HEALTH INFORMATION TECHNOLOGY, EVALUATION, AND QUALITY CENTER

Beyond the Headlines:

AI Roundtable for Health Centers

Introduction to HITEQ

The HITEQ Center is a HRSA-funded National Training and Technical Assistance Partner (NTTAPs) that collaborates with HRSA partners including Health Center Controlled Networks, Primary Care Associations and other NTTAPs to engage health centers in the optimization of health IT to address key health center needs through:

- A **national website** with health center-focused resources, toolkits, training, and a calendar or related events.
- **Learning collaboratives, remote trainings**, and **on-demand technical assistance** on key content areas.

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This project is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) as part of an award totaling $693,000 with 0 percentage financed with non-governmental sources. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by HRSA, HHS, or the U.S. Government. For more information, please visit HRSA.gov.

HITEQ Topic Areas

Cybersecurity (data security, privacy)

Digital health tools (electronic patient engagement, remote patient monitoring, patient portal, mHealth)

Health IT for HIV prevention and treatment

Health IT and data for Emergency preparedness

Health IT and/or data for health equity

Value based care (population health, quality improvement, and risk scoring)

Interoperability (data exchange, HIE, 21st Century Cures Act, FHIR)

Health IT-supported social needs screening and response

Health IT reporting readiness (UDS, PCMH, HEDIS)

Our Objectives

After participating in this session, attendees (that's you!) will be able to:

➔ Name one or more examples of AI in health centers

➔ Describe considerations and tradeoffs of utilizing artificial intelligence in the safety net primary care setting

➔ Identify one or more key steps prior to implementing

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Content for Today

SECTION 1

What is the AI use case in health care and what is on offer?

SECTION 2

Where does AI fit in a larger digital health strategy?

SECTION 3

How should AI adoption be assessed?

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What are the greatest challenges in your health center right now?

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Artificial intelligence (AI) exploded in 2023, catapulting new forms of large language models and machine learning to the forefront including in healthcare. The rapid rise forces health centers to grapple with what possibilities AI has to offer, how it can be equitably adopted, as well as what can be lost. There are key considerations for those in the safety net, in patient facing roles, and with limited resources. This session encourages thinking through all of this as you consider AI in your health center.

AI is becoming a part of health care.

SECTION 1

What is the AI use case in health care and what is on offer?

Algorithms to AI in Healthcare

Rules-based expert systems

Expert systems based on ‘if-then’ rules (or programmed algorithms) became dominant in the 1980s. In healthcare, they have been widely employed for ‘clinical decision support’ (CDS) purposes over the last couple of decades and are still in wide use today. Many EHR providers furnish a set of rules. Expert systems require human experts and knowledge engineers to construct a series of rules in a particular knowledge domain.

ML

(*Machine Learning*) Use of computer systems that learn and adapt without following explicit instructions through algorithms and statistical models that analyze and draw inferences from patterns in data

NLP

(*Natural language processing*) A form of ML where computers use ability to understand text and spoken words similar to human beings

PA

(*Predictive Analytics*) Use of statistics and modeling techniques to make predictions about future outcomes and performance.

Generative AI

Artificial Generative Intelligence (AGI) refers to deep-learning models that can generate high-quality text, images, and other content based on the data they were trained on. This is the newest type.

The potential for artificial intelligence in healthcare - PMC

Disclaimer: *We are all at different places and that's a good thing!*

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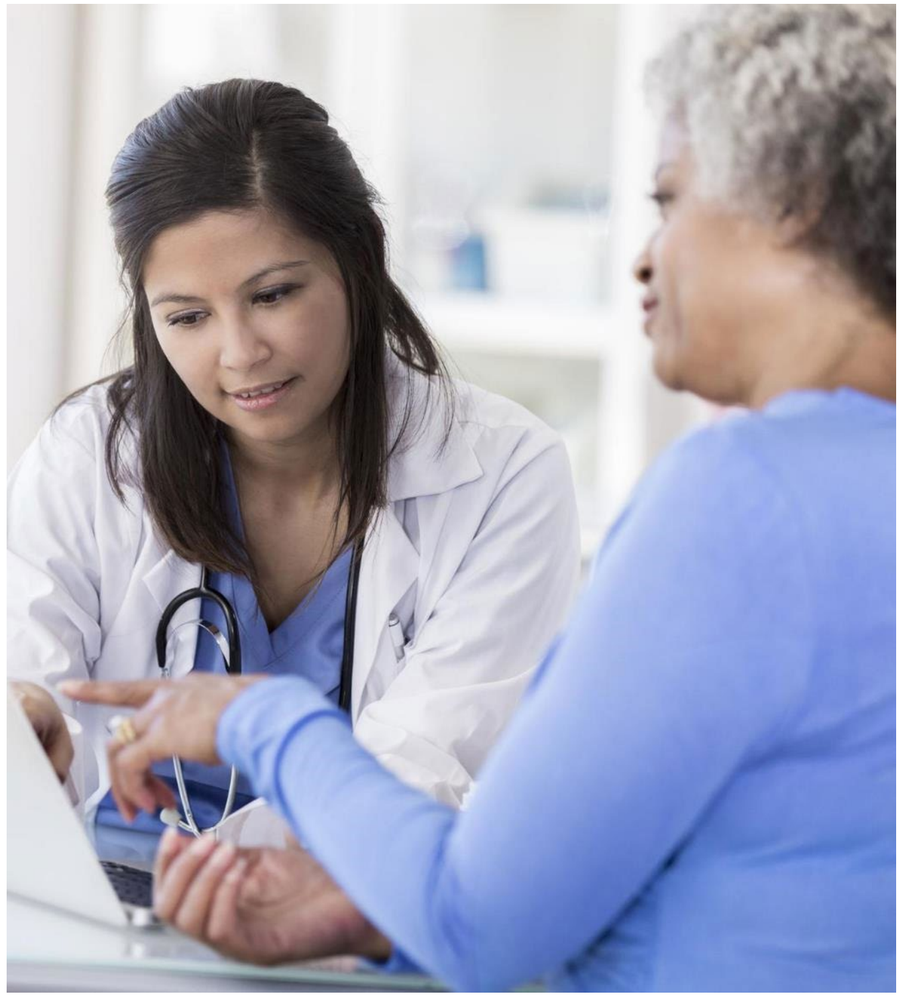
What would your clinic or staff like to see automated?



