

SAU 2026 MEETING

AI as a Research Tool.

Accelerating resident/faculty research productivity and collaboration

LEVERAGING AI IN RESEARCH

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IOWA

DISCLOSURES

Disclosures. Industry partnerships.

Artera	Speaker		
BriNetwork	Speaker		
Evidently	Consultant · Stock		
QI Grant Support	AUA · Pfizer / Astellas	Clinical Decision Support	Sanofi

Learning Objectives

1

A quick overview of AI in QI /Research.

Focus: developing AI skills: prompting, orchestration.

2

The Iowa work using AI in real-world EHR data.

Emphasis: speed of development (2024/2025-now) and the scope.

Pivot from administrative/operational.

3

Practical considerations to **spark your research program.**

Part One

A unique historical moment.

Unlike the challenges of
the initial EHR era ☒
physicians can now **build**
with tools.

BUT WITH AI DEVELOPMENT AT THE

speed of trust.

THE QUESTION

Hype ☒ or reality?

THE PULL: SINCE NOVEMBER 30, 2022

AI is everywhere in headlines

Adoption among physicians, residents, and students has moved fast outside the institution — faster than within the institution itself.

THE PUSHBACK

Academic medicine rightly demands evidence.

Concerns about hallucinations and confabulations are real.
Skepticism is a feature, not a bug.

THE QUESTION

Is there a healthy balance— one in which the groups **LEAD** to **develop** the tools and **benchmark** the real accuracy

Part Two

Three engines of AI QI & research **success.**

All three engines work together.

1

**Understanding the
Language.**

2

**Use Tools for
Personal Processes &
Productivity, then within
the EHR as available**

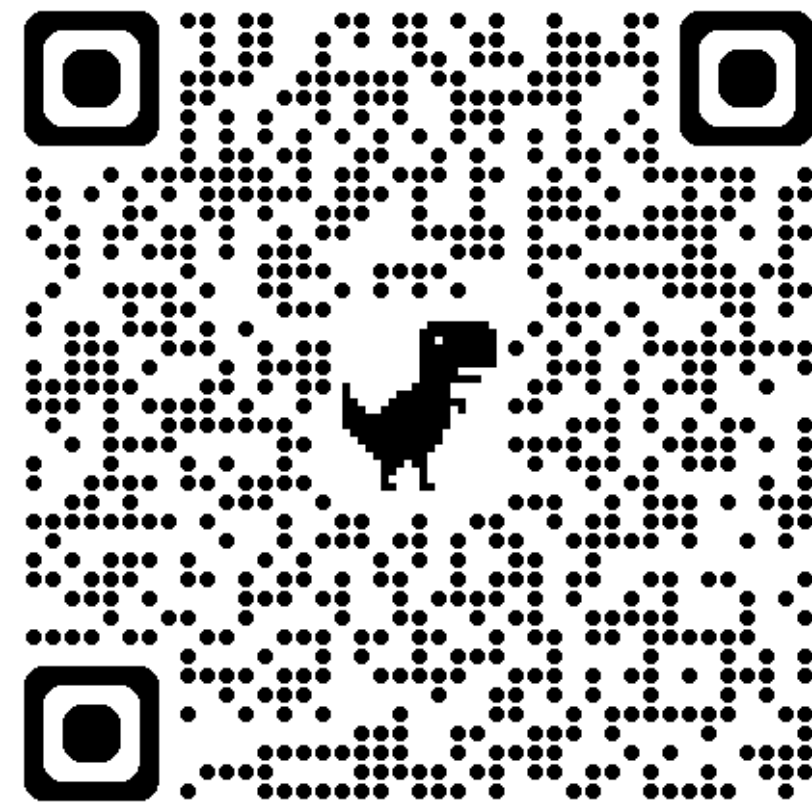
3

Institutional Support

Learn the Language.

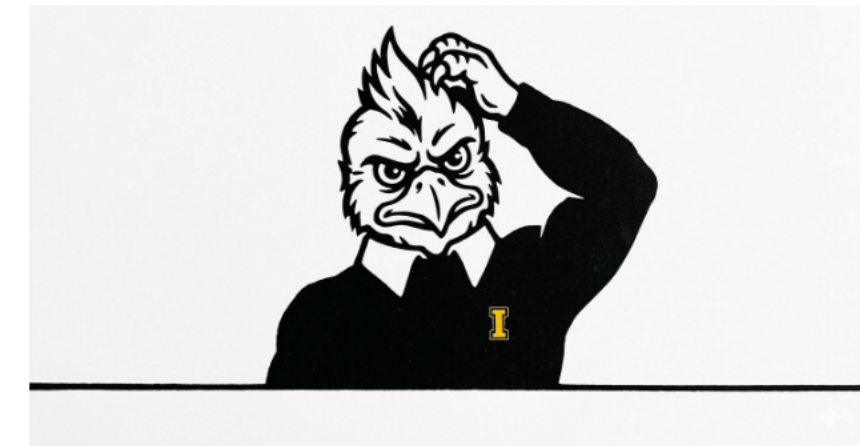
Prompts. Skills. Agents. Learn from AI.

AI literacy.



UNDERSTAND

AI



EXPLANATIONS OF CONFUSING AI VOCABULARY

Non-embedded vs. Embedded tool.

Write Prompts. Develop Skills. Orchestrate Agents.

Non-embedded

LLMs available to everyone.

- ☒ Frontier LLMs (ChatGPT, Claude, Gemini, Copilot).
- ☒ Open Evidence and UpToDate
- ☒ Functionality: Search vs. chat vs. cowork vs. build/code
- ☒ A growing catalog of "skills" being crowd-sourced

Embedded

AI inside the EHR.

- ☒ EHR vendor or 3rd part or build
- ☒ **Institutionally: Buy EHR vendor or Buy 3rd party or Build**
- ☒ Functionality: extremely variable
- ☒ Growing at different speeds and governance

Sequential tiers of departmental investments.

Pivot existing research time.	Re-direct already-protected effort toward AI projects. Zero net new spend.
Expand protected time for AI.	Add hours to a faculty member's allocation, or carve a resident research block. Modest cost, fast signal.
Dedicate real resources and seat at table	Talent, tools, license seats, statistician support, Ras. The tier that compounds.

