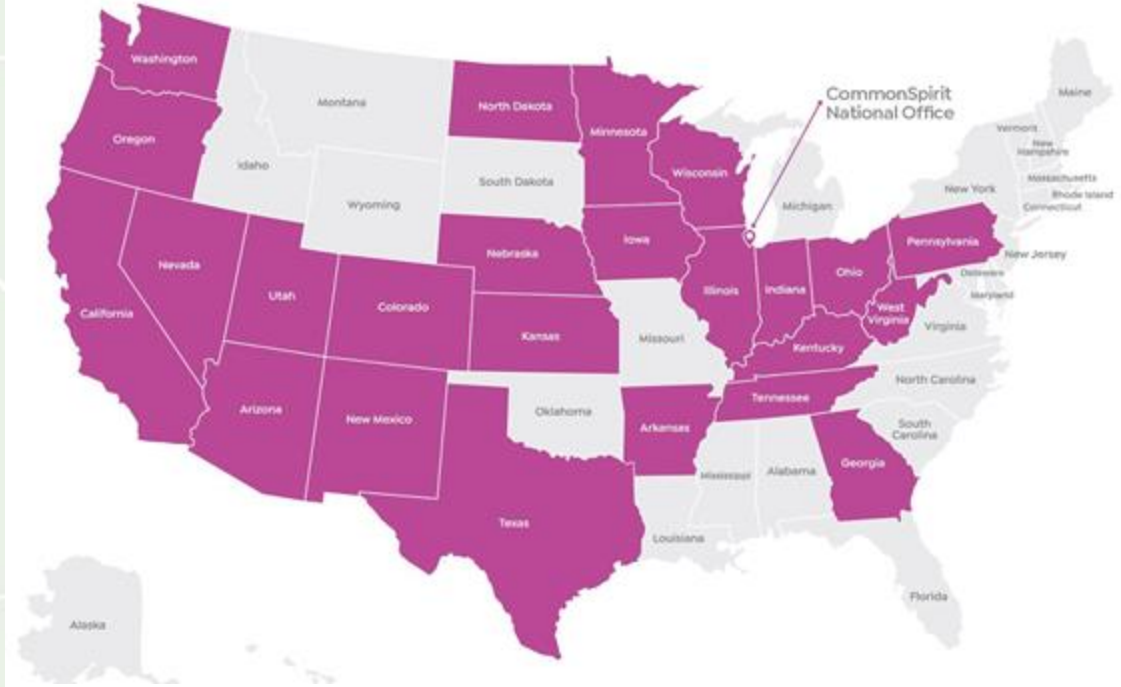


# Unlocking Creativity: Exploring the Power of Artificial Intelligence

Dean Field MD MBA  
CommonSpirit Health  
System VP & NW Region CMIO

October 2025



## CommonSpirit Health

*\*Special appreciation for their support, resources and vision to Sunil Kakade System VP IT Data Engineering & Advanced Analytics and Daniel Barchi SEVP & CIO for CommonSpirit.*

# What is Artificial Intelligence?



## Artificial Intelligence

*[är-tə-'fi-shəl in-'te-lə-jən(t)s]*

The simulation of human intelligence by software-coded heuristics.



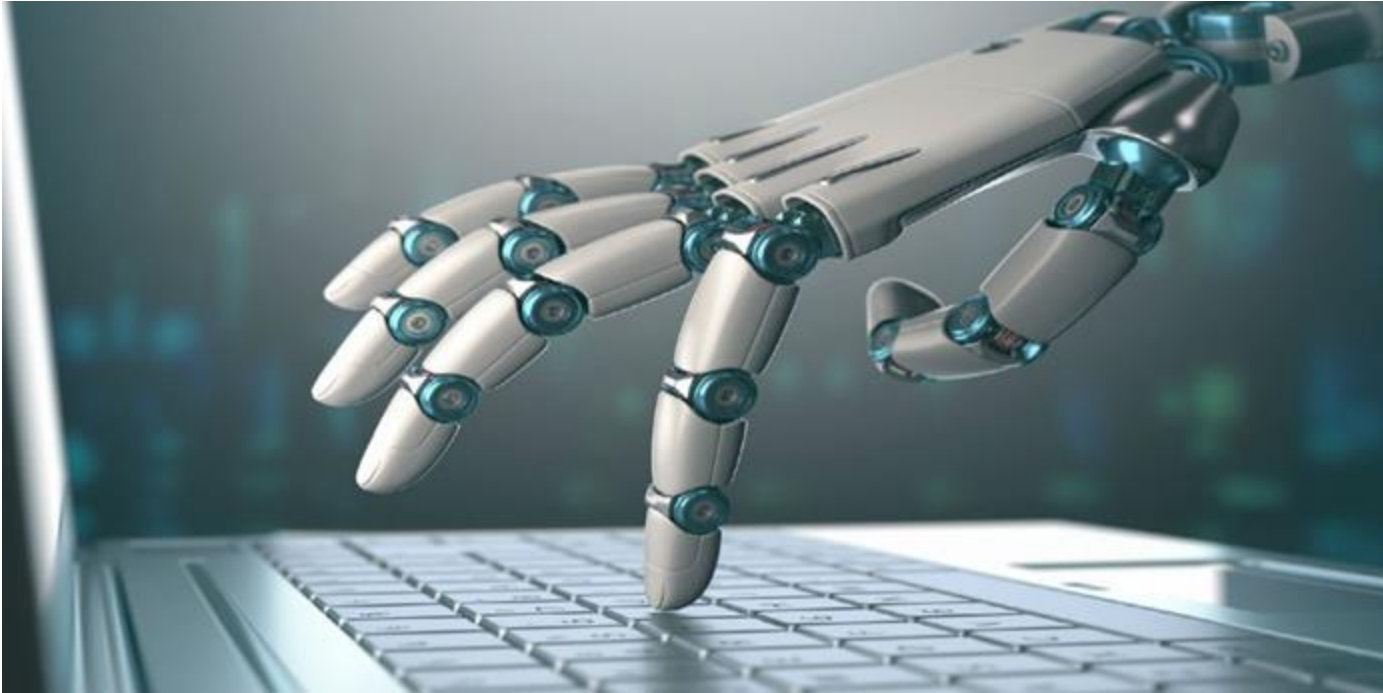
# Automation and Artificial Intelligence

- Robotic Process Automation - software trained to replicate human workflows
- Machine Learning - systems learning from data without being explicitly programmed - Natural Language Processing
- Deep Learning - machine learning systems that can train themselves from large data sets - Radiology image pattern recognition
- Generative AI - systems capable of generating unique outputs - Note Creation



