intervene Predict Value Framework" Value and Outcomes Spotlight Feb 2023

Where you see this symbol, please reach out to Ipsos for further details. We look forward to the discussion.

