How to speak healthcare AI in 2024



Strategy Bootcamp **excerpt**

Contact: Amanda Berra
Amanda@unionhealthcareinsight.com

Five savvy-generalist cornerstones for any strategy topic

Topical Pillars in All Union's Strategy Bootcamp Modules

01	Language		**Recognize and use core concepts and specialized terms**
02	High-level trends		**Know the big patterns and trends: Utilization, investment, reimbursement, regulation**
03	Market diplomacy		**Areas of high sensitivity, major topics. Develop a set of informed, yet non-controversial, talking points**
04	Focus areas (and economics) by sector		**Each major player's goals and activities in this area (e.g. payers, providers, employers)**
05	Some key players		**A handful of anchor organizations/ people/ information sources to know**

Focus of this excerpt

Major applications—by terrain

Clinical



Diagnosis Support: Analyze images (X-ray, MRI, CT), to help diagnose conditions including cancer, pneumonia, and fractures



Predictive Analytics: Predict risk of chronic disease development, readmission, etc. by analyzing patient records



Drug Discovery and Development: Predict molecular structures that could lead to effective new drugs faster/more cheaply than traditional drug development.



Personalized Treatment Plans: Using simulations based on a patient's health data, help clinicians develop more personalized treatment plans.

Administrative



Patient Scheduling: Optimize appointment scheduling, reducing wait times and raising schedule productivity



Billing and Claims Processing: Extract information from encounters to generate billing statements, automate claims processing.



Automated Documentation: Synthesize information from EHRs, notes, and test results to generate patient summaries, discharge instructions, and referral letters



Training and Education: Generate virtual patient cases for medical students to practice diagnosing and creating treatment plans—without without risking real patient safety/privacy



Cheat sheet: AI and its various flavors in 2024

AI: General definition

Technologies that enable machines to mimic human intelligence, such as learning, reasoning, and problem-solving.

AI subtypes and sub-techniques (we're making that a word)



Generative AI: Creates new content: Text, images, audio, simulations.



Deep Learning: ML subset using many-layered neural networks. Can handle lots of unstructured data.



Machine Learning (ML) Algorithms that improve automatically through experience.



Predictive Analytics: Using data, statistical algorithms, and ML techniques to identify likelihood of outcomes



Natural Language Processing (NLP): Process and understand human (natural) languages.



Computer Vision: Sees, identifies, and processes images in the way human vision does, then provides appropriate output



Major applications—by terrain

Clinical



Diagnosis Support: Analyze images (X-ray, MRI, CT), to help diagnose conditions including cancer, pneumonia, and fractures



Predictive Analytics: Predict risk of chronic disease development, readmission, etc. by analyzing patient records



Drug Discovery and Development: Predict molecular structures that could lead to effective new drugs faster/more cheaply than traditional drug development.



Personalized Treatment Plans: Using simulations based on a patient's health data, help clinicians develop more personalized treatment plans.

Administrative



Patient Scheduling: Optimize appointment scheduling, reducing wait times and raising schedule productivity



Billing and Claims Processing: Extract information from encounters to generate billing statements, automate claims processing.



Automated Documentation: Synthesize information from EHRs, notes, and test results to generate patient summaries, discharge instructions, and referral letters



Training and Education: Generate virtual patient cases for medical students to practice diagnosing and creating treatment plans—without without risking real patient safety/privacy



What different sectors are doing in AI

Largely considering/purchasing AI via point-solution vendors (or using tools already in the EMR)



Providers

- Automating administrative processes, especially in revenue cycle
- Considering/piloting clinical-support tools
- Formulating governance policies re: AI tool use and data access.