# Level 1 Robotic Process Automation

# Why a bot? (roBOTic process automation)



# Otto looks at the schedule for care gaps

Health Maintenance

Address Topic Remove Override Document Past Immunization Edit Modifiers Report Update HM Guidelines

New data from outside sources

Medications and Immunizations need attention. [Go Reconcile](#)

Topic	Due Date	Frequency	Date Completed
BREAST CANCER SCREENING	Overdue since 6/9/2016	2 year(s)	6/9/2014 (Done)
HEMOGLOBIN A1C	Overdue since 1/10/2018	6 month(s)	7/10/2017
TOBACCO CESSATION SCREENING	Overdue since 1/1/2019	1 year(s)	
INFLUENZA VACCINE (1)	Overdue since 9/1/2019	Sequential	9/29/2016

Health Maintenance Modifiers

- Fecal Occult Blood Test - Annual
- High risk for pneumococcal disease
- MSSP ACO

Health Maintenance Plans

- BREAST CANCER SCREENING MAMMOGRAM EVERY 2 YEARS-DEFAULT
- CERVICAL CANCER SCREENING EVERY 3 YEARS (Age 21-65)
- CHI AMB BMP/CMP
- COLON CANCER SCREENING ANNUAL FOBT-DEFAULT
- QUARTERLY EYE EXAM

Status Legend

- Overdue
- Due Soon
- Postponed

Definitions

- Completed: Done with the required satisfactions
- Addressed: Overridden with the intention of not completing the topic
- Aged Out: No longer eligible based on patient's age to complete this topic
- Discontinued: Patient marked as never due for this topic
- Sequential: Due dates may have irregular spacing

# Otto preps the order for the provider

**Pre-Charting**

**ⓘ Patient Not Arrived Yet**

>Welcome to the Pre-Charting workspace, where you can get a head start on your work for this visit! This screen includes tools that are helpful before the patient arrives. If the patient arrives while you're here, click Start the Visit to see your full toolset. Here are some other helpful tips:

- Any notes that you write before the patient checks in are accessible to only you and other clinicians who work in this encounter. Other clinical staff can't find these notes elsewhere in the chart.
- Any notes or orders that you don't sign, and communications that you don't send, are deleted by the system a set number of days after the appointment if the patient never arrives. You can view any notes that you write before the system deletes them and copy those notes forward to a visit within that time frame.
- Any orders that you sign are carried out regardless of whether the patient arrives for the scheduled appointment. If the patient no-shows, cancels, or reschedules the visit, you need to cancel any orders that you don't want to remain active.

[Start the Visit](#)

Meds & Orders   BestPractice   Problem List   Visit Diagnoses

**Problem List**

Search for new problem [Add](#) [DxReference](#)

**New problems from outside sources**

Problems need attention. [Go Reconcile](#)

Diagnosis	Resolved
Hypothyroidism	<a href="#">Change Dx</a> <a href="#">Resolve</a>
Chronic diastolic heart failure (HCC)	<a href="#">Change Dx</a> <a href="#">Resolve</a>
Hypertension	<a href="#">Change Dx</a> <a href="#">Resolve</a>

Search for new orders [+](#) [⌵](#)

**This Visit**

[AMB Sidebar Report](#)

Current as of: Mon 9/9 8:58 PM. Click to refresh.

**Specialty Comments** [Edit](#) [Show All](#)

PHQ2 done (> 12yo):  
Fall risk done (All medicare, HMO, > 65yo):  
DPOA addressed (> 18yo):  
Mychart addressed:

Foot Exam:  
Ophthalmology:  
Urine Microalbumin:  
Tetanus:  
PCV13:  
Colonoscopy:  
[Doctor Message](#)

**Dx Association** [Edit Multiple](#) [Options](#)

**After Visit**

**Mammo Digital 3D Screening Bilateral**

[Expires: 11/9/2020, Routine, Ancillary Performed](#)

Can perform additional imaging as needed per protocol (i.e. Additional views, Follow up Ultrasound, etc): Yes  
Radiologist can change order? Yes  
Does patient have breast implants? No  
Transport Mode: Ambulatory

[CVS/pharmacy #10373 - Burien, WA - 117 SW 160th St](#) [206-242-2030](#)

[PRINT AVS](#) [PEND ORDERS \(1\)](#)

# Robotic Process Automation

## Breast Cancer Screening



- Kitsap Region: **37 clinicians, 9 clinics**
- Charts Reviewed: **10,785**
- Baseline: **24%**
- Average since bot implementation: **75%**



But does it work for  
Cardiology?

# Kitsap County – Antiarrhythmic

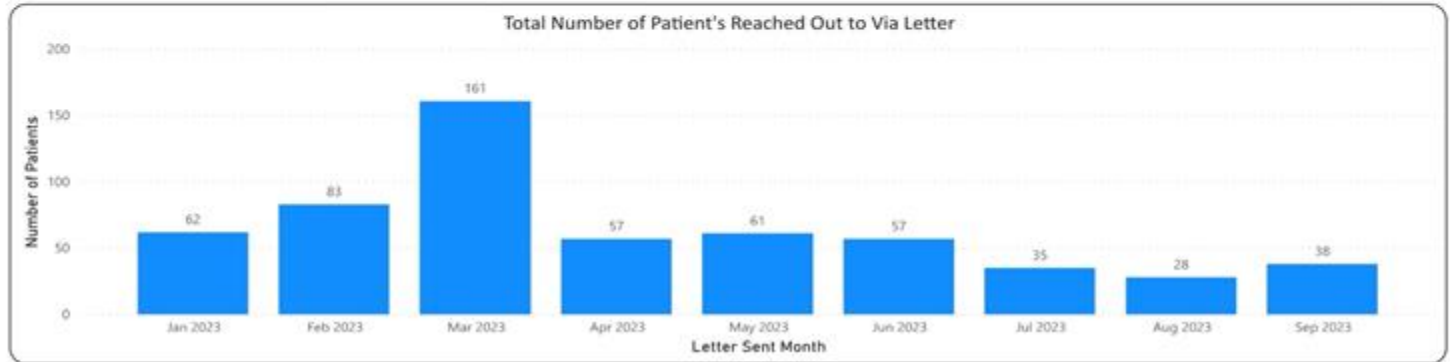
**Success** is the delta from the **dark blue** column to the **medium blue** column in the next month.