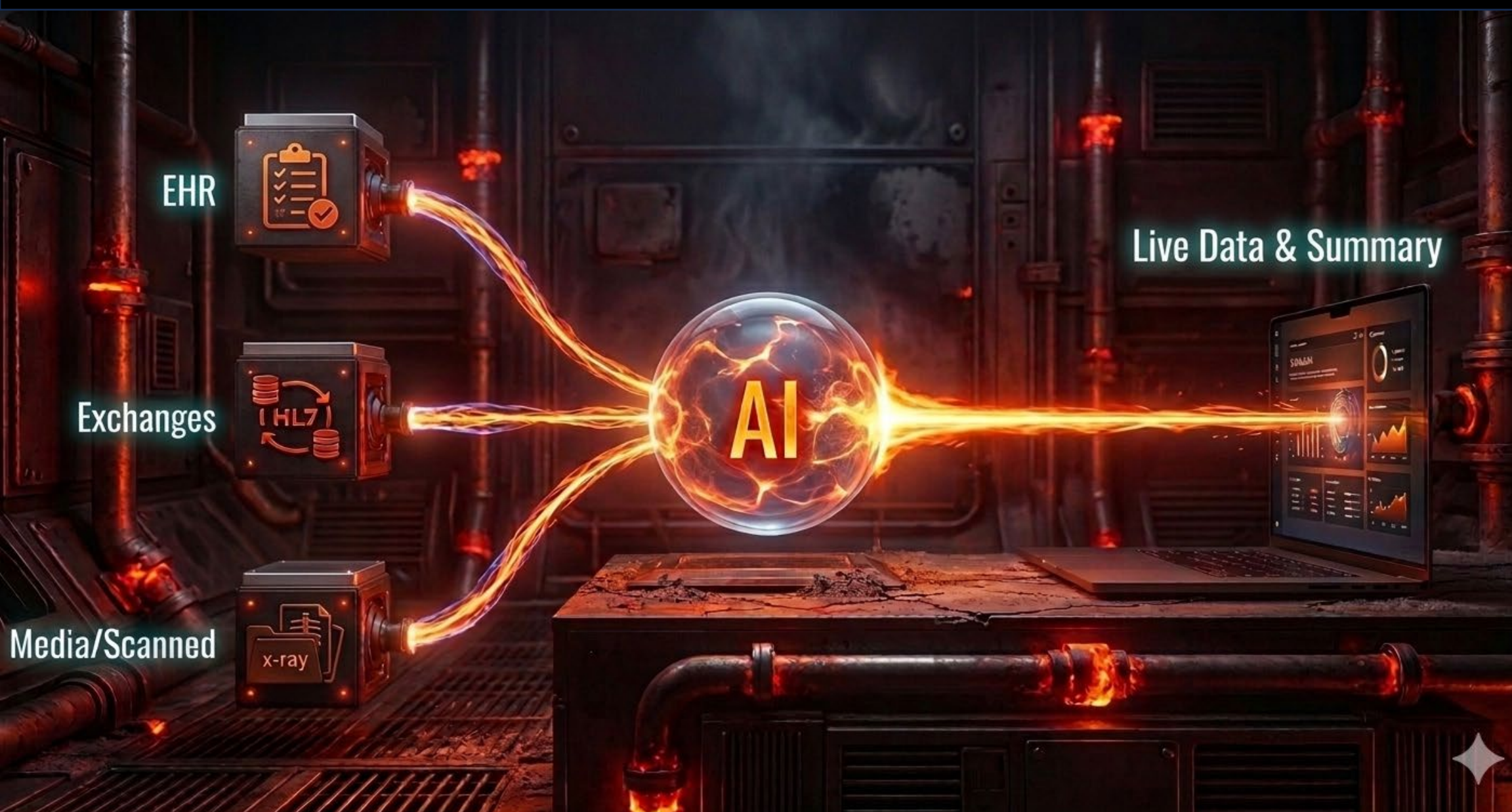
Part Three

Accelerators of AI QI & research **success at Iowa.**

The Iowa Approach: Parallel efforts ☒ not sequential.

Concurrent threads. Projects reinforce each other.

THREAD 01 Embedded EHR tool use.	THREAD 02 Prompting in the chart.	THREAD 03 Opportunistic grant applications and industry partnerships.
THREAD 04 QI initiatives with “building in production”.	THREAD 05 Talent recruitment. If you build it they will come.	THREAD 06 Overlap with GME education and University symposium.



AI Medical Summarization

Patient Summary

✓ Diagnosis

✓ Treatment History

✓ Follow-Up Plan

AI Data Extraction

Gleason Score: 4+3

Tumor Size: 3.2 cm

Lymph Node Positive

EHR Notes

Pathology Report

Part Three -Iowa Spotlights

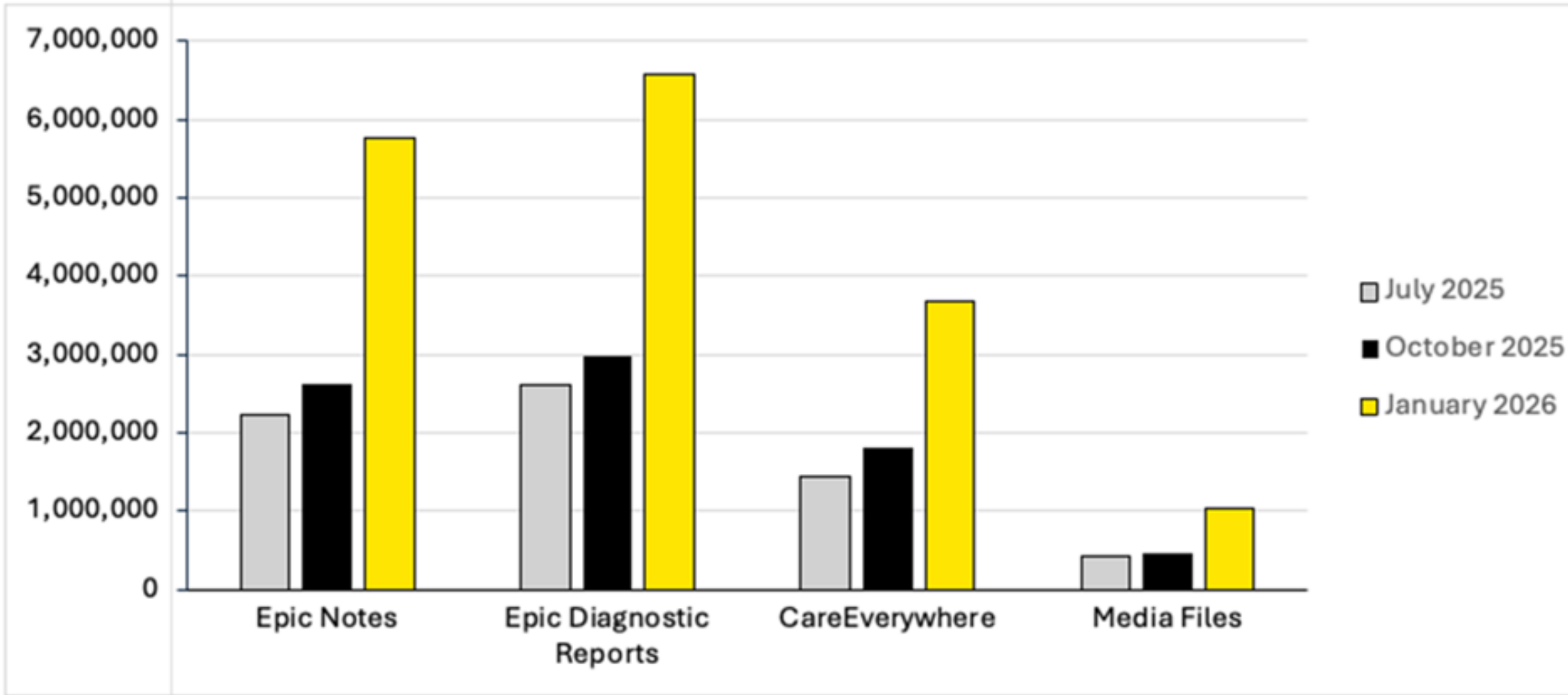
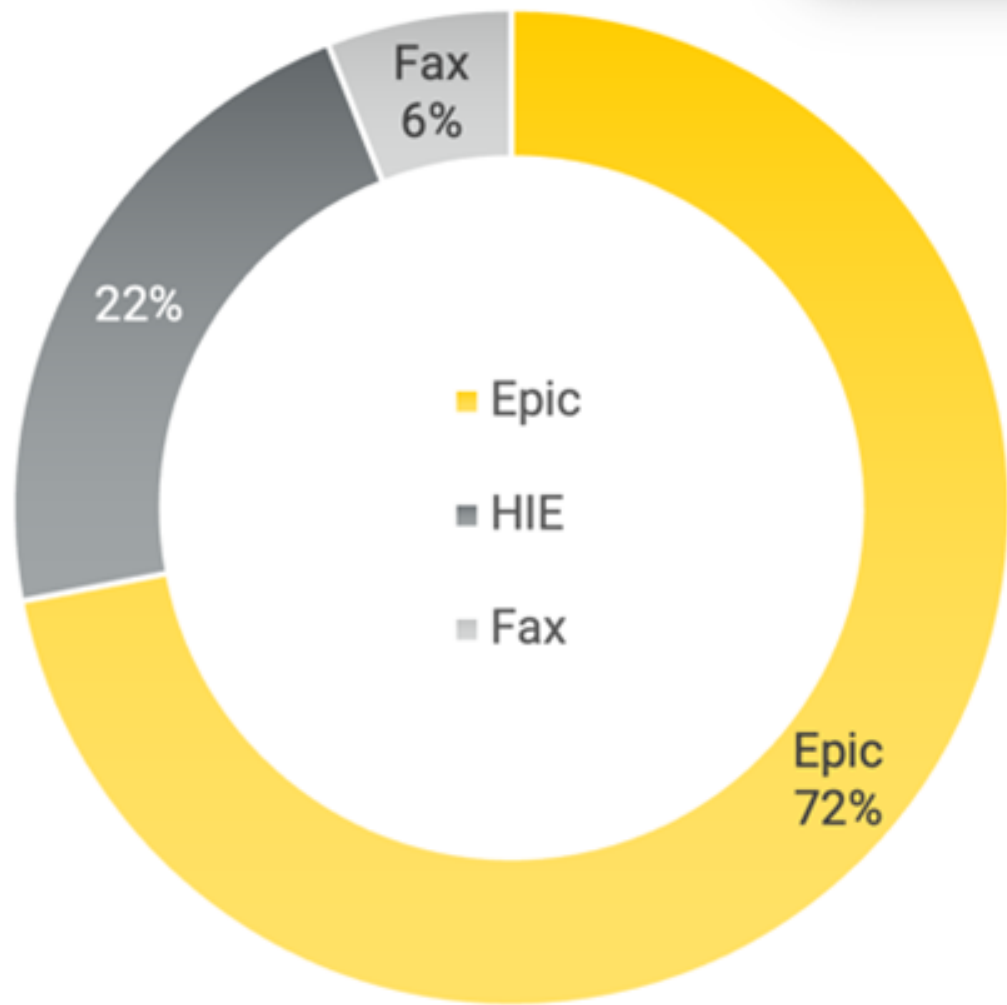
The AUA QI Grant.

