SAU 2026 MEETING

# AI as a Research Tool.

**Accelerating** resident/faculty research productivity and collaboration

LEVERAGING AI IN RESEARCH


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Physician Value Officer

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WASHINGTON DC

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.**

# 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

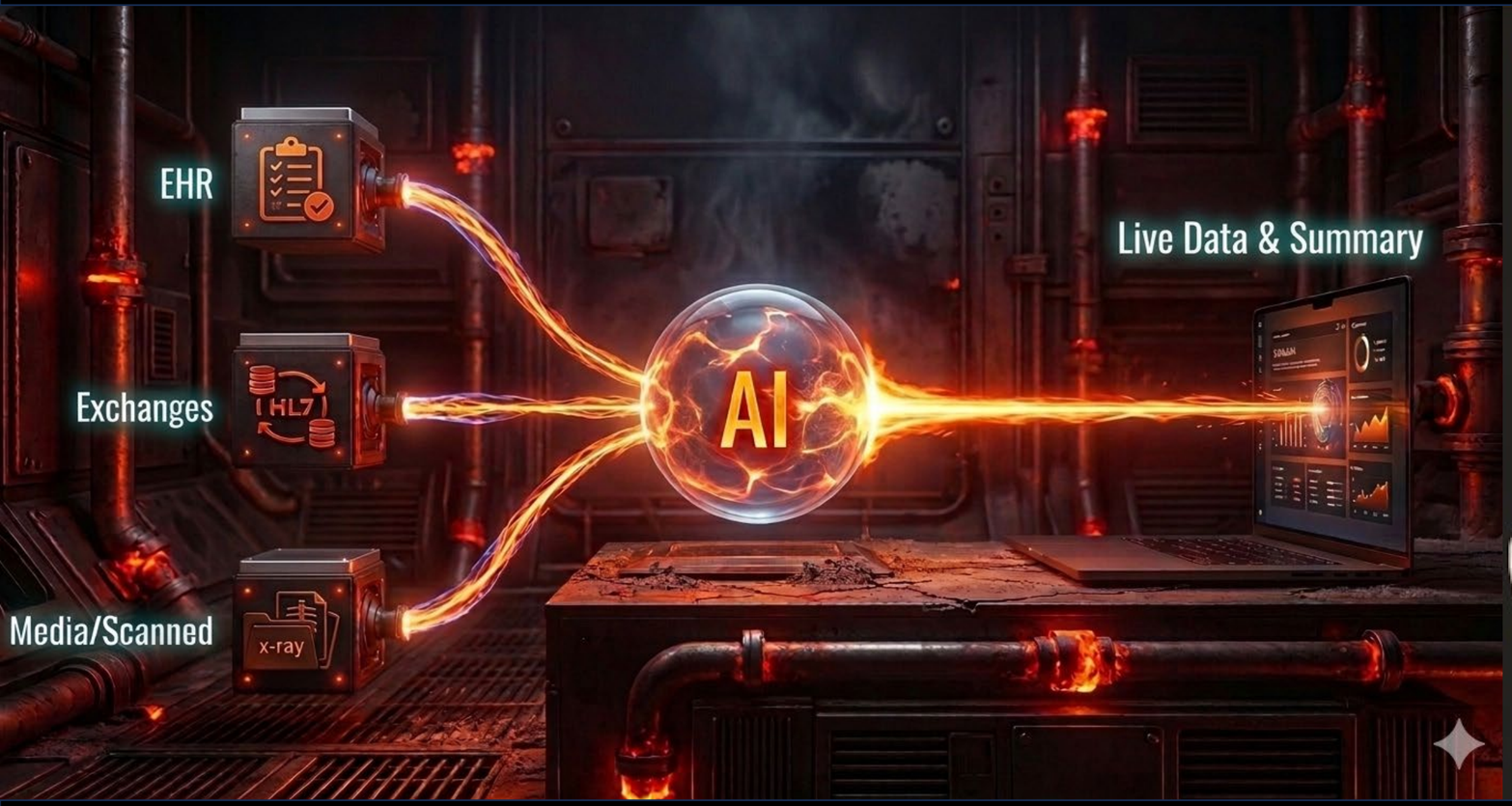
**QI initiatives with “building in production”.**