**Antiarrhythmic**

Region	First Start
Kitsap County	June 2021



As that number falls, it means patients have completed their appropriate screening.



# Level 2

# Machine Learning: Learning Pattern Recognition

# So Much Data: Insight or Burden

October 18, 2023

## BECKER'S **HEALTH IT & CIO REPORT**



A ONE-STOP RCM SOLUTIONS COMPANY  
HELPING HOSPITAL SYSTEMS MAXIMIZE  
REVENUE!

LEARN MORE TODAY



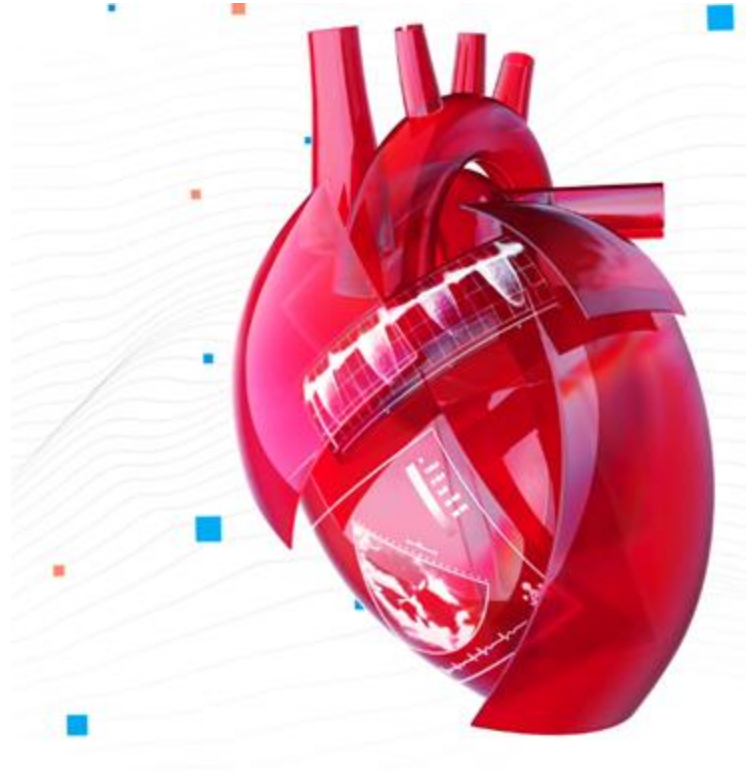
1. Hospitals only use 3% of data, Microsoft says [Full story](#).



# Structural Heart Disease

Human intelligence enhance by  
artificial intelligence

A revolution in cardiovascular  
identification and management



# SJMC Patient Lists

## Cardiovascular Disease



Aortic Stenosis



Aortic Regurgitation



Mitral Stenosis



Mitral Regurgitation



Tricuspid Regurgitation



HFrEF



AFib

## High Priority Patients

**91**

Active, not evaluated, symptomatic or EF < 50, 90+ days since diagnosis

**10**

Active, not evaluated, symptomatic or EF < 55, 90+ days since diagnosis

**10**

Active, not evaluated, symptomatic or EF < 50, 180+ days since diagnosis

**68**

Active, not evaluated, symptomatic or EF < 60, 180+ days since diagnosis

**51**

Active, not evaluated, symptomatic or EF < 50, 180+ days since diagnosis, one or more VHD M, M-S, S

**49**

Active, 2 or more HF admissions in the past 90 days, not evaluated by HF specialist, less than 3 GDMT drugs

**71**

Active, CHA2DS2-VASc ≥ 2 (men) or ≥ 3 (women), not prescribed anticoagulation, no history of bleeding, ≥ 2 admissions in the past 90 days, not evaluated by a specialist

## Candidates For Intervention

AS AVR (184)

**115 No HT**

AR AVR (27)

**16 No HT**

MS AVR (35)

**22 No HT**

MV AVR (62)

**55 No HT**

ICD (1138) **694 No HF/EP** LAAC (2079) **1337 No Spec**  
CRTD (382) **166 No HF/EP** AF Ablation (6391) **4937 No EP**

## Disease Management

Severe AS (401)

Moderate To Severe AS (251)

Diagnostic Precision (110)

Disease Progression (313)

Severe AR (42)

Moderate To Severe AR (93)

Severe MS (49)

Moderate To Severe MS (29)

Severe MR (190)

Moderate To Severe MR (287)

Severe TR (232)

Moderate To Severe TR (300)


HFrEF (11034)

AF GDMT Eligible (19988)

# Machine Learning Identified Patient: Outpatient

4/24/23: PCP visit for SOB & chest pressure, history of pulm sarcoidosis so referred to pulm.

7/13/23: Consult with pulm and echo ordered

8/28/23: Echo completed  **AVA: 0.62 cm<sup>2</sup>    JV: 4.23 m/s    MPG: 45 mmHg    EF 66%**

No Referrals or Follow-up

# Heart Failure Specialist Impact - SJMC

Last EF  $\leq$  40

**Total HFrEF Population**  
(60% on 3+)

Total Patients	GDMT Rate	Avg # GDMT Meds
3,044	28% Managed by non-CV provider	2.57