Moving forward with AI

Assess data quality, integrity and management.

Create a matrix of possibilities for proof-of-concept.

Build out the infrastructure with your people in mind.

Adapted from How generative AI can optimize health care supply chains | EY - US

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What makes AI in health center settings uniquely challenging?

Long changing data standards and capture.

Atomized data sources (few public data sources that are sufficiently large to train models).

The complexity of humans and their care means there are less clear probabilities.

An Example

Verbal or written descriptions of symptoms or conditions can vary widely depending on language, level of formality, region, etc. Historical information depends on regulation, coding, and available information at the time.

So an AI scribe program or natural language processing tool that creates the note, orders, and/or complete forms may vary pretty widely in response to these differences (and it's training data).

Health Center Data

Health Center likely to factor into AI implementation and utilization:

Procedures

CPT coding

Procedures from external providers

Diagnoses

Chronic conditions

Problem list

SDoH (Z-Codes)

Demographics

ZIP code

Race, ethnicity, language

Sexual orientation, gender identity (SOGI)

Social history

Operational

Scheduling

Resource Availability

Cancellations or No Shows

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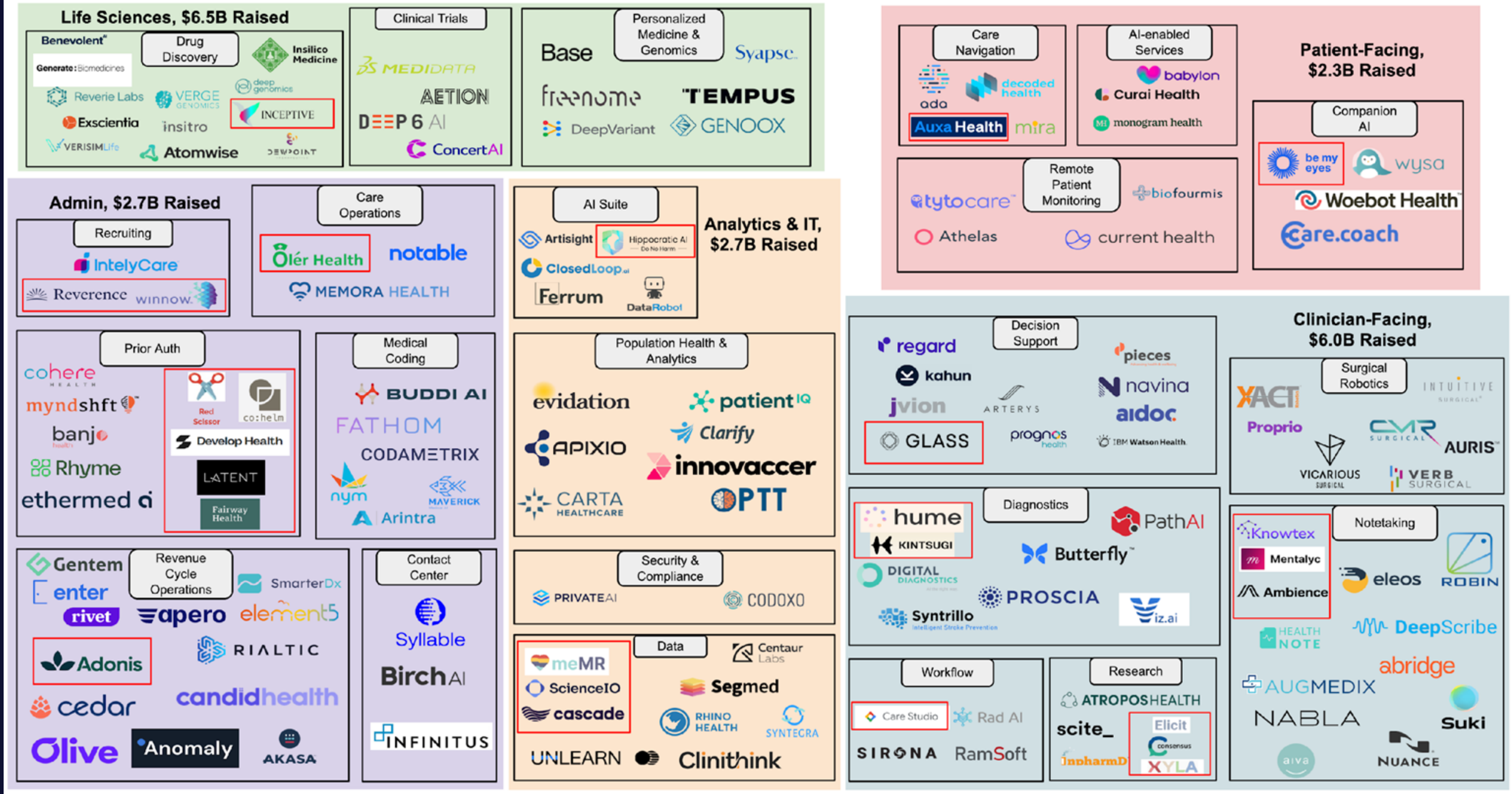
What AI tools are available? What have you seen or tried?