THREAD 05

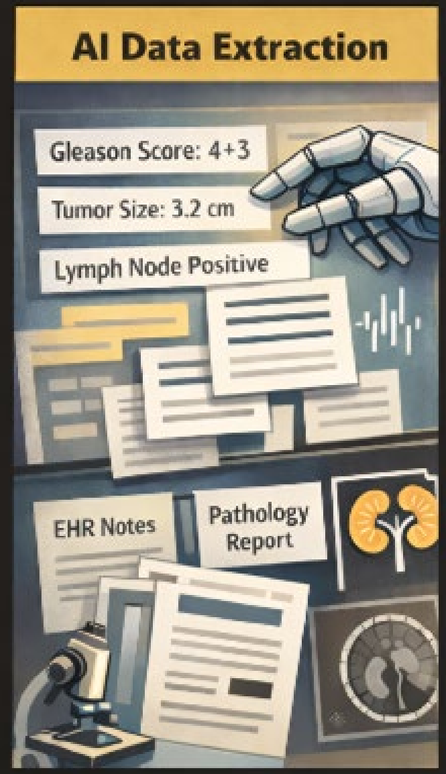
**Talent recruitment. If you build it they will come.**

THREAD 06

**Overlap with GME education and University symposium.**


EHR
Exchanges
HL7
Media/Scanned
x-ray
AI
Live Data & Summary


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

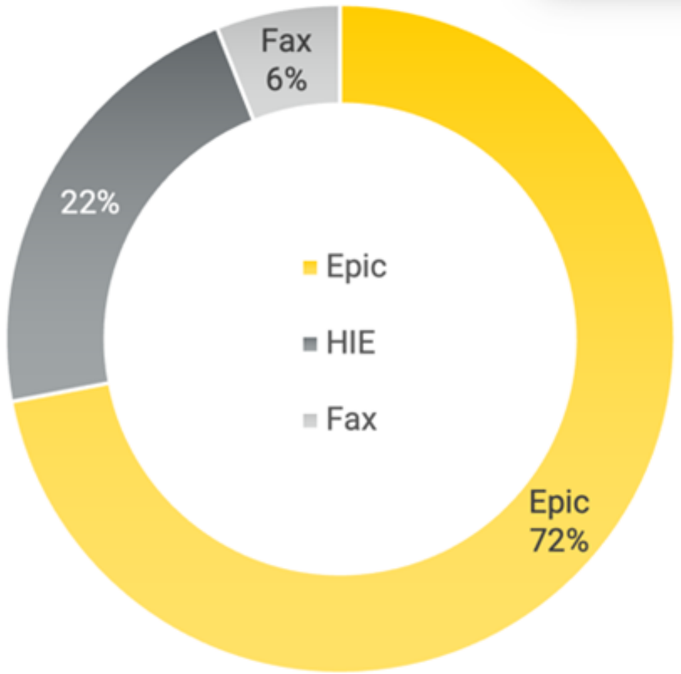