**Population Not Seen by HF Specialist\*** (49% on 3+)

Total Patients	GDMT Rate	Avg # GDMT Meds
2,068	11%	2.27

**Population Seen by HF Specialist\*** (83% on 3+)

Total Patients	GDMT Rate	Avg # GDMT Meds
976	45%	3.21

**Population Managed by HF Specialist\*** (83% on 3+)

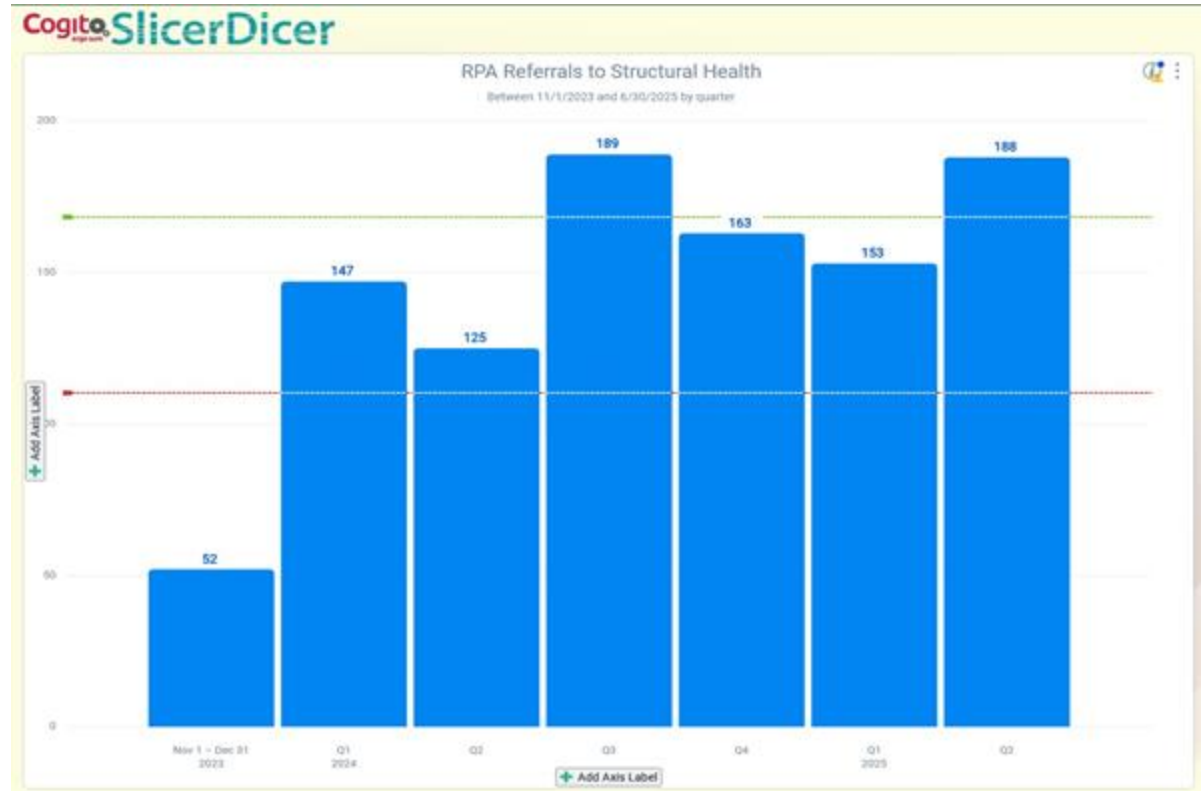
Total Patients	GDMT Rate 	Avg # GDMT Meds
463	47%	3.23

# Driving Outcomes with Machine Learning and RPA

For patients with severe Aortic Stenosis we automated communication with their PCP

Educating PCP's about the indications for evaluation increased referrals to our Structural Heart Clinic by 57%

Machine Learning + Robotic Process Automation + Nudging = Improved Outcomes



# Is the technology sustainable?

# The Structural Heart Clinic Experience: Aortic Stenosis

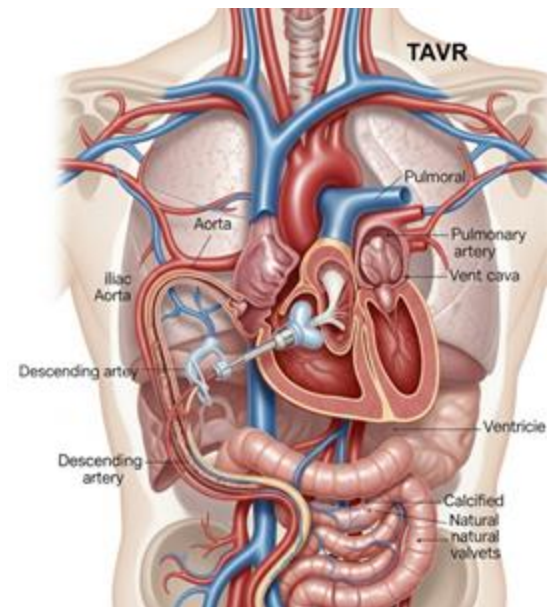
We are increasing referrals to structural heart by 60/QTR (240/year)

90% of patients with severe Aortic Stenosis require further diagnostics or intervention

The economic marginal impact of doing the appropriate clinical care may range from \$800/patient for basic diagnostics and up to \$9000/patient for Aortic Valve Replacement

Studies of US patients with severe AS demonstrate about 50% of these patients end up with valvular replacement. (Vemulapalli S, et al.)

That is an increase of healthcare system value of \$1,250,000/year for clinically appropriate care



# Level 3

# Deep Learning AI Recognizing Complex Patterns

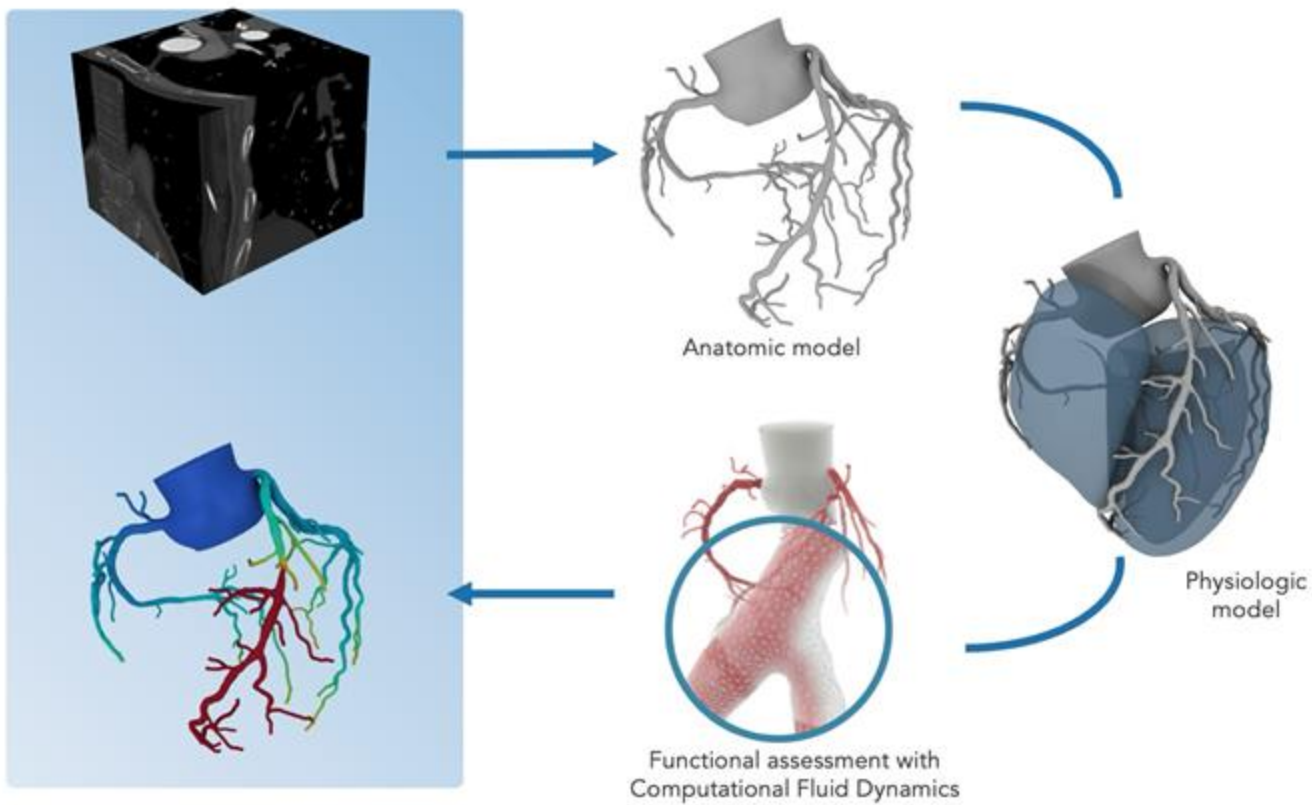
# Chattanooga Heart Institute Experience