Using embedded AI to improve germline genetic testing in advanced prostate cancer — and benchmarking it against manual abstraction.



Institutional Ingestion of Data at Scale

Variables	Total RWD in 3-day period #1: 7/23/25 to 7/25/25	Total RWD in 3-day period #2: 10/29/25 to 10/31/25	Total RWD in 3-day period #3: 1/27/26 to 1/29/26	Average RWD in one day in period #1	Average RWD in one day in period #2	Average RWD in one day in period #3
<i>Users</i>						
Unique users	997	1,202	1,268	N/A	N/A	N/A
<i>Selected Inputs</i>						
Epic EHR notes (% total)	2,231,956 (33%)	2,618,253 (33%)	5,759,043 (34%)	743,985	872,751	1,919,681
Epic EHR diagnostic reports (% total)	2,622,172 (39%)	2,983,249 (38%)	6,569,194 (39%)	874,057	994,416	2,189,731
Health information exchange (% total)	1,451,217 (22%)	1,817,744 (23%)	3,675,403 (22%)	483,739	605,915	1,225,134
Media files (% total)	412,481 (6%)	465,365 (6%)	1,029,788 (6%)	137,494	155,122	346,596
Total notes/reports + media files	6,717,826	7,884,611	17,043,428	2,239,275	2,628,204	5,681,143



Institutional Output of Summaries at Scale

Variables	Total RWD in 3-day period #1: 7/23/25 to 7/25/25	Total RWD in 3-day period #2: 10/29/25 to 10/31/25	Total RWD in 3-day period #3: 1/27/26 to 1/29/26	Average RWD in one day in period #1	Average RWD in one day in period #2	Average RWD in one day in period #3
Output						
System generated summaries	215,427	347,825	760,470	71,809	115,942	253,490
User generated summaries	NA	2,000	11,675	NA	667	3,891

January 2026,
Iowa generated **13,600,000**
summaries, including
81,080 custom summaries.