Part Three ·Iowa Spotlights

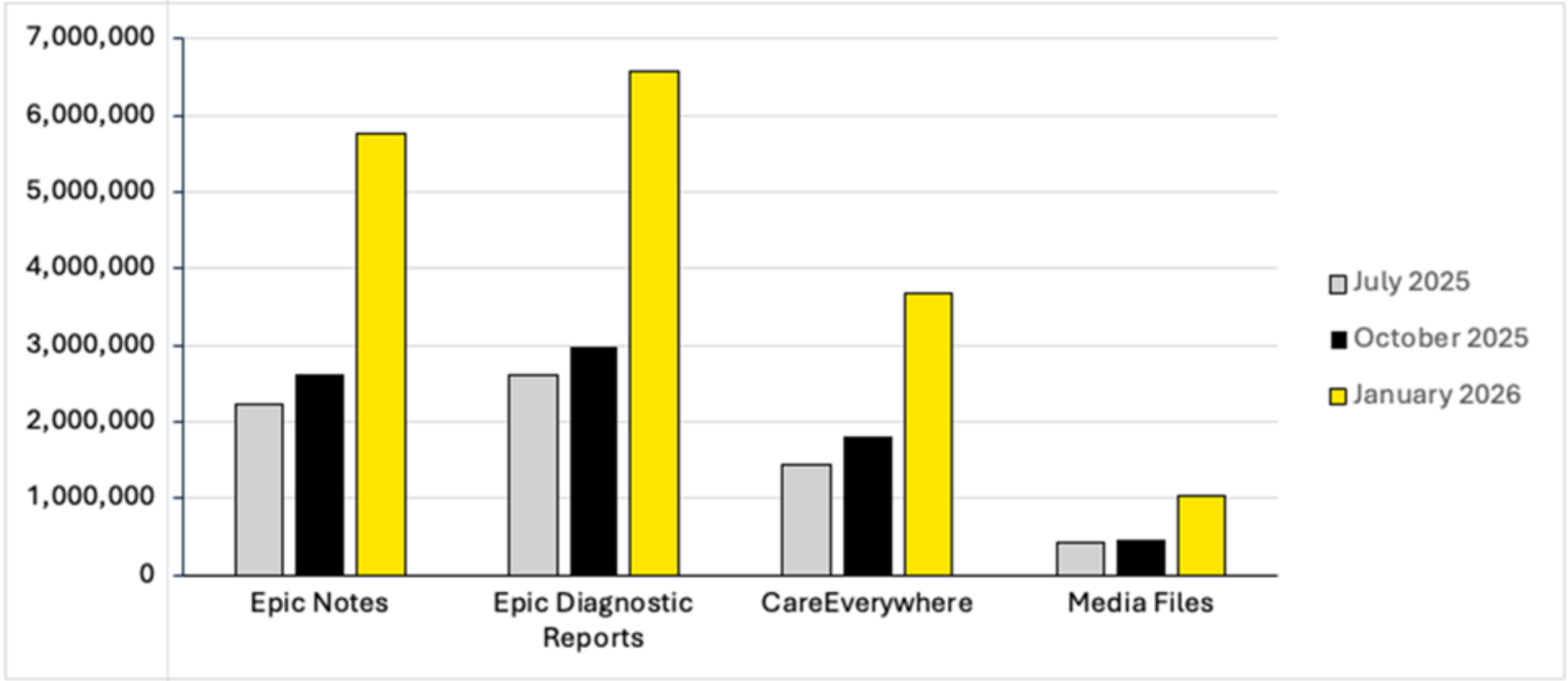
# The AUA QI Grant.


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 |
|---|---|---|---|---|---|---|
| ***Users*** | | | | | | |
| Unique users | 997 | 1,202 | 1,268 | N/A | N/A | N/A |
| ***Selected Inputs*** | | | | | | |
| 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.