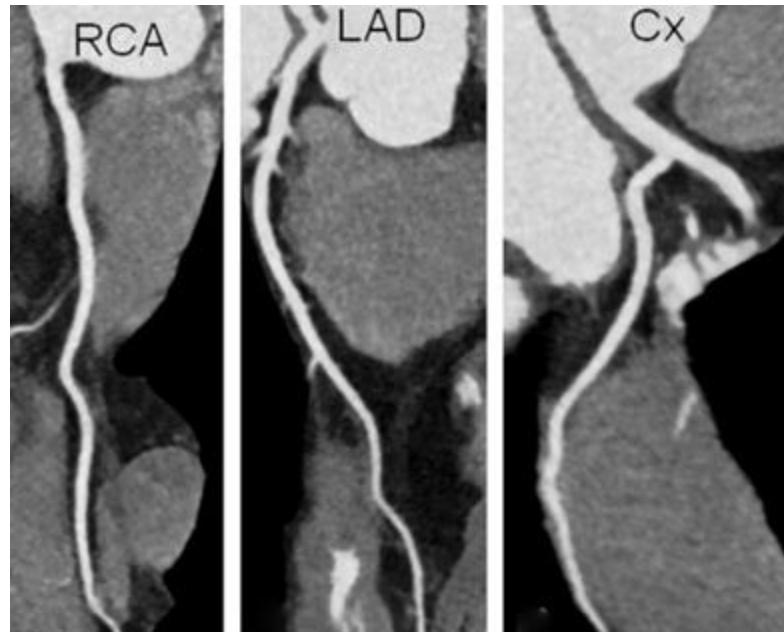
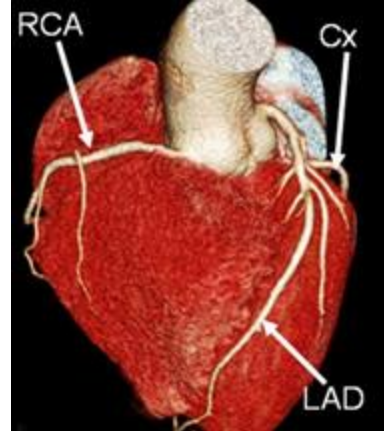
- Data and examples provided by Dr Vimal Ramjee