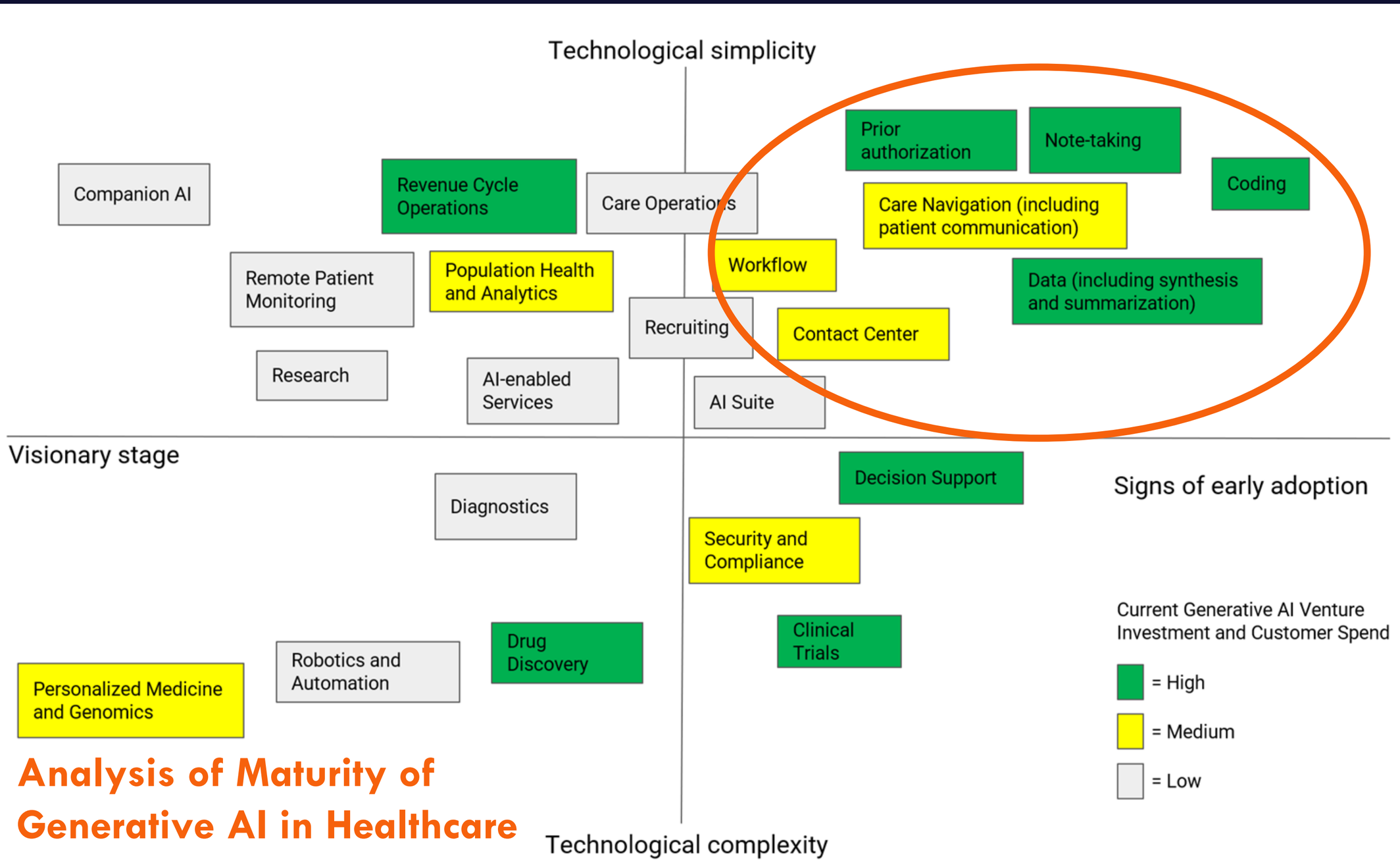
Where Generative AI Meets Healthcare: Updating The Healthcare AI Landscape

red box = launched product after 2020



Source: https://aicheckup.substack.com/p/where-generative-ai-meets-healthcare, June 2023

Note that some may no longer be available or may have changed their offerings.



Analysis of Maturity of Generative AI in Healthcare

Source: https://aicheckup.substack.com/p/where-generative-ai-meets-healthcare

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Examples of AI Considered or Used by Health Centers

- Virtual or AI Scribes that transcribe/ summarize the visit or in some cases fill out EHR fields based on inputs.
- RPA (Robotic Process Automation) tool automates the completion of structured data in EHR; clinicians only need to verify the accuracy of the entries, similar to how lab results are handled.
- Clinical inbox or in-basket management that can read and route or respond to messages.
- Patient communication such as with reminders or answering certain questions. Examples are portal companions and lab result letters.
- Optical character recognition insurance card scanning/ interpretation

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What AI tools have you considered or adopted?