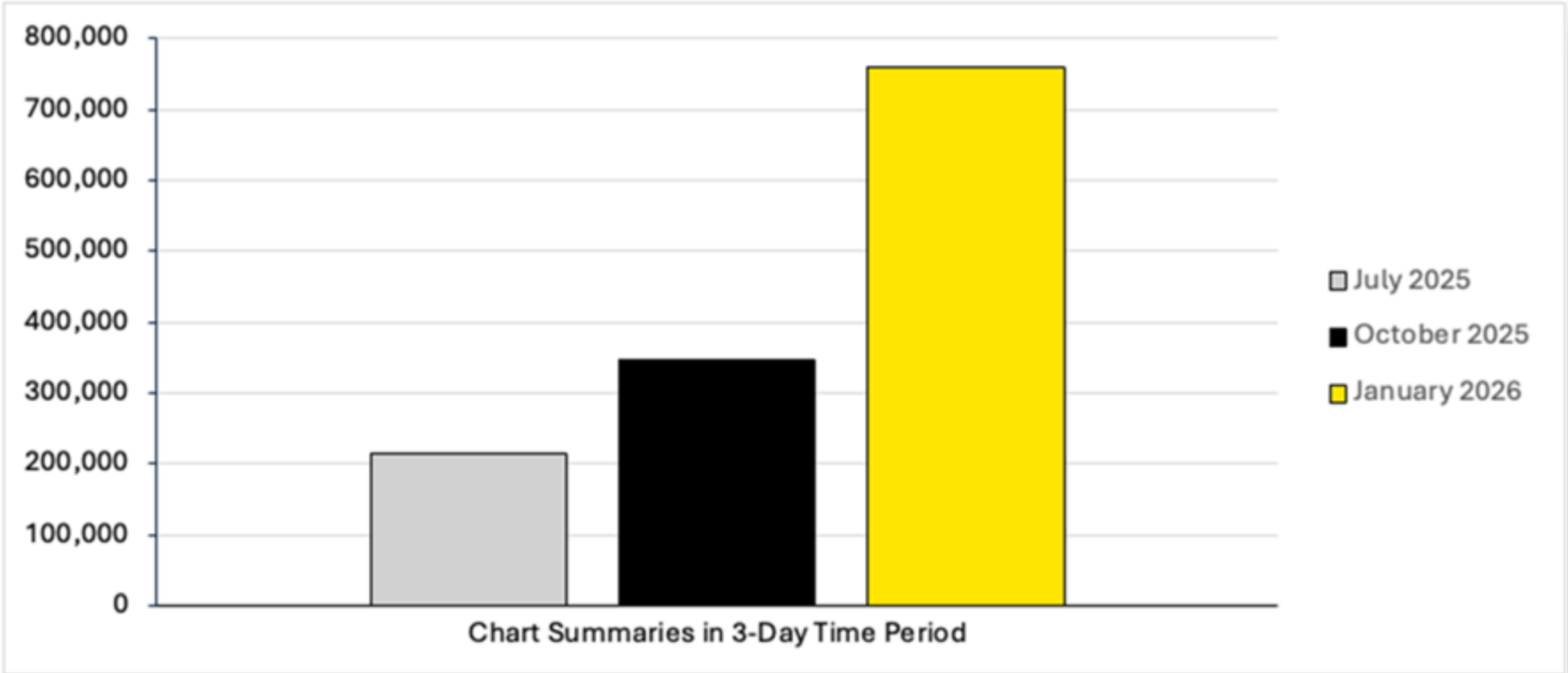


Figure A.7. Institutional output volume of AI Chart Summaries during a 3-day periods in July 2025, October 2025, and January 2026

Encounter Timeline

■ Inpatient ■ Emergency ■ Office ■ Other

2009

2025

☒ All Data Loaded 1,160 Records Found

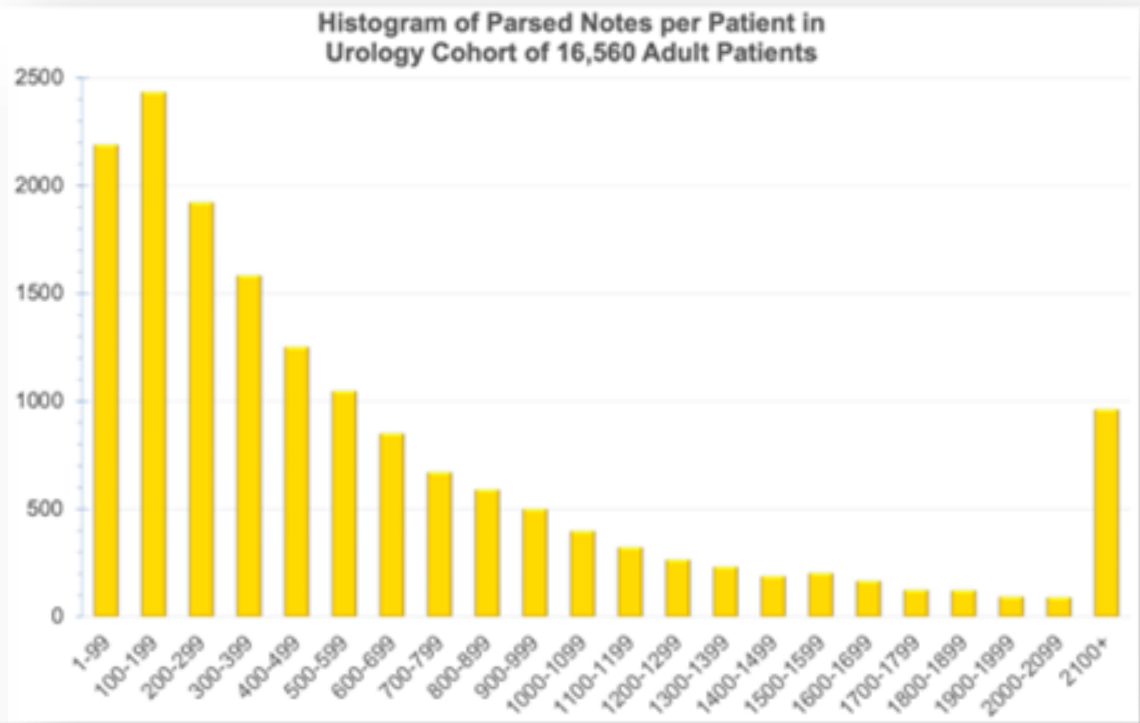
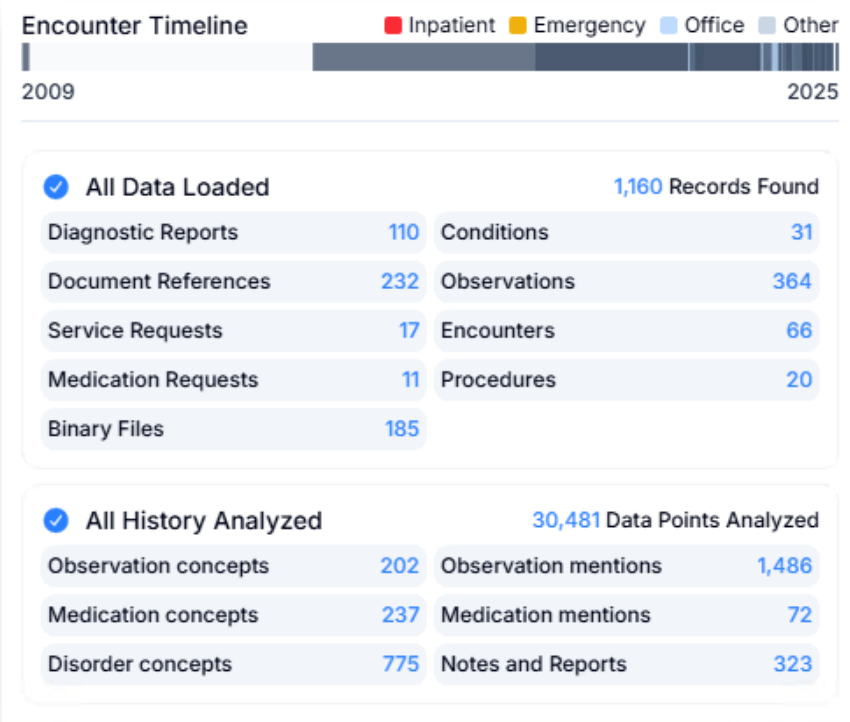
Diagnostic Reports	110	Conditions	31
Document References	232	Observations	364
Service Requests	17	Encounters	66
Medication Requests	11	Procedures	20
Binary Files	185		

☒ All History Analyzed 30,481 Data Points Analyzed

Observation concepts	202	Observation mentions	1,486
Medication concepts	237	Medication mentions	72
Disorder concepts	775	Notes and Reports	323

Urology Data Processing Study - DIAGNOSIS

Description: Average data processed across a total of 16,561 unique patients that had at least one appt between 08-01-2024 and 07-31-2025 at any these locations: UROLOGY ONCOLOGY, IRL UROLOGY, UROLOGY



Total parsed notes in 16,560 pt cohort was **11,478,564**

16,560 patients x 693.2 notes/pt x 273 words/note =
Total parsed words in the 16,560 cohort was **3,133,647,792**

Average words from notes parsed per patient was **189,230**.

...