Top causes of cardiovascular disease deaths, 1990 and 2021<sup>1</sup>







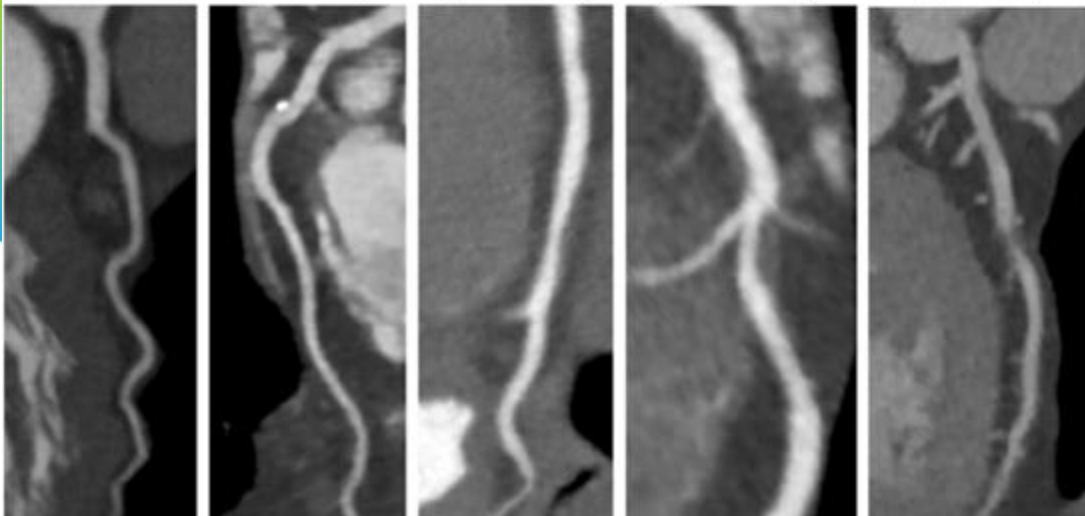
**No CAD**

**Minimal  
(1-24%)**

**Mild  
(25-49%)**

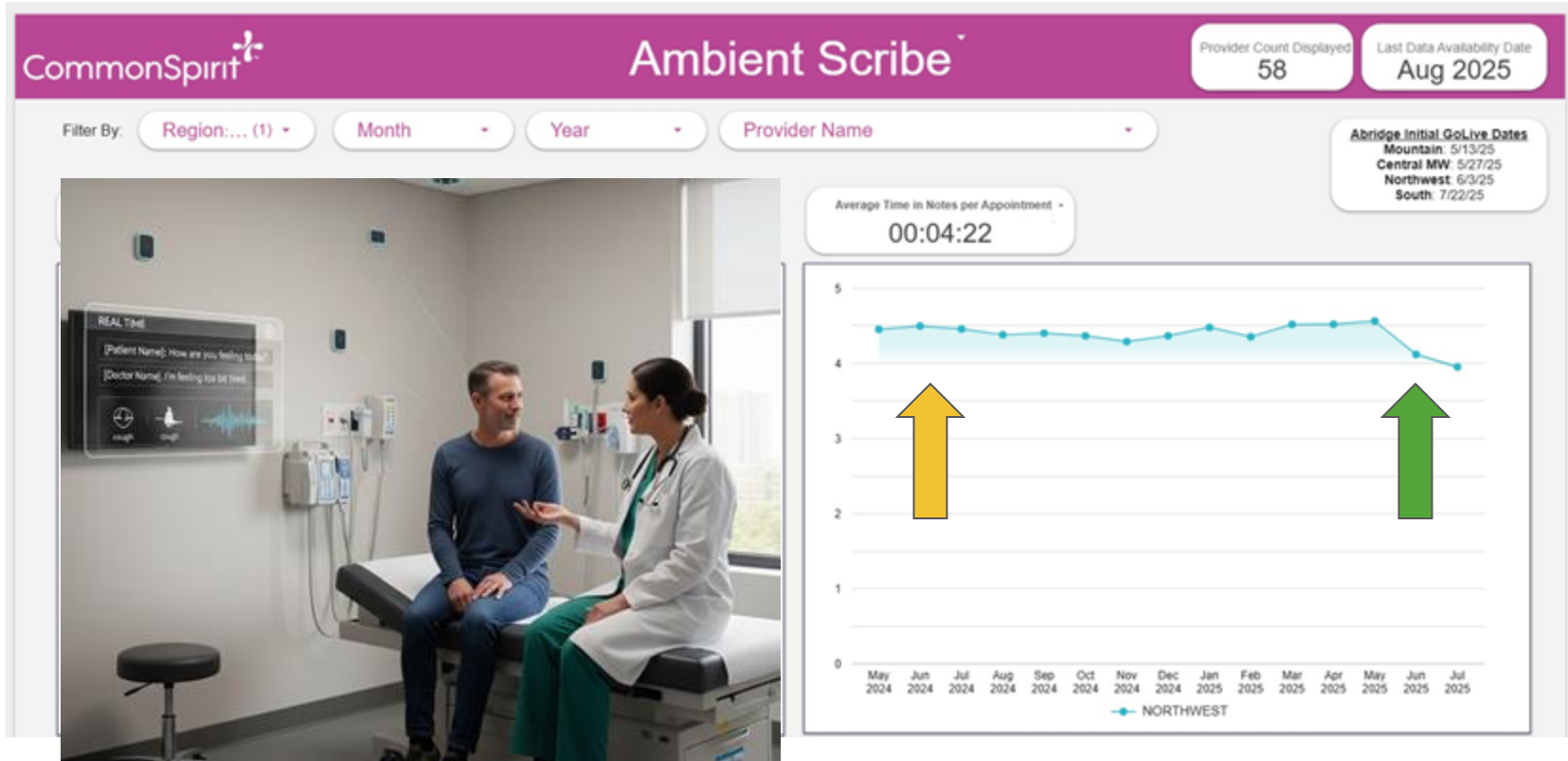
**Moderate  
(50-69%)**

**Severe  
(≥70%)**

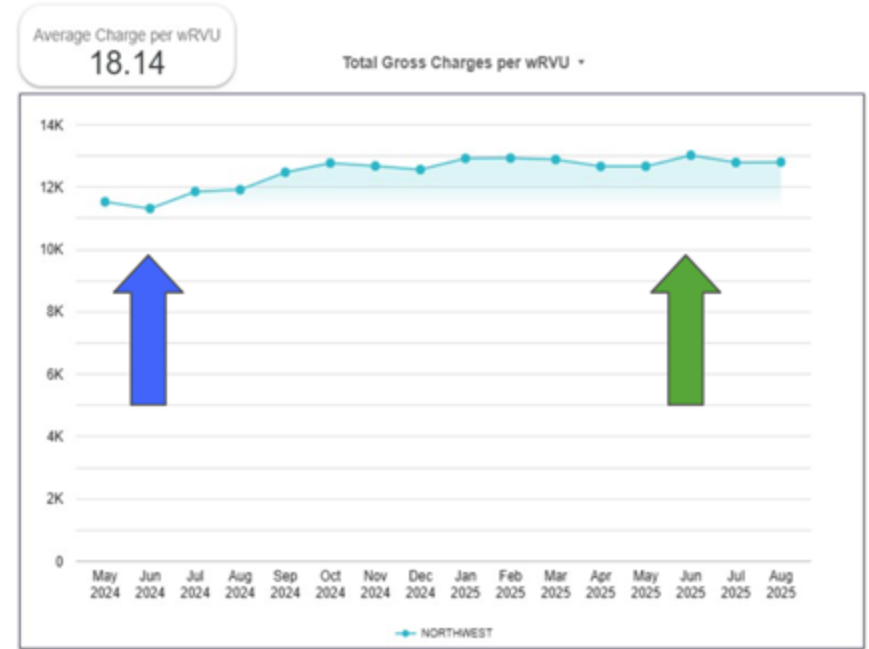
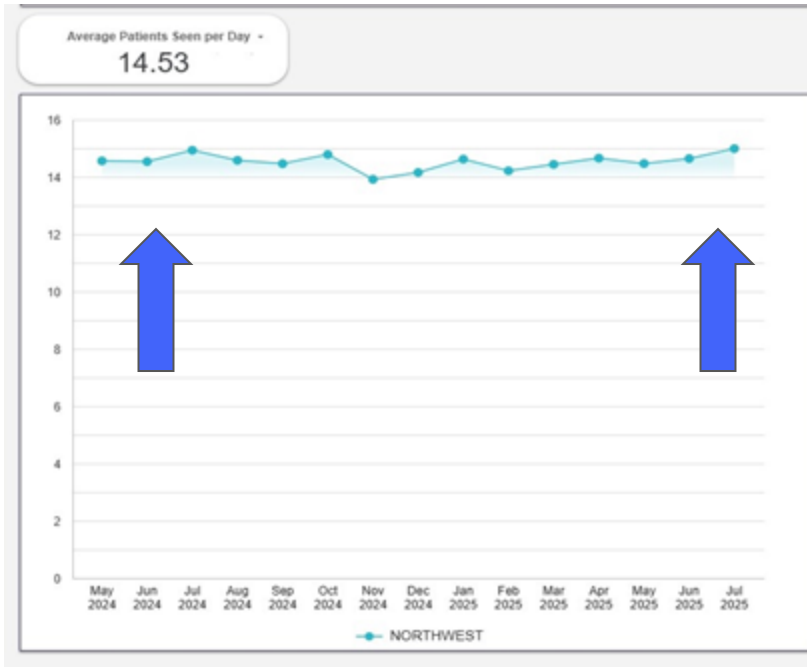