SECTION 2

Where does AI fit in a larger digital health strategy?

Investment in digital tools (including AI) without a strategic vision **risks building techno-stress** for all involved, creating more chaos and less engagement, and using precious resources (time, energy, money, goodwill) when those things are in short supply.

Digital Health Strategy Framework

Engaging patients.

A digital strategy must engage patients in their overall health and wellness. This includes providing an engaging experience services to promote health, wellness, engagement, and 'brand loyalty'-- while **also addressing inequities**.

Enabling care team.

Digital tools must **enable care teams to provide excellent care and effectively collaborate.** Doing so means connecting care team members with patients/ caregivers to enhance patient safety, quality, productivity, and working together *more efficiently*.

Improving outcomes.

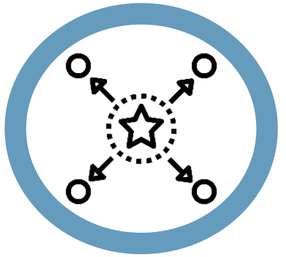
To facilitate optimized and cost-effective care, digital tools must leverage data and analytics to create embedded insights and decision support, thereby improving business and clinical outcomes and therefore, health of patients. *Outcomes across care locations!*

Maximizing data utility.

Data must be available and useable within the health center to support resource optimization and care coordination. Data definitions and data requirements are integrated, standardized and documented, and access is optimized both across the organization and externally.

Aligning with care ecosystem.

Situational alignment with the infrastructure, resources, and supports available across the healthcare ecosystem in order to minimize duplication of effort and maximize.
This means working across organizations and care sites and making use of external resources.



Realizing value.

A digital strategy supports growth, diversification, and innovation, allowing you to harness the power of strategic partnerships, platforms, tools, and data to keep pace with rapidly changing business imperatives and realize value of expended resources.

Adapted from: https://www.healthcatalyst.com/insights/healthcare-digitization-framework-5-strategies

Applying Digital Health Strategy

Define the problem that AI investment is seeking to solve.

Perhaps obvious, but AI must address an actual identified need in your health center!

Things that are just helpful or nice to have won't have traction.

All perspectives are important.

Digital strategies that are useful and solve a need are still subject to the realities of patients and personnel.

It is important to pilot and gather feedback from as many perspectives as possible.

Every tool requires investment; be selective!

Resources, including time, money, and goodwill, are **finite**.

Even tools that check all the boxes (engage patients, enable care teams, improve quality, and realize value) will take some of these valuable resources.

SECTION 3

How should AI adoption be assessed?

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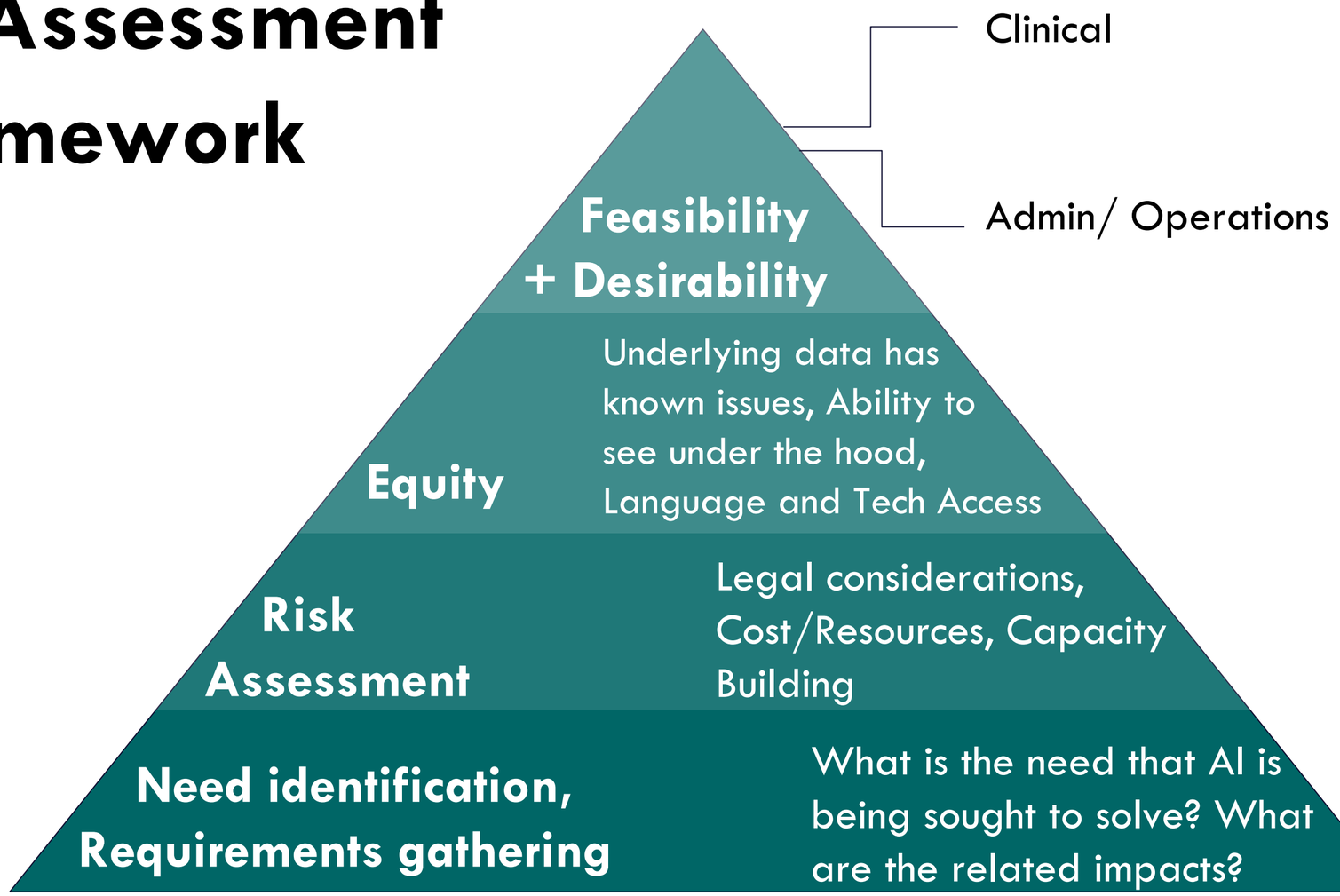
AI Assessment Framework