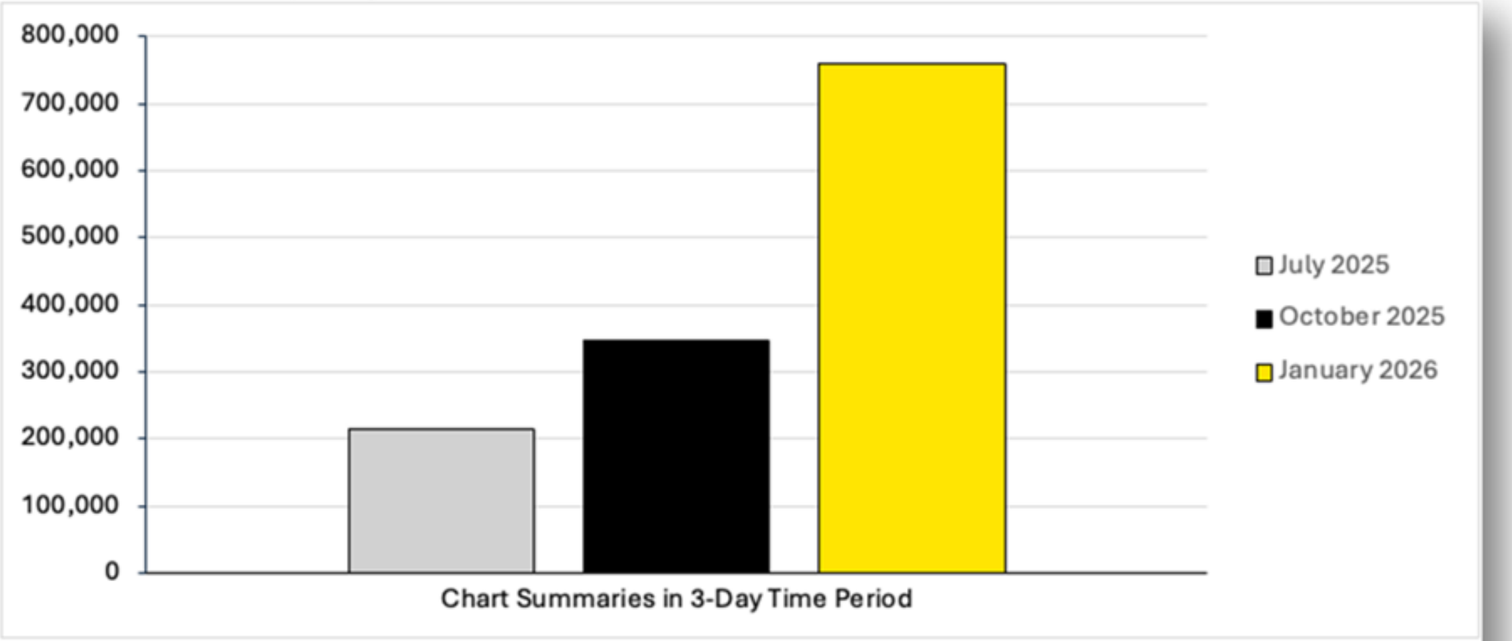



**Figure A.7. Institutional output volume of AI Chart Summaries during a 3-day periods in July 2025, October 2025, and January 2026**

## 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 | | |

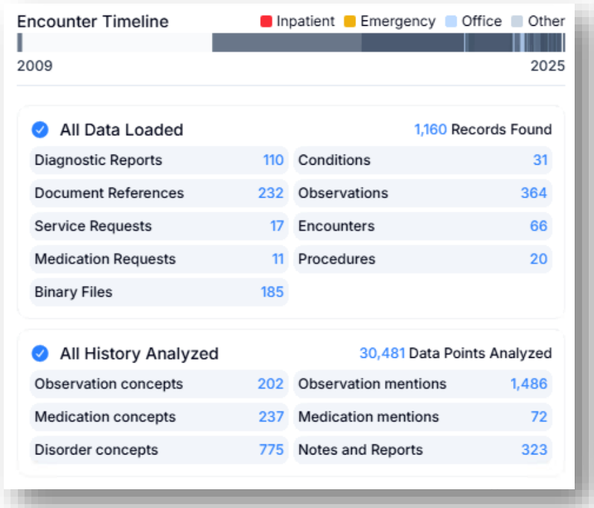
### All History Analyzed

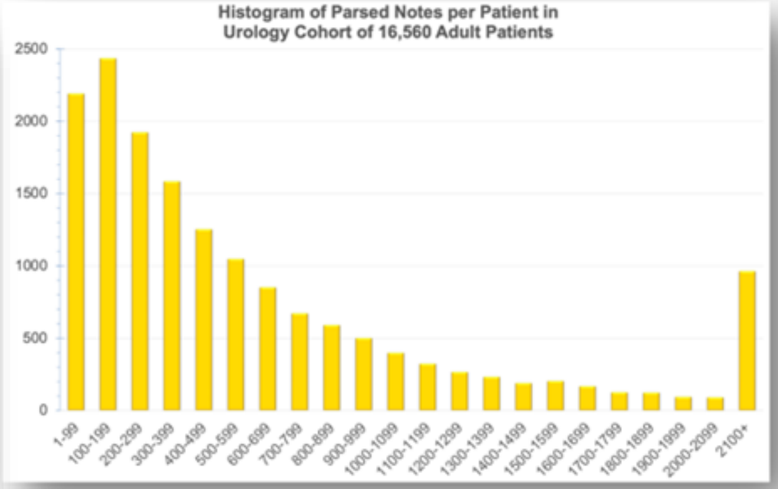
30,481 Data Points Analyzed

| | | | |
|---|---|---|---|
| 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**.