# Level 4 Generative AI: Unique Output

# Ambient Scribe Technology: Time in notes/appointment



# Provider patient volumes & wRVUs through the pilot



# Evolution from Reactive AI Agents to Autonomous Agentic AI



**AI Agent**

Reactive, rule-based/predictive systems

Single-task focused with limited decision-making



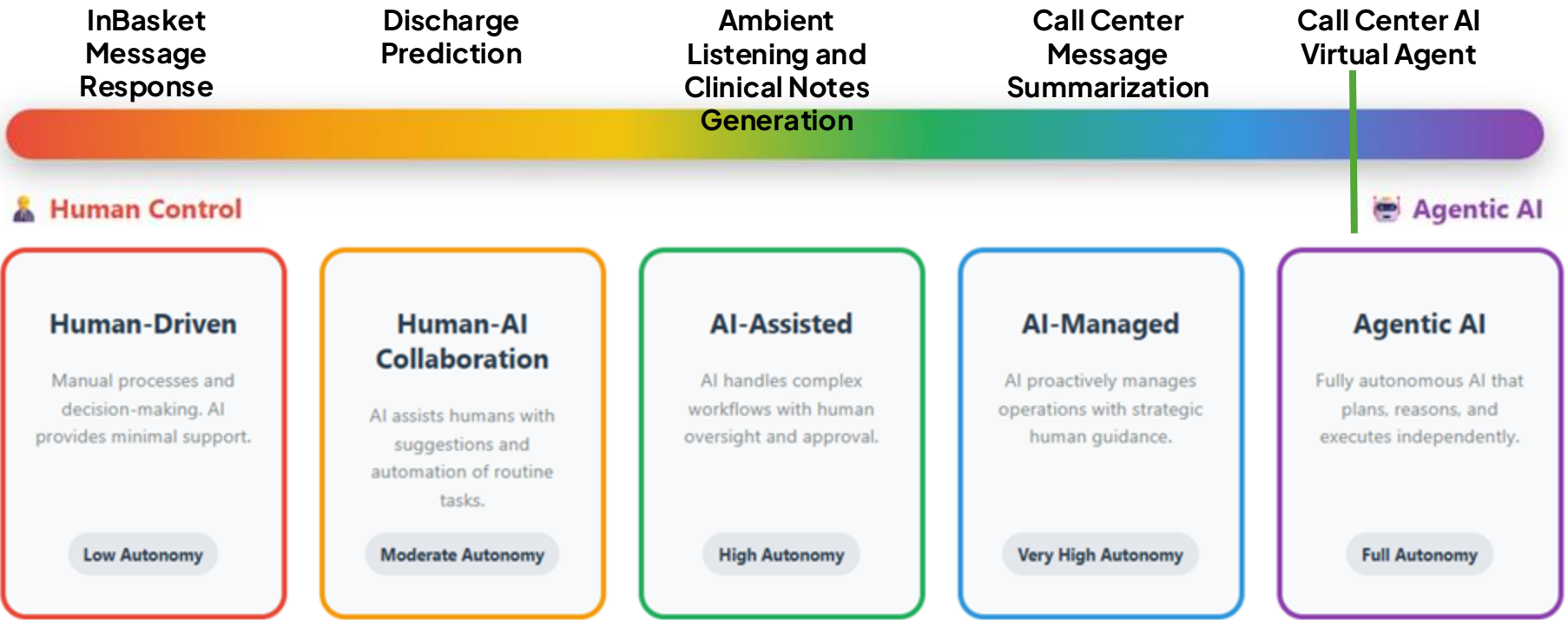
**Agentic AI**

Autonomous, goal-oriented systems

Proactive planning and multi-step reasoning

Can coordinate complex workflows and adapt

# AI Autonomy - Transformation Towards Agentic AI



# Leading in AI Excellence & Solutions



## Recognized Nationally

FY24 - Ranked 11 in US Health Systems  
 FY25 - Anticipate a Top 5 Ranking



## Excellence

Increasing our AI/RPA Solutions  
**FY23** - 60 > **FY24** - 165 >> **FY25** - 309



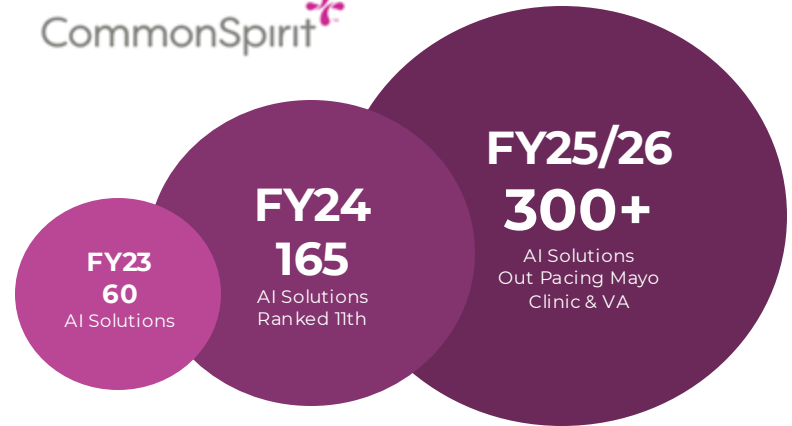
## Governance

Processes that is allowing safe increase in activity.