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Assessing the Need:

Acknowledging the promise of the next big thing

- If everyone else is using AI and gaining efficiency or improvement in work experience, then health centers may feel like they can't miss out on that.
- Many orgs want to use this for marketing purposes, such as to demonstrate that they are using the cutting edge technology (recruitment consequences?)[1]
- Promise that AI offers to "give providers their time back," in reality that time is likely to be taken up by more patient visits, as current models demand

[Doctor Ex Machina: AI in Medicine and its Pitfalls]

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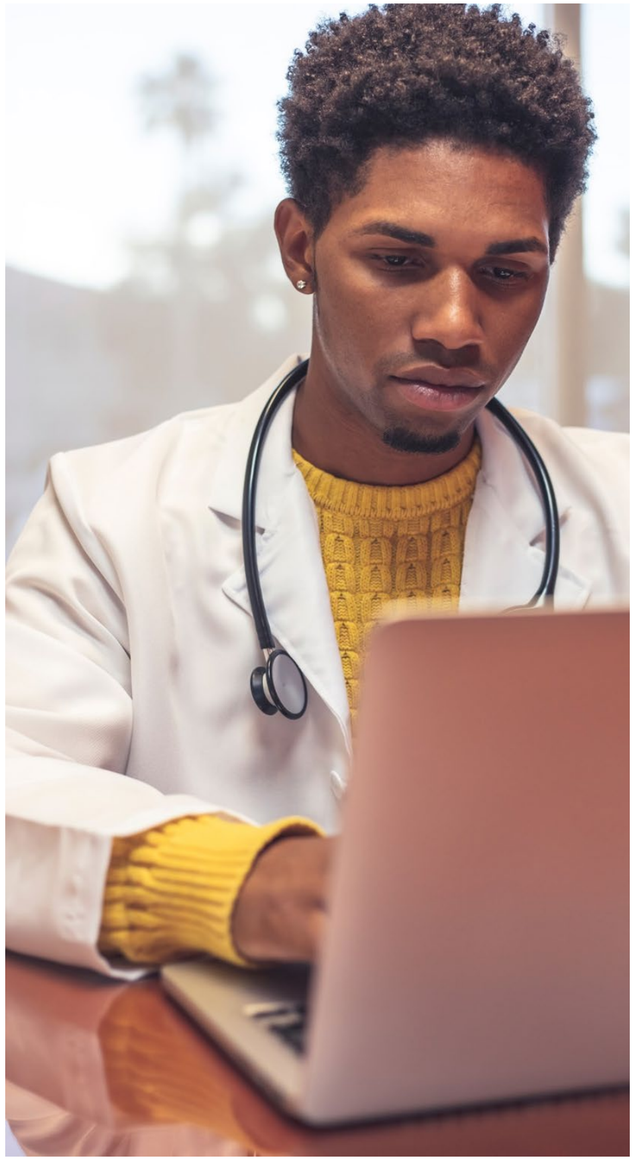
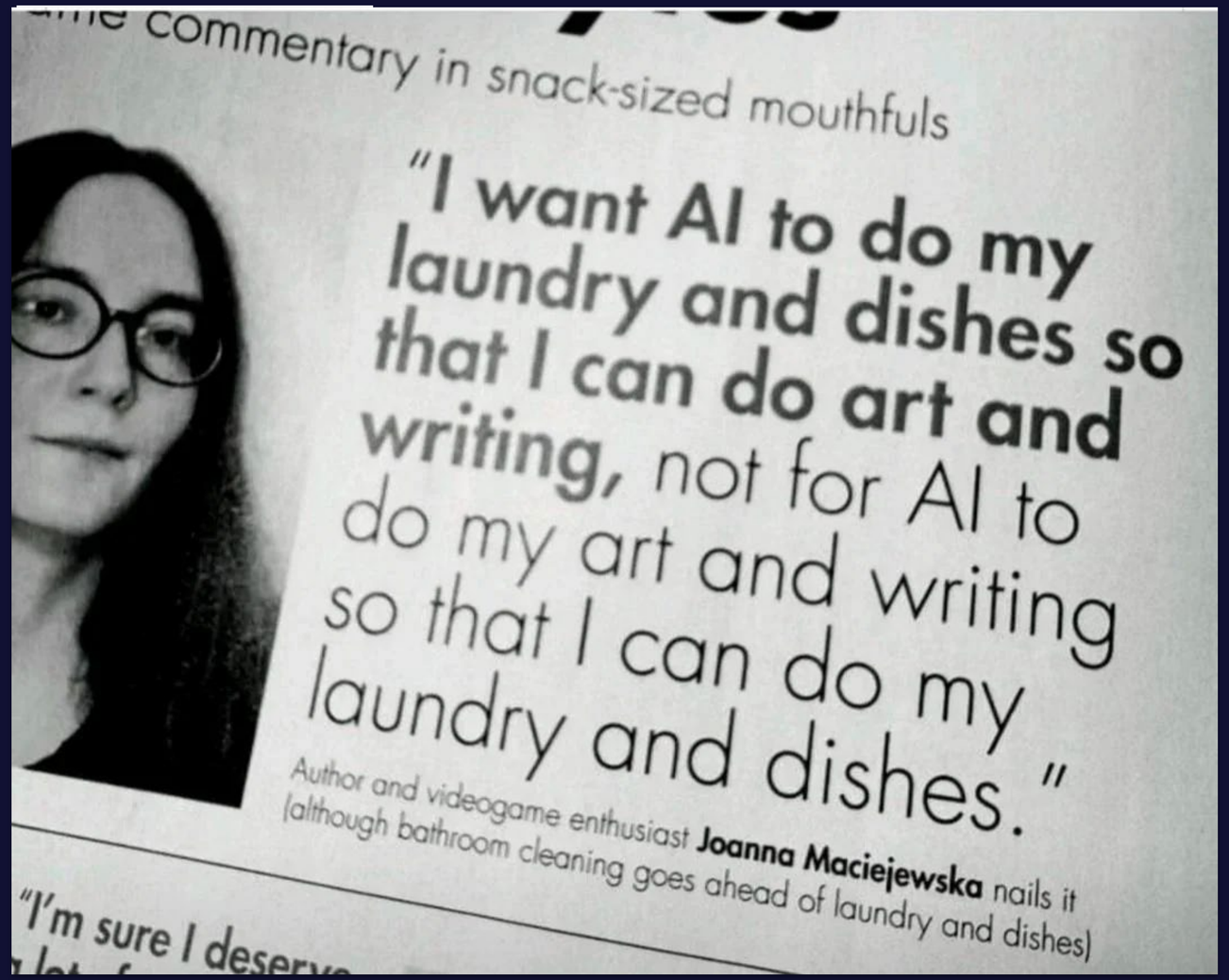
Assessing the Need:

Replace Repetitive Tasks, Not Decision Making

- Often the most troublesome duties in health centers are those that are rote and repetitive, these can be a need or opportunity for AI:
  - Abstracting information from Fax or PDF results or specialist records into patient charts
  - Reviewing and accurately categorizing things like insurance
- Updating charts or communications may be automated:
  - Updating data products like dashboards or run charts
  - Draft updated guidance to align with changes to specs



Source: The Current Generation of AI Tools: Three Considerations for Quality Leaders | Institute for Healthcare Improvement



Source: @AuthorJMac

People don't generally go into healthcare to do administration and data entry; they want AI to do that so they can do patient care!

Risk Assessment: Generative AI

For whom?

There is a risk that certain groups continue to have access to live human care, while others might be **relegated to AI support.**

Ownership

AI can write policies or summarize important information, but that means that the **humans who need to know or implement** that information have less familiarity with it. Losing capacity is also a real concern.

Top Concern

It is often incorrect (or at least not *exactly* right). Whether hallucinating references and rules that don't exist to providing ethically dubious guidance, generative AI is not yet reliably accurate in it's conclusions.

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Risk Assessment:

Generative AI Regulation Considerations

DATA SHARING What implications are there if that data is shared with other systems, which then may incorporate that data into their own models and decision making?

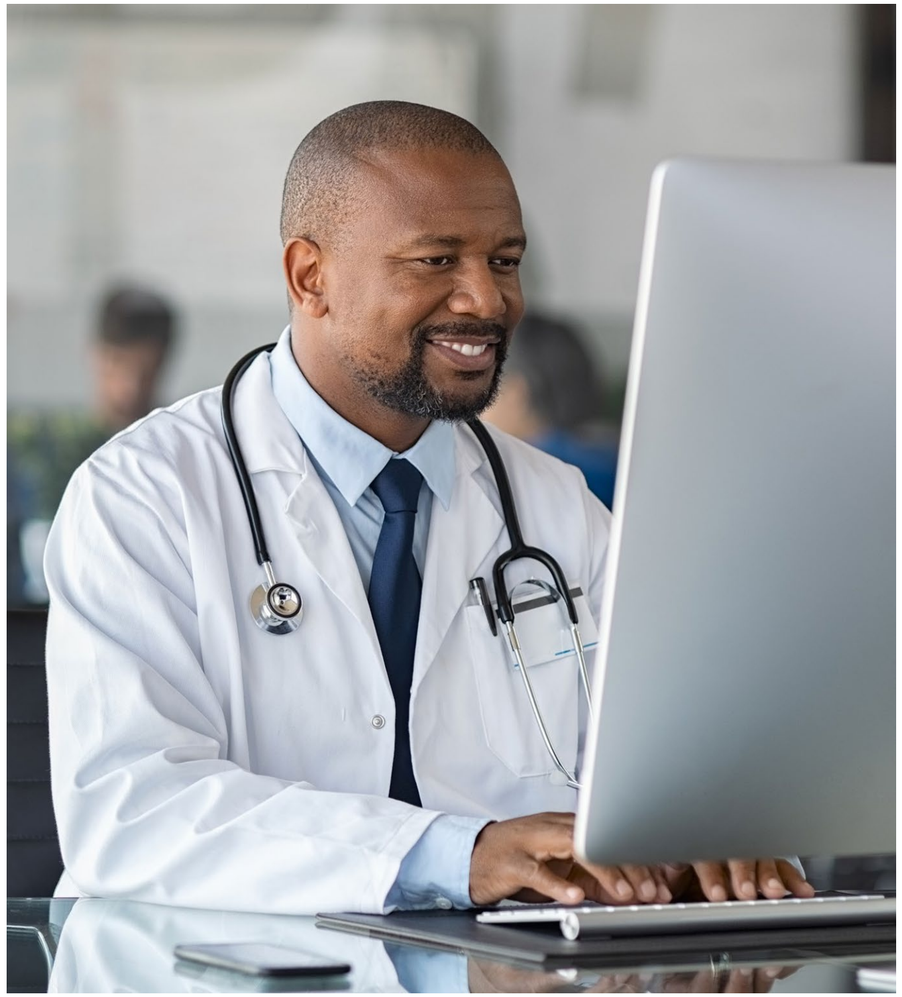
RESPONSIBILITY Who is "responsible" (liable) for what the AI says/ recommends in the care setting? If outreach is AI generated or a follow-up plan is AI generated inaccurately, what then? The responsibility is certainly still the clinician and/or organization.