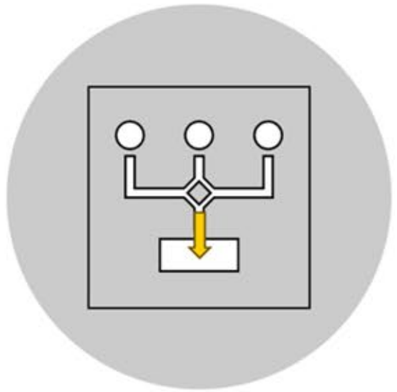
…

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 |
| ***Raw Record Data*** | | |
| 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 |
| ***Parsed and summarized data*** | | |
| 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 |
| *Word counts* | | |
| 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.



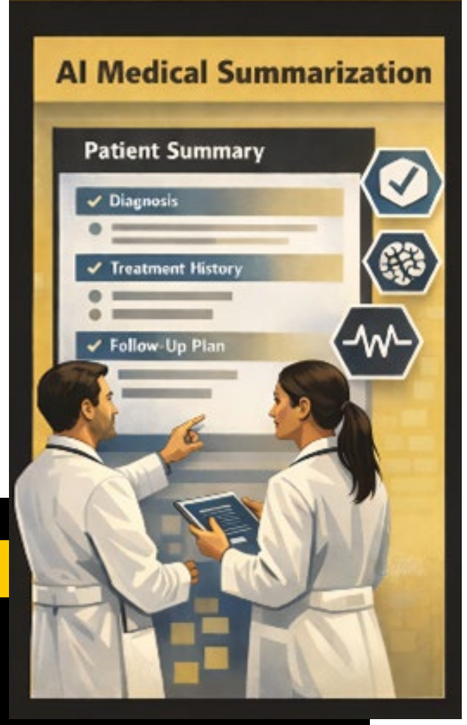
*BIG DATA PULL*

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

| Variable | Prostate (n=2,476) | Bladder (n=1,620) | Kidney (n=1,187) |
|---|---|---|---|
| Diagnostic reports | 251.1 | 375.7 | 330.3 |
| Conditions | 347.3 | 415.1 | 365.7 |
| Document references | 449.6 | 645.9 | 543.7 |
| Observations | 1,448.7 | 2,116.8 | 1,845.0 |
| Service requests | 289.0 | 429.6 | 375.8 |
| Encounters | 218.6 | 254.6 | 240.4 |
| Medication requests | 209.1 | 371.4 | 294.6 |
| Binary files | 302.8 | 428.9 | 359.0 |
| Procedures | 30.0 | 48.9 | 31.1 |
| Observation concepts | 214.7 | 260.7 | 248.5 |
| Observation mentions | 2,687.1 | 4,061.2 | 3,590.7 |
| Medication concepts | 583.7 | 699.2 | 647.4 |
| Medication mentions | 299.0 | 493.9 | 418.0 |
| Disorder concepts | 1,214.8 | 1,366.2 | 1,332.0 |
| Notes and reports | 589.9 | 867.8 | 743.8 |
| Outside records | 112.9 | 143.7 | 139.9 |
| Parsed Notes | 591.8 | 869.1 | 742.1 |
| Word count per parsed note | 273.9 | 253.5 | 259.1 |