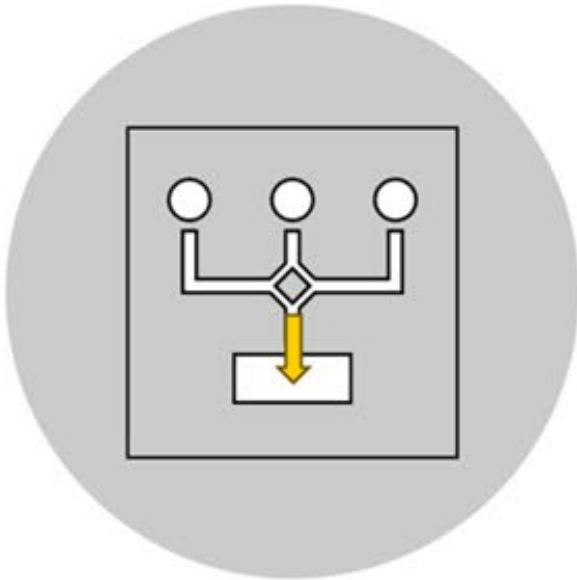
Average hardcover book is 220 words,
so 189,230 / 220 is analogous to **860** page book per patient



Average Data Elements per Patient and Total Data Elements in 16,560 Urology Patients (8/1/24-7/31/25)		
Date element	Average	Total data elements
<i>Raw Record Data</i>		
Diagnostic reports	305.7	5,061,730
Conditions	419.5	6,947,417
Document references	524.0	8,677,606
Observations	1,701.6	28,177,668
Service requests	354.7	5,873,170
Encounters	258.9	4,287,715
Medication requests	249.2	4,126,586
Binary files	349.8	5,791,860
Procedures	29.3	484,546
Outside records	129.5	2,144,520
<i>Parsed and summarized data</i>		
Observation concepts	235.9	3,905,842
Observation mentions	3,096.8	51,282,346
Medication concepts	627.7	10,395,043
Medication mentions	344.5	5,704,920
Disorder concepts	1,302.8	21,573,871
Notes and reports	695.0	11,509,200
Parsed Notes	693.2	11,478,564
<i>Word counts</i>		
Word count per parsed note	273.0	
Total words parsed per patient		189,230
Total words parsed in cohort		3,133,647,972

Big data pull, by cancer type.

Average data elements processed per patient – prostate, bladder, kidney cancer cohorts at Iowa.



BIG DATA PULL

INITIAL EVALUATION OF AI
PLATFORM: **CANCER TYPE**



Variable
Diagnostic reports
Conditions
Document references
Observations
Service requests
Encounters
Medication requests
Binary files
Procedures
Observation concepts
Observation mentions
Medication concepts
Medication mentions
Disorder concepts
Notes and reports
Outside records
Parsed Notes
Word count per parsed note

Prostate (n=2,476)	Bladder (n=1,620)	Kidney (n=1,187)
251.1	375.7	330.3
347.3	415.1	365.7
449.6	645.9	543.7
1,448.7	2,116.8	1,845.0
289.0	429.6	375.8
218.6	254.6	240.4
209.1	371.4	294.6
302.8	428.9	359.0
30.0	48.9	31.1
214.7	260.7	248.5
2,687.1	4,061.2	3,590.7
583.7	699.2	647.4
299.0	493.9	418.0
1,214.8	1,366.2	1,332.0
589.9	867.8	743.8
112.9	143.7	139.9
591.8	869.1	742.1
273.9	253.5	259.1

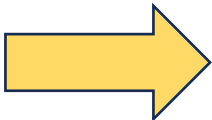
Two tools

AIMS

AI Medical Summarization.

Produces structured patient summaries — Diagnosis, Treatment History, Follow-Up Plan — for clinician review.

- Patient summary cards
- Custom summaries by clinical question

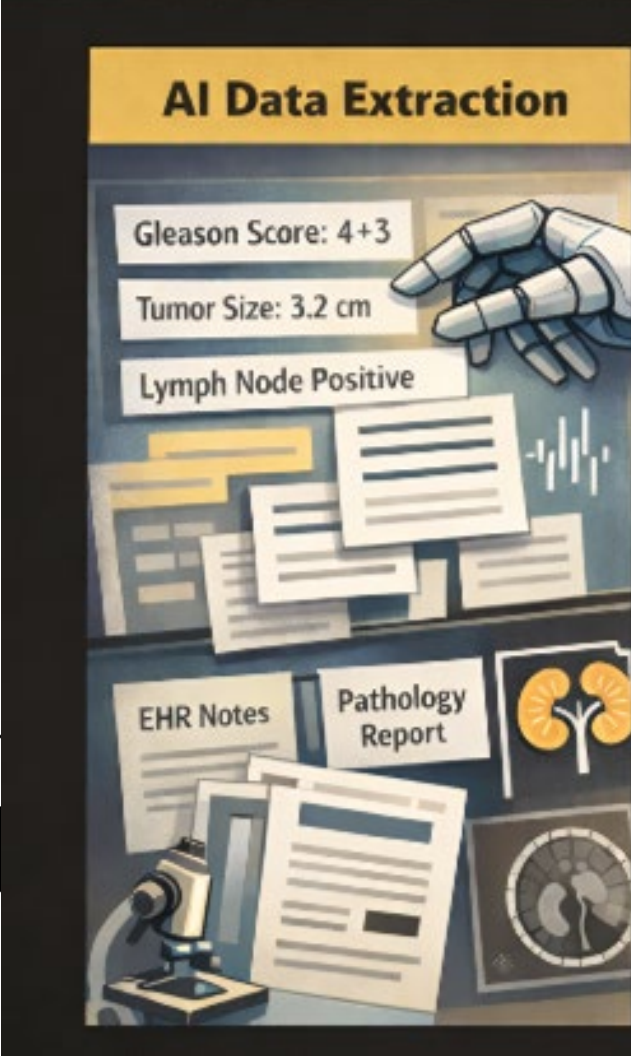


AIDE

AI Data Extraction.

Pulls structured variables out of unstructured notes — Gleason scores, tumor size, lymph node status, treatment dates.

- EHR notes · Pathology reports
- Imaging reports · Outside records



THE POINT

One writes **prose**. The other pulls **data**.

Use your prompting skills in the chart

THE PROMPT · 760 WORDS

Edit Custom Summary

Describe the information you want summarized in each chart you open. The summary will save to your current overview profile.

Ex: "Create a table of recent ECHOs, flagging abnormal impressions in red."