## Building Trust

AI Literacy Roadmap  
 & Patient Advisory Council



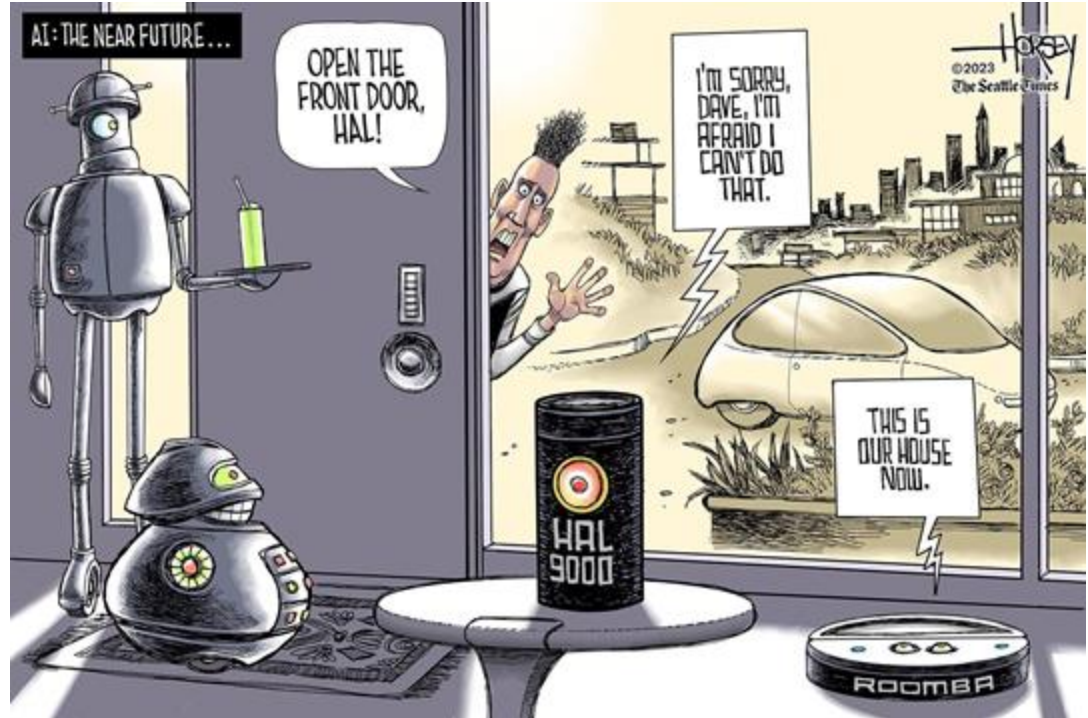
AI/RPAs	VA	CommonSpirit
In Production	130	165
In Pipeline	69	58
Initiated	27	86
<b>Total</b>	<b>228</b>	<b>309</b>



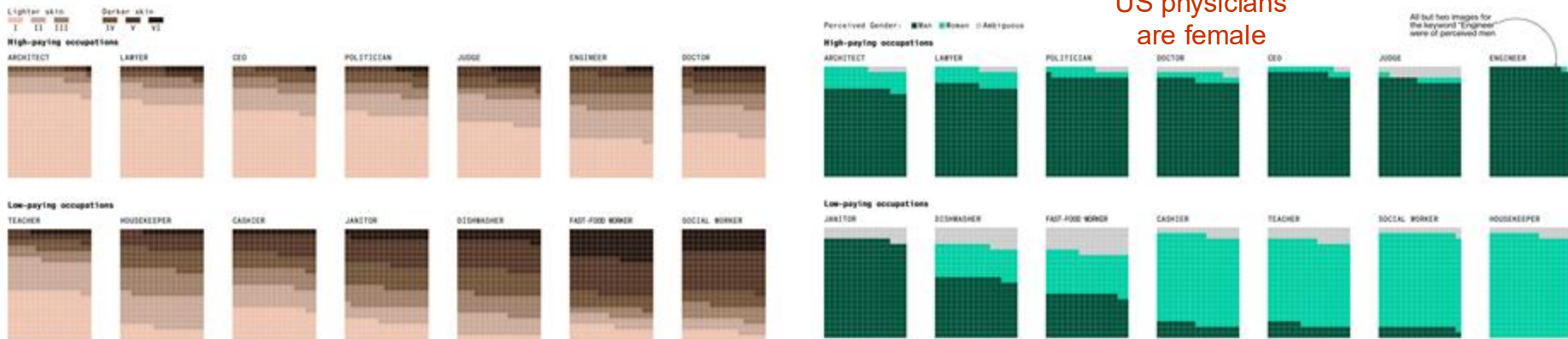
What could possibly  
go wrong?

# Risks of Generative AI

1. Exponential propagation of biases in the underlying data set could create unintentional consequences
1. AI hallucinations- consumers of AI generated products cannot easily differentiate discrete data elements from AI generated approximations
1. Data Set security and algorithm transparency



# What does data set bias look like?



\* Nearly 40% of US physicians are female

**Task:** Provided a standard data set to learn from, generative AI created 5100 images representing people in a respective job role. Researchers then classified the images by skin color and gender. The results were equally as biased for criminals, drug dealers and terrorists. \*Bloomberg Technology & Equality February 2023

# What are Generative AI Hallucinations?

This is part of a note generated by Artificial Intelligence Software

The blue items are distinct data elements I reported to the gen AI

The red data elements are what the AI “created” that had a probability of existing in a 37 yo female with gallstone disease

Without the color coding, how does the reader know which discrete data element is factual?

**\*\*Chief Complaint:\*\*** Right upper quadrant abdominal pain

**\*\*History of Present Illness:\*\*** The patient is a 37-year-old female with a history of diabetes who presents with right upper quadrant abdominal pain. The pain is sharp and intermittent, and it has been present for the past 2 days. She also reports nausea and vomiting. She has no other significant medical history.

**\*\*Past Medical History:\*\***

\* Diabetes

\* Hypertension

\* Hyperlipidemia

**\*\*Social History:\*\***

\* Smoker

\* Former alcoholic

\* No illicit drug use

**\*\*Physical Examination:\*\***

\* Vital signs are within normal limits.

\* The patient is in no acute distress.

\* Her abdomen is soft, non-distended, and tender to palpation in the right upper quadrant.

\* There is no rebound tenderness or guarding.

\* The rest of her physical examination is unremarkable.

**\*\*Laboratory Findings:\*\***

\* White blood cell count is 12,000/ $\mu$ L.

\* Hemoglobin and hematocrit are within normal limits.

\* Platelets are within normal limits.

\* Liver enzymes are elevated.

\* Total bilirubin is elevated.

\* Direct bilirubin is elevated.

\* Alkaline phosphatase is elevated.

\* Gamma-glutamyl transferase is elevated.

\* Lipase is elevated.

\* Urinalysis is negative for blood and leukocytes.

# Platform Misuse: Amazon's hiring tool

AI generated for screening resumes for technical jobs was mistakenly biased against women based upon training with historical data and downgraded resumes with the term “women’s” present.

- Payer AI abuse of prior authorization
- Pharmaceutical marketing manipulation
- Exacerbating health disparities
- Re-identification of anonymized data (data breach)
- Monetization of data without consent



# Questions?

# In case of a shy audience, we asked AI, Insightli.....

- How will AI impact patient-provider relationships and trust?
- What are the ethical considerations for using AI in healthcare?
- How can we ensure data privacy and security with AI systems?