TOOLS IN THE PIPELINE

# Two tools



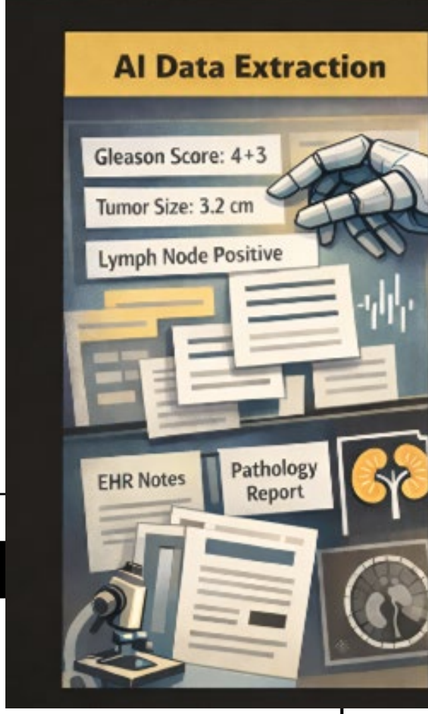

AIMS

## 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

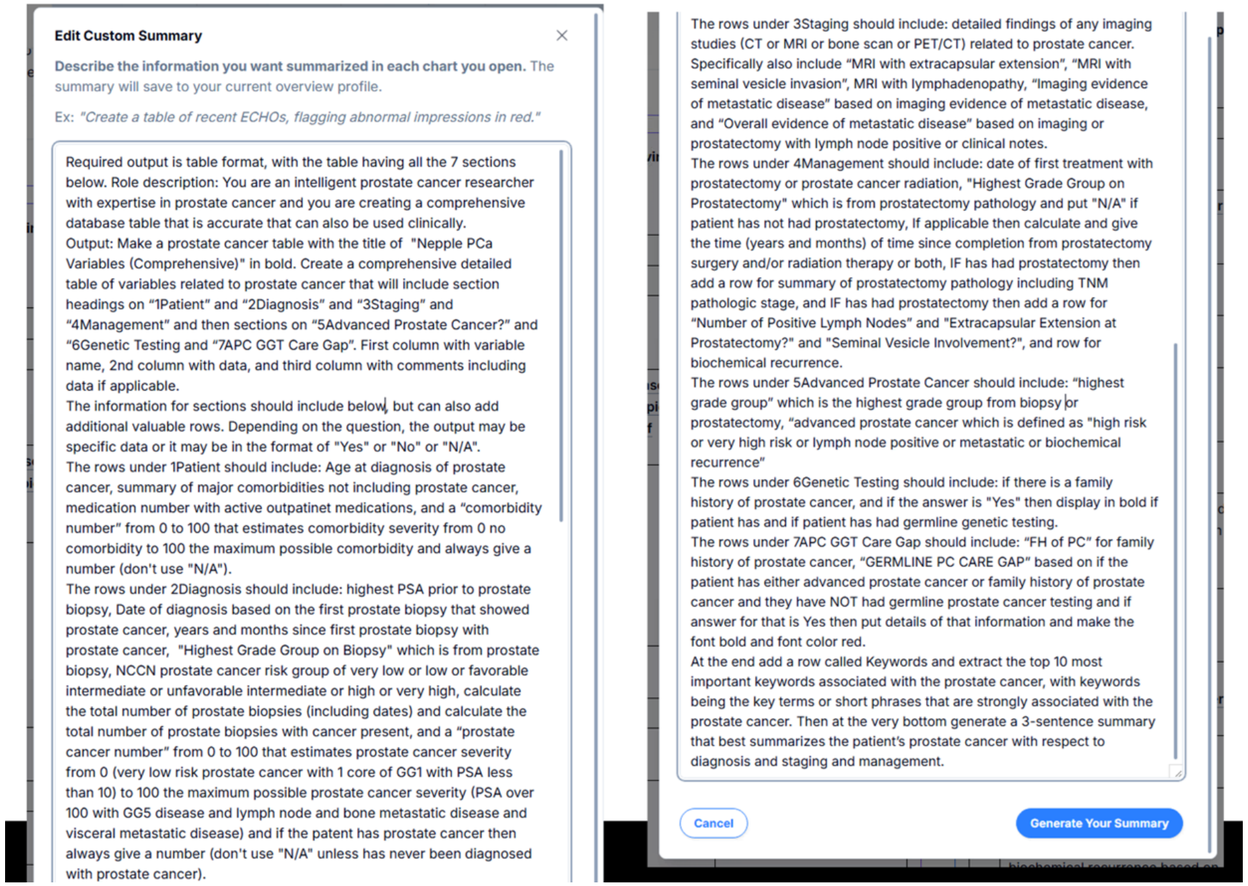
— Imaging reports · Outside records

THE POINT

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

# Use your prompting skills in the chart

THE PROMPT · 760 WORDS




**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 | |

**Required output is table format, w**

Custom Summary

**Nepple PCa Variables (Comprehe**

| Variable | Data |
|---|---|
| **1Patient** | |
| Age at diagnosis of **prostate cancer** | 72 |
| Summary of major comorbidities not including **prostate cancer** | **Coror hyper** status **melar** |
| Medication number with active outpatient medications | 9 |
| Comorbidity number | 55 |
| **2Diagnosis** | |
| Highest **PSA** prior to **prostate biopsy** | 8.5 ng |
| Date of diagnosis based on the first **prostate biopsy** that showed **prostate cancer** | 12/10/ |