Plans

- Implementing tools in fraud detection, claims processing, and customer service automation
- In claims processing, drawing legal challenges alleging wrongful use of AI tools to deny coverage for essential care



Pharma

- Drug discovery and development
- Clinical trials (streamlining patient recruitment, monitoring and data analysis)
- Market intelligence gathering and analysis
- Regulatory compliance



Some diplomatic talking points for common conversations

Non-controversial talking points



Real **potential** of healthcare AI

Healthcare certainly offers no shortage of low-value administrative burden to lift, breakthrough treatments to find



Real **risks** of healthcare AI

Even if it hampers innovation pace, still imperative to to address data privacy, algorithmic bias, speed, integrity of decision-making before unleashing tools in healthcare – where stakes are so high



Business risks of healthcare AI

Plenty of strategic and operational issues that need solving. From clarifying ‘job to be done’ and establishing ROI, to leaping hurdles in technology, training, compliance

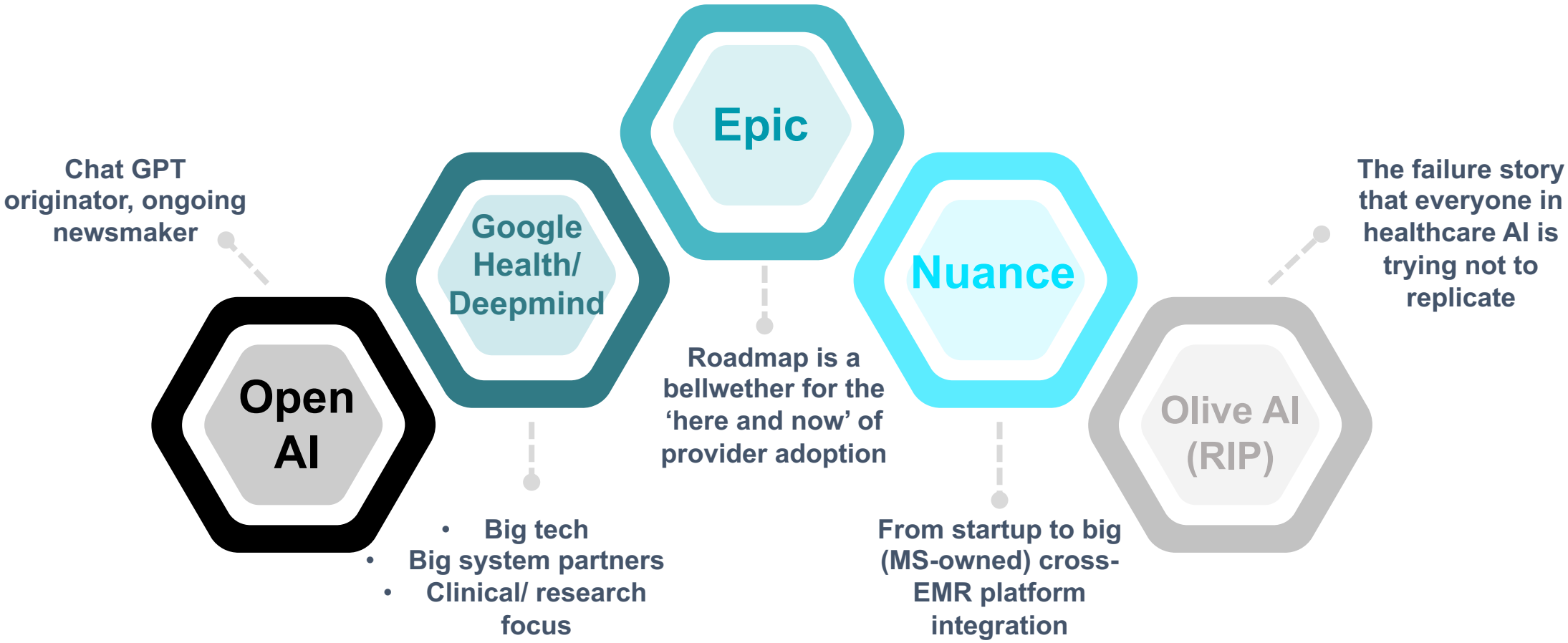


Clinicians and AI

Good news, data shows clinicians feeling more enthusiastic about AI, at least on the provider administrative side; but, serious reservations about any clinical applications other than as an *adjunct* to care