BAD GUIDANCE What if the guidance is incorrect and then a clinic makes its decisions or policy based on that bad data?

Examples

A clinic uses AI to draft a HIPAA- and 21st Century Cures Act-compliant policy for responding to patient portal messages and the generative AI hallucinates references or examples.

A clinician uses a AI scribe that ambient listens and then writes up the note and suggests orders and the clinician just approves it without meaningful review.



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Equity: "Algorithmic Paternalism"

- Medical paternalism: "Doctor knows best"– now providers are experiencing this from AI tools, termed *algorithmic paternalism*.
- Tschandl et al. observed that **when AI predictions were incorrect, many clinicians were swayed against their own initial judgment** (even when they were originally correct), particularly when they were less confident in their judgment. Findings were unrelated to years of experience.
- AI can only predict based on the information it has (both what was ingested in its training, and what its acting on in your system).

Source: Artificial intelligence is infiltrating health care. We shouldn't let it make all the decisions.

Equity: Example

KFF News headlines a story about Bamboo Health's NarxCare Artificial Intelligence May Influence Whether You Can Get Pain Medication. The software **predicts the likelihood that a patient will overdose based on their documented use of narcotics, sedatives, and stimulants.**

CDC has warned providers to make sure use of the algorithm doesn't harm patients, such as turning them away for visits or denying them medications for documented chronic pain, and has voiced concern about "proprietary algorithms" whose methods are not transparent.

Providers feel it threatens their ability to provider care.

Patient feel this compromises their ability to get the care that they need.

Equity

Patients are not thrilled about AI being part of their care.

Consideration	Actions
Balance sources of knowledge to guide clinical decisions	Clinicians offer recommendations and make decisions that promote the good of the patient by exploring all relevant sources of clinical knowledge, including lab tests, imaging, physiology and knowledge of the patient's history and trajectory. AI outputs should form part of the larger decision, along with patient values, wishes and preferences, as well as the patient's family and social context.
Prioritize understanding over prediction	Clinicians should consider historical patterns, societal inequalities, and biases such as racism, sexism and ableism, which may influence medical recommendations and decisions. Interrogating patterns of bias in AI predictions may involve seeking complementary sources of knowledge such as social science, gender and race studies, anthropological perspectives and ethics literature.
Recognize and redress power imbalances imposed by AI	Explain to patients that their values, wishes and preferences will guide the treatment plan and/or goals of care. Practice shared decision-making by discussing with patients and families how the AI predictions fits into the larger clinical picture informing clinical judgment. Invite patients to share their values and perceptions of the risks and benefits of the proposed care plan (informed by AI) to obtain informed consent. Recognize that marginalized patients may require more support and validation to exercise their decisions.

Sources: Artificial intelligence is infiltrating health care. We shouldn't let it make all the decisions and Patient wisdom should be incorporated into health AI to avoid algorithmic paternalism .