| Years and months since first **prostate biopsy** with **prostate cancer** | 0 yea |
| Highest Grade Group on **Biopsy** | Grade |

| | |
|---|---|
| NCCN prostate cancer risk group | Favorable ir |
| 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** 10/24/2 RADS 5 lesi peripheral z Indetermina intertrochar **enlarged ly** convincing **metastatic 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 |

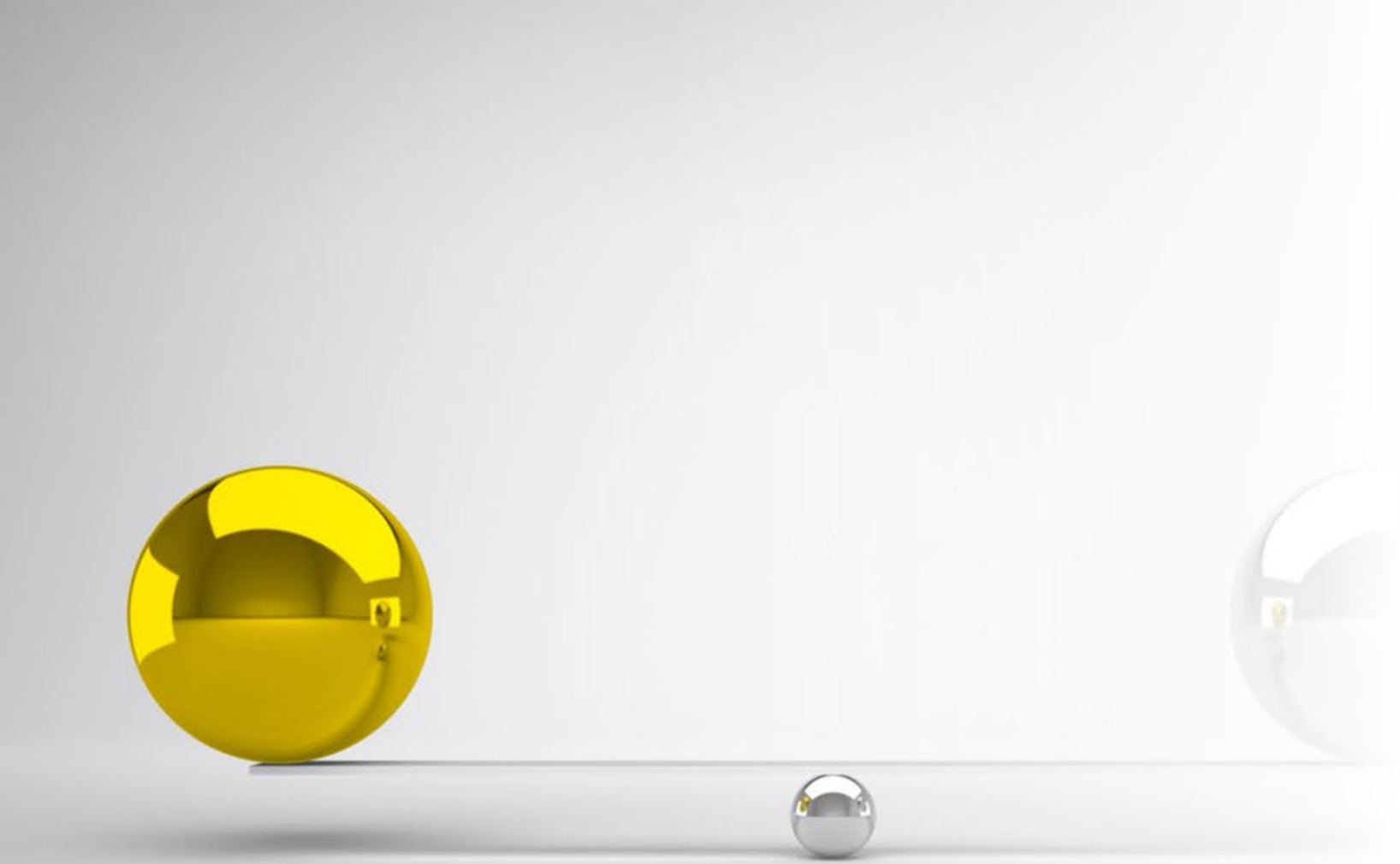
| | |
|---|---|
| **4Management** | |
| Date of first treatment with **prostatectomy** or **prostate cancer** radiation | |
| Highest Grade Group **Prostatectomy** | |
| Time since completion from **prostatectomy** surgery and/or **radiati therapy** or both | |
| Summary of **prostatectomy** pathology including TNM pathologic stage | |
| Number of Positive Lymph Nodes | |
| **Extracapsular Extension** at **Prostatectomy**? | |
| Seminal Vesicle Involvement? | |
| Biochemical recurrenc | |
| **5Advanced Prostate C** | |
| 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 ⋮