If you can only remember **five cases** …

Here are five conceptual anchors for ‘getting’ today’s AI landscape as a whole



OpenAI: Bringing AI into the public consciousness

Now one of the most well-known AI companies in the world, OpenAI was founded in 2015 and gained global prominence after the public launch of ChatGPT in late 2022

The most notable accomplishment of OpenAI thus far, inside and outside of healthcare, was brining Gen AI to the masses and acerating stakeholder interest and investment

OpenAI is primarily focused on artificial *general* intelligence, tools and algorithms designed to perform well in broad applications—in contrast to *narrow* AI, which is tailored to specific tasks

Many researchers have explored the use of ChatGPT in healthcare, but because of its generalized nature, is not in its standard form well-suited to healthcare functions



OpenAI

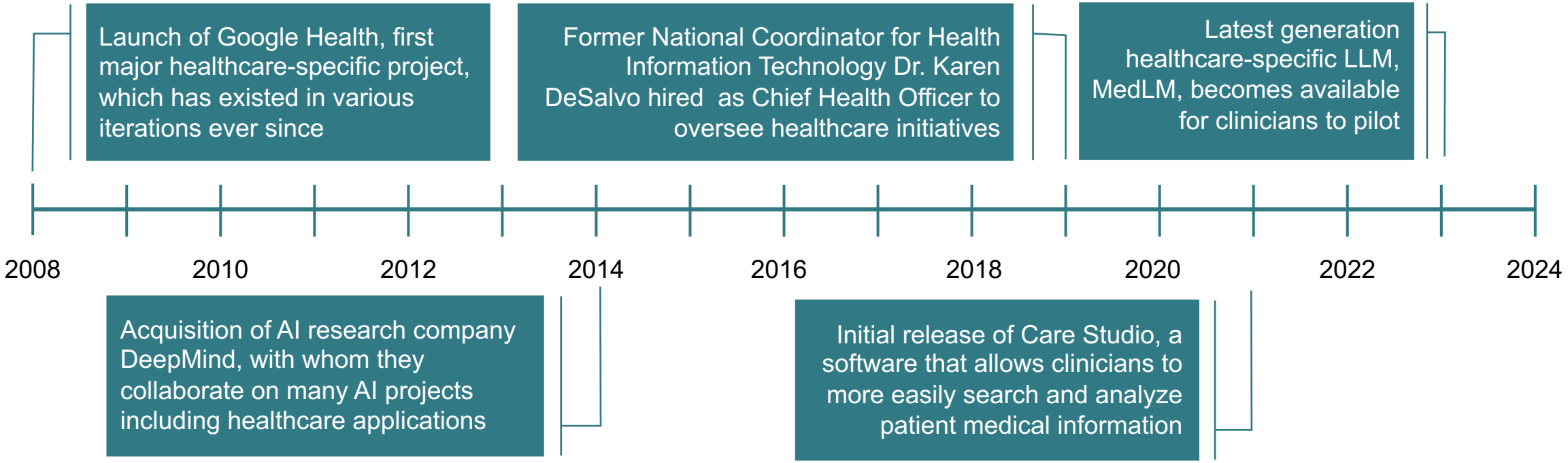
In 2023 OpenAI began playing a more specialized role in healthcare…

- The company stated that the most recent version of their large multimodal model, GPT-4, can be used to assist drug discovery by proposing compounds and molecules
- Direct Primary Care enablement company Hint Health partnered with OpenAI to build a tool to assist with clinical documentation and EHR querying



Google uses analytics to build clinician tools

Leveraging deep data and analytics expertise, partnerships with top health systems, and acquisition of smaller AI firms, Google has established itself as a leader in the field of healthcare AI



Notable clinical AI tools from Google/DeepMind

ARDA: Tool that helps clinicians diagnose diabetic retinopathy and help prevent blindness

AlphaFold: Algorithm that can predict protein structures, with applications for drug development

AlphaMissense: Model that can predict which DNA variations are likely to result in disease

EHR leader Epic is bellwether for industry adoption

Epic dominates EHR market share, covering 36% of acute care hospitals and 48% of hospital beds