Required output is table format, with the table having all the 7 sections below. Role description: You are an intelligent prostate cancer researcher with expertise in prostate cancer and you are creating a comprehensive database table that is accurate that can also be used clinically. Output: Make a prostate cancer table with the title of "Nepple PCa Variables (Comprehensive)" in bold. Create a comprehensive detailed table of variables related to prostate cancer that will include section headings on "1Patient" and "2Diagnosis" and "3Staging" and "4Management" and then sections on "5Advanced Prostate Cancer?" and "6Genetic Testing and "7APC GGT Care Gap". First column with variable name, 2nd column with data, and third column with comments including data if applicable. The information for sections should include below, but can also add additional valuable rows. Depending on the question, the output may be specific data or it may be in the format of "Yes" or "No" or "N/A". The rows under 1Patient should include: Age at diagnosis of prostate cancer, summary of major comorbidities not including prostate cancer, medication number with active outpatient medications, and a "comorbidity number" from 0 to 100 that estimates comorbidity severity from 0 no comorbidity to 100 the maximum possible comorbidity and always give a number (don't use "N/A"). The rows under 2Diagnosis should include: highest PSA prior to prostate biopsy, Date of diagnosis based on the first prostate biopsy that showed prostate cancer, years and months since first prostate biopsy with prostate cancer, "Highest Grade Group on Biopsy" which is from prostate biopsy, NCCN prostate cancer risk group of very low or low or favorable intermediate or unfavorable intermediate or high or very high, calculate the total number of prostate biopsies (including dates) and calculate the total number of prostate biopsies with cancer present, and a "prostate cancer number" from 0 to 100 that estimates prostate cancer severity from 0 (very low risk prostate cancer with 1 core of GG1 with PSA less than 10) to 100 the maximum possible prostate cancer severity (PSA over 100 with GG5 disease and lymph node and bone metastatic disease and visceral metastatic disease) and if the patient has prostate cancer then always give a number (don't use "N/A" unless has never been diagnosed with prostate cancer).

The rows under 3Staging should include: detailed findings of any imaging studies (CT or MRI or bone scan or PET/CT) related to prostate cancer. Specifically also include "MRI with extracapsular extension", "MRI with seminal vesicle invasion", MRI with lymphadenopathy, "Imaging evidence of metastatic disease" based on imaging evidence of metastatic disease, and "Overall evidence of metastatic disease" based on imaging or prostatectomy with lymph node positive or clinical notes. The rows under 4Management should include: date of first treatment with prostatectomy or prostate cancer radiation, "Highest Grade Group on Prostatectomy" which is from prostatectomy pathology and put "N/A" if patient has not had prostatectomy, If applicable then calculate and give the time (years and months) of time since completion from prostatectomy surgery and/or radiation therapy or both, IF has had prostatectomy then add a row for summary of prostatectomy pathology including TNM pathologic stage, and IF has had prostatectomy then add a row for "Number of Positive Lymph Nodes" and "Extracapsular Extension at Prostatectomy?" and "Seminal Vesicle Involvement?", and row for biochemical recurrence. The rows under 5Advanced Prostate Cancer should include: "highest grade group" which is the highest grade group from biopsy for prostatectomy, "advanced prostate cancer which is defined as "high risk or very high risk or lymph node positive or metastatic or biochemical recurrence" The rows under 6Genetic Testing should include: if there is a family history of prostate cancer, and if the answer is "Yes" then display in bold if patient has and if patient has had germline genetic testing. The rows under 7APC GGT Care Gap should include: "FH of PC" for family history of prostate cancer, "GERMLINE PC CARE GAP" based on if the patient has either advanced prostate cancer or family history of prostate cancer and they have NOT had germline prostate cancer testing and if answer for that is Yes then put details of that information and make the font bold and font color red. At the end add a row called Keywords and extract the top 10 most important keywords associated with the prostate cancer, with keywords being the key terms or short phrases that are strongly associated with the prostate cancer. Then at the very bottom generate a 3-sentence summary that best summarizes the patient's prostate cancer with respect to diagnosis and staging and management.

Cancel

Generate Your Summary

Q: Does a long prompt confuse the platform?

A: Nope.

Prostate cancer · comprehensive prompt — the 7-section schema returns reliably across patients without truncation.

760	60	PROMPTS
words in prompt	variables returned	

21 · PROSTATE CANCER COMPREHENSIVE PROMPT

Required output is table format, with Custom Summary

Nepple PCa Variables (Comprehensive)

Variable	Data
1Patient	
Age at diagnosis of prostate cancer	72
Summary of major comorbidities not including prostate cancer	Coronary artery disease, hypertension, hyperlipidemia, status melar
Medication number with active outpatient medications	9
Comorbidity number	55
2Diagnosis	
Highest PSA prior to prostate biopsy	8.5 ng/mL
Date of diagnosis based on the first prostate biopsy that showed prostate cancer	12/10/2024
Years and months since first prostate biopsy with prostate cancer	0 years
Highest Grade Group on Biopsy	Grade 2

NCCN prostate cancer risk group	Favorable intermediate risk
Total number of prostate biopsies (including dates)	3
Total number of prostate biopsies with cancer present	3
Prostate cancer number	45
3Staging	
Detailed findings of any imaging studies (CT or MRI or bone scan or PET/CT) related to prostate cancer	MRI 10/24/2024: PI-RADS 5 lesion in the left lobe, peripheral zone, indeterminate for metastatic disease. Intertrochanteric left femur lesion, enlarged by convincing metastatic disease in the pelvis.
MRI with extracapsular extension	No
MRI with seminal vesicle invasion	No
MRI with lymphadenopathy	No
Imaging evidence of metastatic disease	No
Overall evidence of metastatic disease	No

4Management

Date of first treatment with prostatectomy or prostate cancer radiation

Highest Grade Group on Prostatectomy

Time since completion from prostatectomy surgery and/or radiation therapy or both

Summary of prostatectomy pathology including TNM pathologic stage

Number of Positive Lymph Nodes

Extracapsular Extension at Prostatectomy?

Seminal Vesicle Involvement?

Biochemical recurrence

5Advanced Prostate Cancer

Highest grade group

Advanced prostate cancer

6Genetic Testing

Family history of prostate cancer	Yes	Father
Germline genetic testing	No	

7APC GGT Care Gap

FH of PC	Yes	
GERMLINE PC CARE GAP	YES	Patient has family history of prostate cancer but has NOT had germline prostate cancer testing
Keywords	Prostate cancer, PI-RADS 5 lesion, elevated PSA, Grade Group 2, androgen deprivation therapy, radiation therapy, intertrochanteric left femur lesion, coronary artery disease, hypertension, hyperlipidemia	

is a 72-year-old male diagnosed with favorable intermediate-risk prostate cancer (Grade Group 2) in December 2024, presenting with an 18 mm PI-RADS 5 lesion. Staging included an MRI that showed no evidence of metastatic disease in the pelvis, but an indeterminate lesion in the left femur. He was treated with androgen deprivation therapy and radiation therapy, and has a family history of prostate cancer, but has not undergone germline genetic testing.