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Patient-facing

Behind the scenes

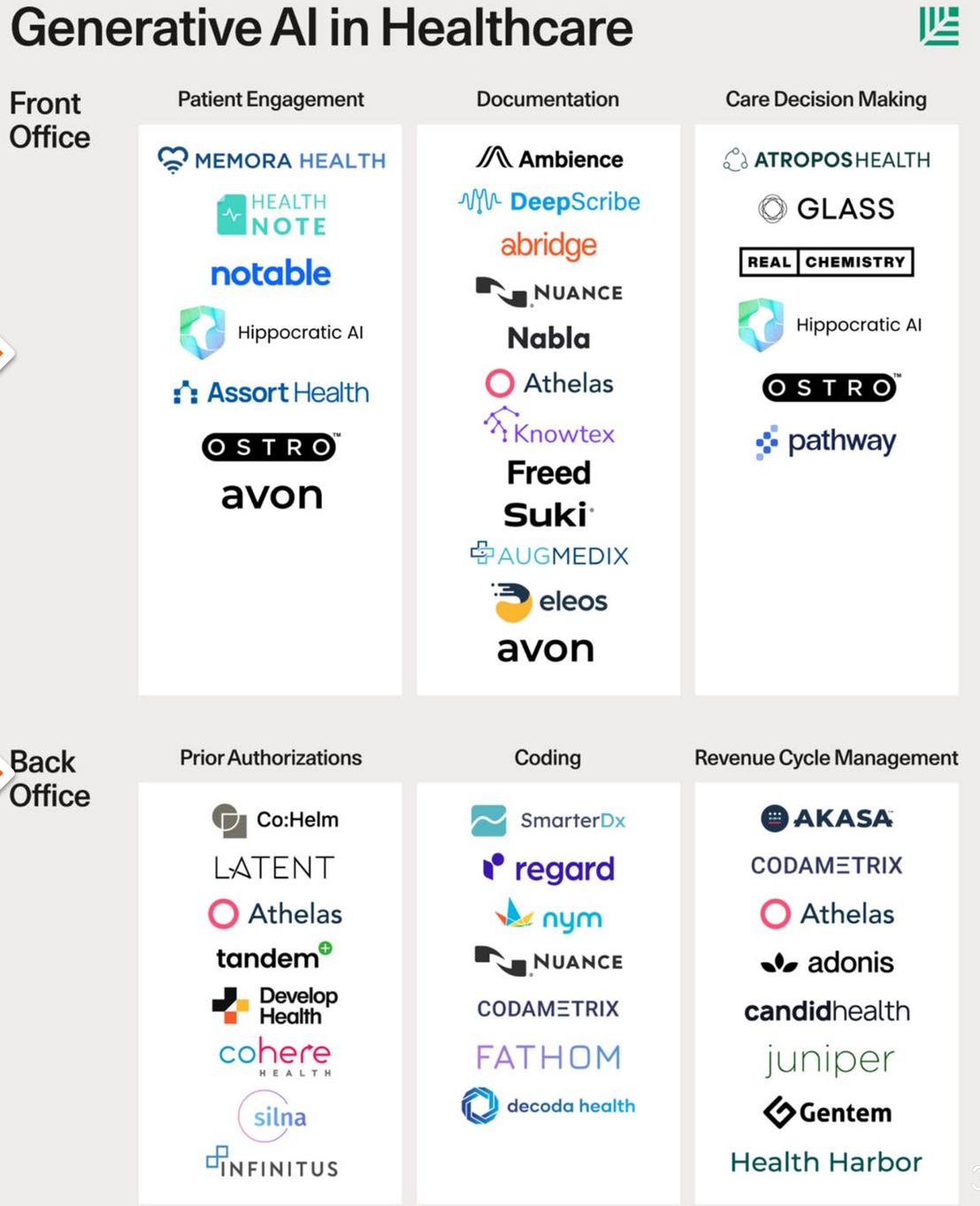

Image Source: Bringing Generative AI to Healthcare | Sequoia Capital Sept. 2023
More comprehensive generative AI tracker: Generative AI Tracker: A guide to health systems driving adoption from Stat+.

Feasibility + Desirability:

Generative AI & Mental Health Apps

Many thousands of mobile apps have flooded the mental health space in recent years. Few on the market have independent outcomes research showing they help; most haven't had any review by the FDA.

The **core tenet of medicine is that it's a relationship between human and human …"** said Bon Ku, director of the Health Design Lab at Thomas Jefferson University and a pioneer in medical innovation. "I have a human therapist, and that will never be replaced by AI."

Ku said he'd like to see AI used instead to reduce practitioners' tasks like record-keeping and data entry to **"free up more time for humans to connect."**

Potentially better applications of AI: Retrieval of information from large data sets; Summarizing available information, Addressing common but simple requests (e.g., wayfinding), Routing information.

Source: An AI Chatbot May Be Your Next Therapist. Will It Actually Help Your Mental Health? | KFF Health News

Related resource: HITEQ Highlights: Deploying Smartphone Apps to Advance Mental Health in Primary Care

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Communication

Capitalizing on AI: Support for doing less when appropriate

Heuristics

AI might offer a convincing second opinion to a patient, for example, someone who is told that they don't need antibiotics for a viral infection.

AI could generate discharge instructions, describe the logic behind the chosen medical plan, and answer common patient questions.

AI could help…

- identify/correct confirmation bias, offer fresh perspective to see that evidence might *not* support the suspected diagnosis
- providers and patients understand *why* lab tests may not be indicated and how to react to results.

Inspiration: I, For One, Welcome our New Medical Large Language Model Overlords

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It's important not to enter protected information into a general AI program-- we don't know what any platform does with that information!

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As an [EHR] implementation consultant who came of age during the Meaningful Use era, the hope presented validates the burden of days and nights spent typing into the EHR, a byproduct of installs performed across the country.

But if the data that was gathered by such typing **can now be mined and used to generate insights, and if the initial installs are seen as the first step in the shift to integrating technology into workflows** (workflows that begin to substitute vocal cords for fingers), maybe it wasn't all in vain.

Tons of healthcare data exists, it's reasonable to want it to be put to use.

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What questions or thoughts do you have about what we've discussed?

Thank you!

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- The Current Generation of AI Tools: Three Considerations for Quality Leaders | Institute for Healthcare Improvement
- NEMJ Catalyst: Ambient Artificial Intelligence Scribes to Alleviate the Burden of Clinical Documentation
- Generative AI is supposed to save doctors from burnout. New data show it needs more training (Stat+)
- Despite AI Advancements, Human Oversight Remains Essential | Mount Sinai - New York
- How generative AI can optimize health care supply chains | EY - US