The Epic “Roadmap”: Epic communicates to its customers what features it plans to add in coming years—due to the cost of implementation and the challenges of interoperability, many providers will not seek outside vendors if Epic is set to release a similar program in the near future, giving it a monopoly on health system software applications

AI tools Epic is piloting for providers

Clinical documentation	Patient communication	Information distillation
Ambient listening programs transcribe conversations during appointments to draft notes and suggest medical codes	Gen AI software drafts automated responses to text-based queries from patients that providers can edit before sending	Gen AI program will summarize notes from previous patient visits for the provider, highlight information relevant to the setting

Nuance specializes in practical AI applications

Ease of implementation

Nuance offers a range of AI-powered ambient listening and clinical documentation tools that streamline notetaking and report generation

Because they don't trigger regulatory, safety, or clinician job-security concerns, NLP technologies to for communication and documentation are perhaps the most common uses of AI in healthcare today

Prevalence among providers

Currently over 10,000 healthcare organization around the world use Nuance software, including 80% of facilities running on Epic, Oracle Health, Allscripts, and MEDITECH EHRs

After being acquired by Microsoft in 2021, Nuance's access to resources, partnerships, and expertise increased significantly, as did its ability to interface with other Microsoft tools

Impact on high-priority issues

Working in the EHR and other related documentation tasks are frequently cited as major drivers of inefficiency and clinician dissatisfaction

Nuance claims its tools solve major problems for healthcare organizations, including efficiency, accuracy care quality, and burnout





Olive AI—the cautionary tale for all other startups

The Olive AI story

- Company launched in 2021 with the mission of automating repetitive healthcare tasks like billing and admin
- Eventually expanded to functions like prior auth, rev cycle, care management, and clinical variation analytics
- Took in over $900M in funding and in 2021 was valued at $4B
- Struggled to deliver on promises and profitability and saw client base shrink
- Began selling business lines and laying off employees before announcing closure in late 2023



Healthcare AI challenges exemplified by Olive

Out-of-industry leadership

Olive's CEO lacked healthcare background and likely did not appreciate the unique complexity of the industry

Lack of focus and delivery

Olive expanded into many disparate healthcare functions before demonstrating success in its core competencies

Overreliance on external funding

The company took on unprecedented levels of investment during the pandemic boom, but could not meet investor expectations

See also…
Babylon was a health tech company founded in 2013, which started out by offering virtual care tools to connect patients and physicians. Despite a $4.2B valuation during its 2021 IPO, it struggled to build AI software that could perform virtual diagnosis and eventually folded in 2023.

High-profile/exemplar AI player cheat sheet

IBM Watson Health
An original pioneer in AI that is trying (and at times struggling) to continue to play in healthcare AI, with applications in clinical decision support, personalized medicine, and operational efficiencies.

Tempus
Applies AI to personalize cancer care, analyzing clinical and molecular data to help doctors make real-time, data-driven decisions.

Flatiron Health
Acquired by Roche; focuses on cancer research and care, using AI to analyze real-world clinical data to accelerate cancer research, improve treatment outcomes.

PathAI
PathAI aims to help pathologists with more accurate and faster diagnoses of diseases, especially cancer

Cleerly
AI analyzes images to measure plaque build-up to diagnose heart disease, rather than indirect factors like symptoms or lifestyle factors

BenevolentAI
Focused on drug discovery, BenevolentAI uses AI to identify new targets for drug development and repurpose existing drugs for new diseases.

NVIDIA
A critical behind-the-scenes player in healthcare AI through its hardware and software that accelerates AI computations, facilitating medical imaging, genomics, and drug discovery.

Butterfly Network
Developed a handheld, AI-powered ultrasound device, making medical imaging more accessible and affordable especially in remote and underserved areas

Subtle Medical
Improves image quality for MRI and PET, shortening patient exam times and expediting radiology workflows

CaptionCare
Walks healthcare workers, including those without prior experience, through cardiac ultrasound (even at home); AI interprets results