Rate this summary

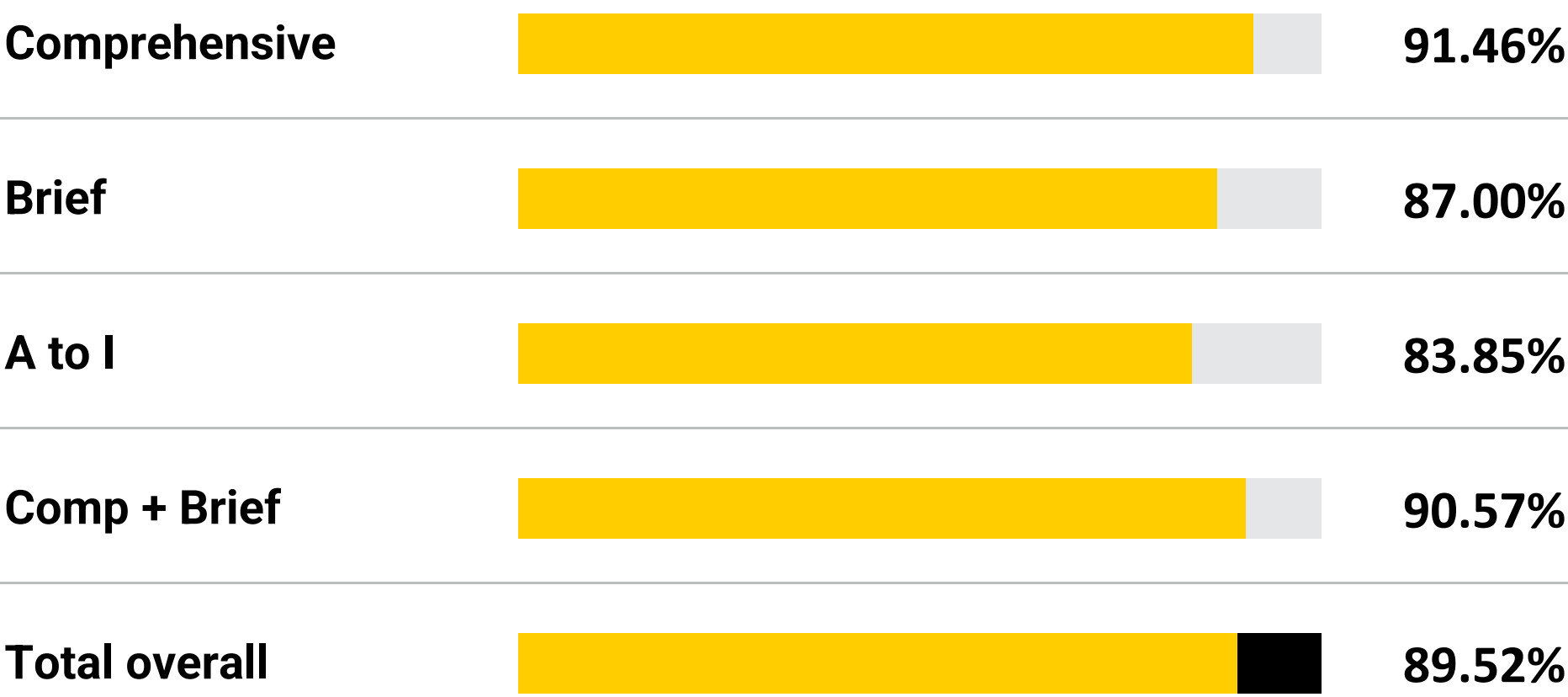
Edit



Validating AI Data Extraction vs Gold Standard Human Review

Prostate cancer benchmarking 📊 accuracy, sensitivity, specificity, PPV, NPV.

50 patients · 4,350 data points · AI data extraction vs. manual abstraction.



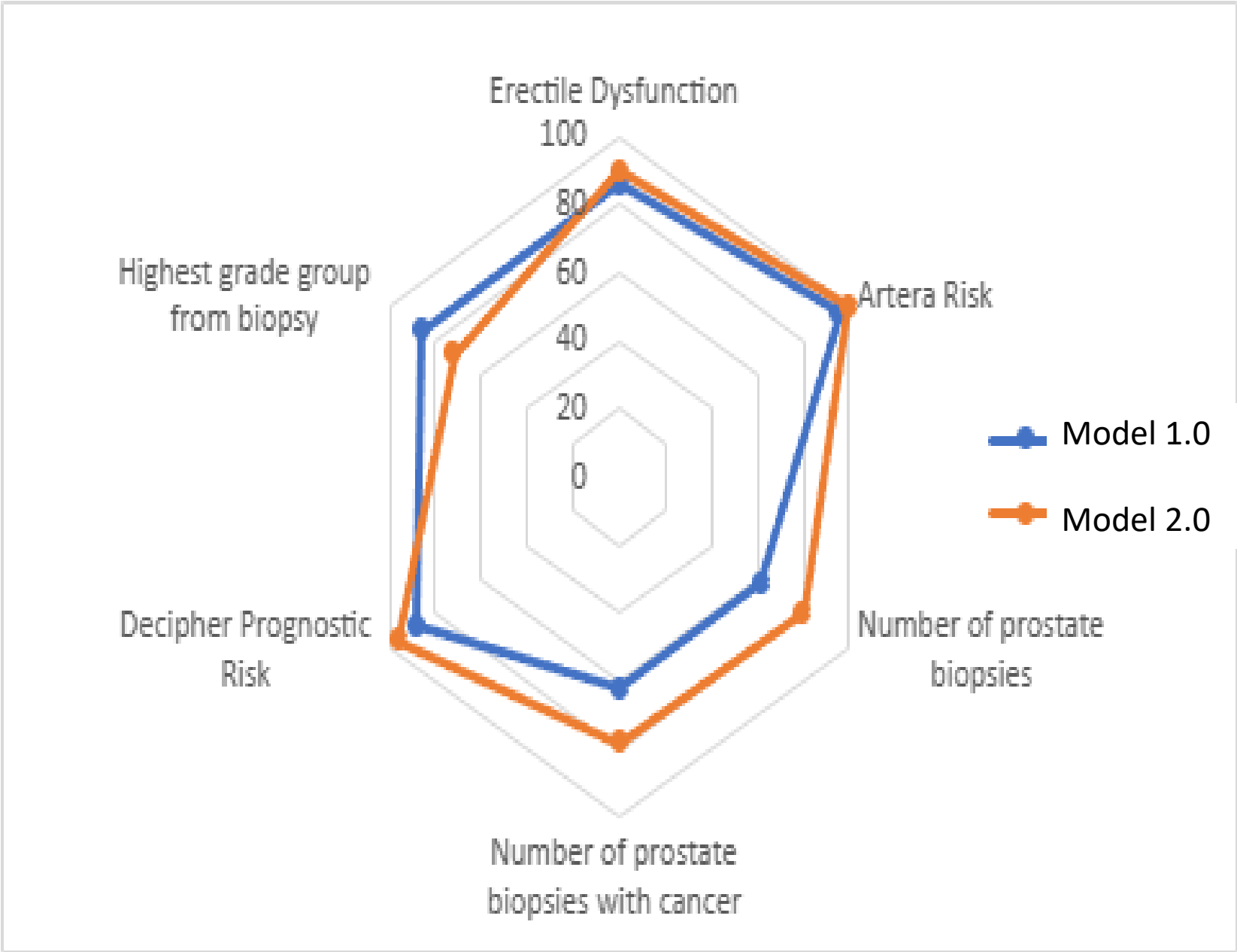
CONTEXT

Comparable prior AI evaluations in cancer cohorts have reported ~65% accuracy.

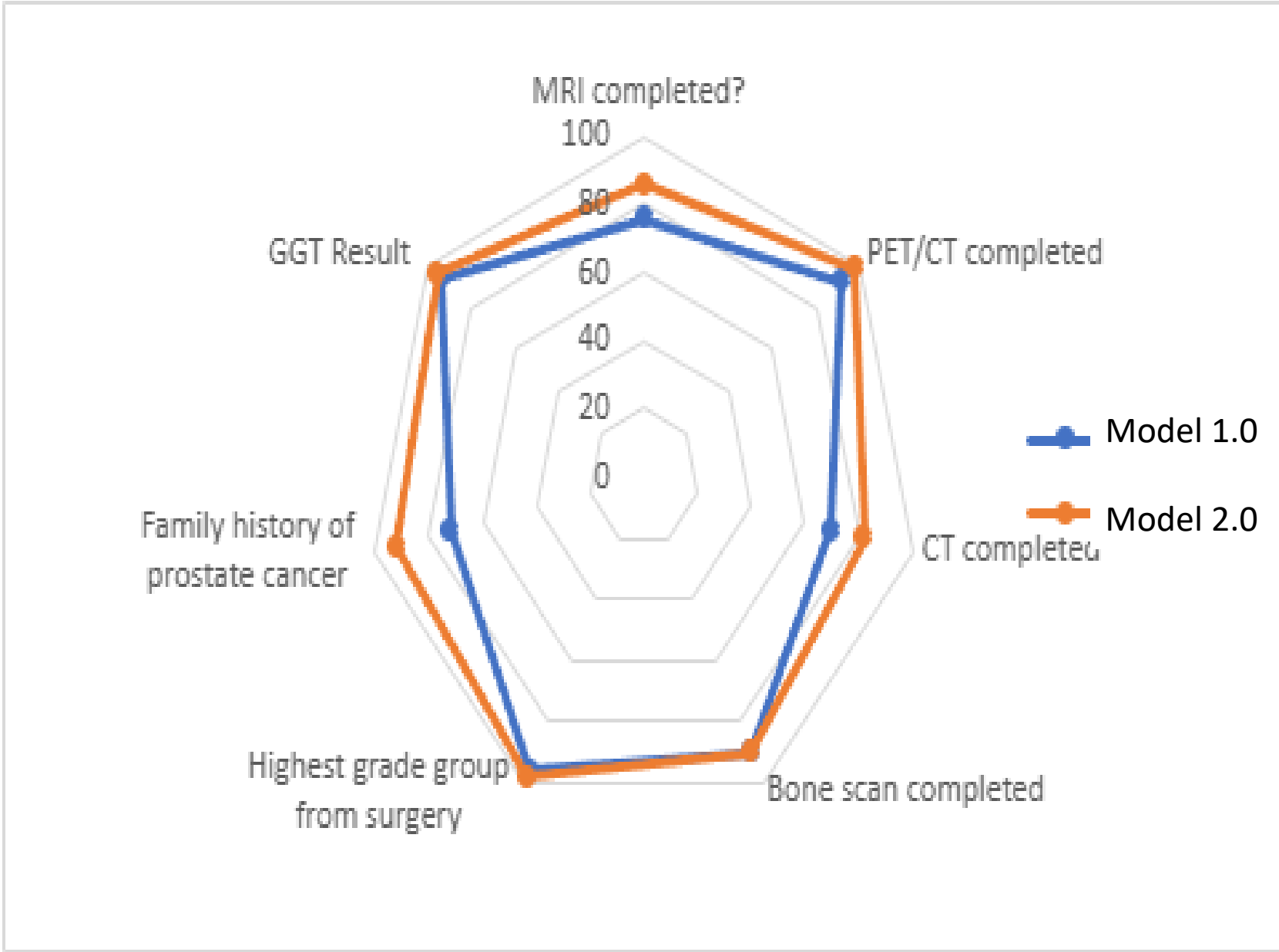
+25% accuracy vs. traditional NLP methods

Iterative evaluation. When the model versions evolve.

Same prompt, same patients.



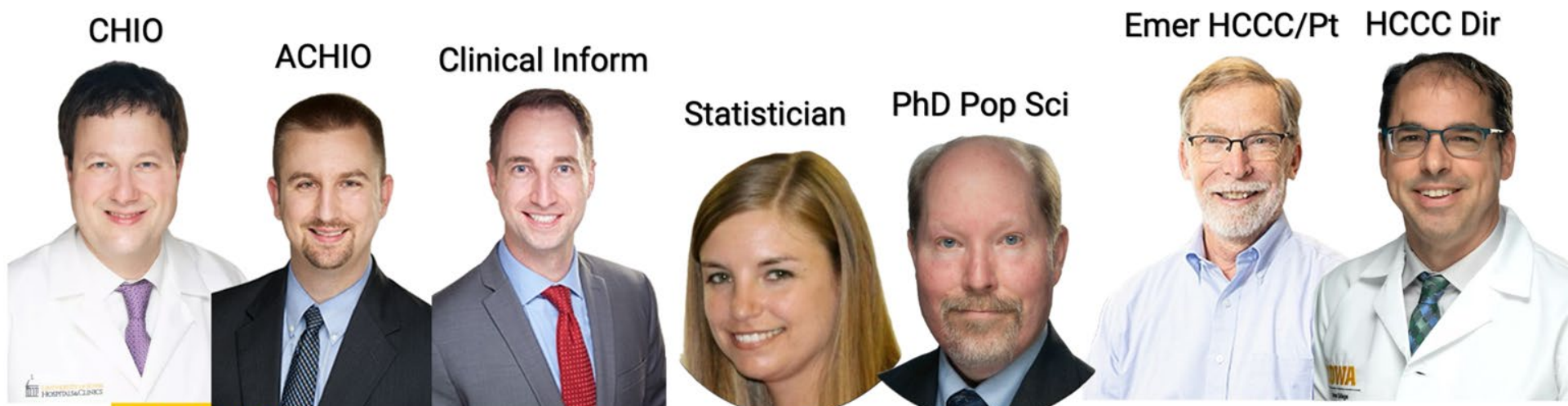
LEVERAGING AI IN RESEARCH



26 · MODEL COMPARISON

Building the Team: Innovation and Support attracts Talent.

PI Nepple · Urology	INT MED Internal medicine	GENETICS Clinical genetics	GENETICS Counseling	BUSINESS AI PHD Analytics faculty	AI PHD STUDENT Methods / modeling	RA Pre-med · 20 hrs/wk
CHIO Chief Health Inform.	ACHIO Assoc. CHIO	CLINICAL INFORM. EHR build	STATISTICIAN Biostatistics	PHD POP SCI Population science	EMER HCCC / PT HCCC liaison	HCCC DIR Cancer center



LEVERAGING AI IN RESEARCH

TEAM

Iowa is **not** Stanford or Harvard ☒ in informatics resources.

But tools level the playing field.

THE ADVANTAGE

Early investment ☒ with tool and time ☒ creates a real head start.

With **real-world patient data** at institutional scale, even mid-sized programs can ship.

THE INSTITUTIONAL DECISION

EHR-native · Vendor · Build.

Every institution is making this decision.

This audience rightly demands evidence.

The groups that **lead are the
ones who **shape** the tools.**

A USEFUL PARALLEL

Robotic surgery. The RAZOR trial.

A field that adopted, evaluated, and refined a technology in parallel — not in sequence — and emerged with both the technology **and** the evidence.

Your posture on AI sets the tone for the field.

145+

academic urology departments represented by the SAU.

A coordinated stance on AI evaluation, governance, and shared data would move the field faster than any single department can.

LEVERAGE

Ability to collaborate.

Multi-site validation, shared prompts, shared cohorts — the kind of work no one program can produce alone.

SAU 2026 · MAY 14, 2026

Thank you.

QUESTIONS, COLLABORATION, FOLLOW-UP

IOWA

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