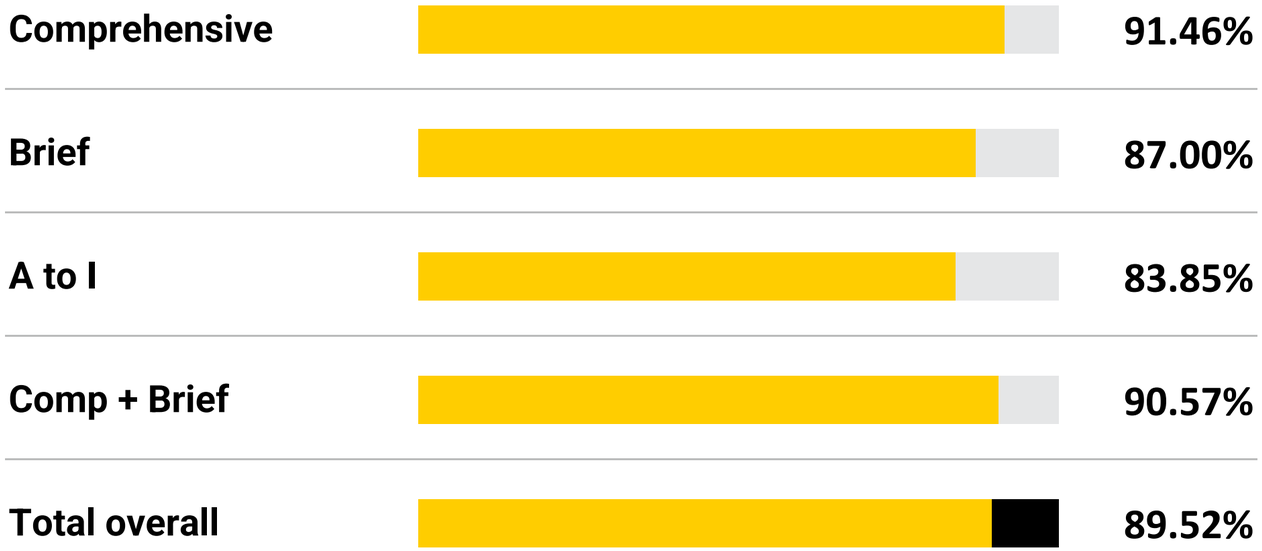
PROMPTS



# 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.



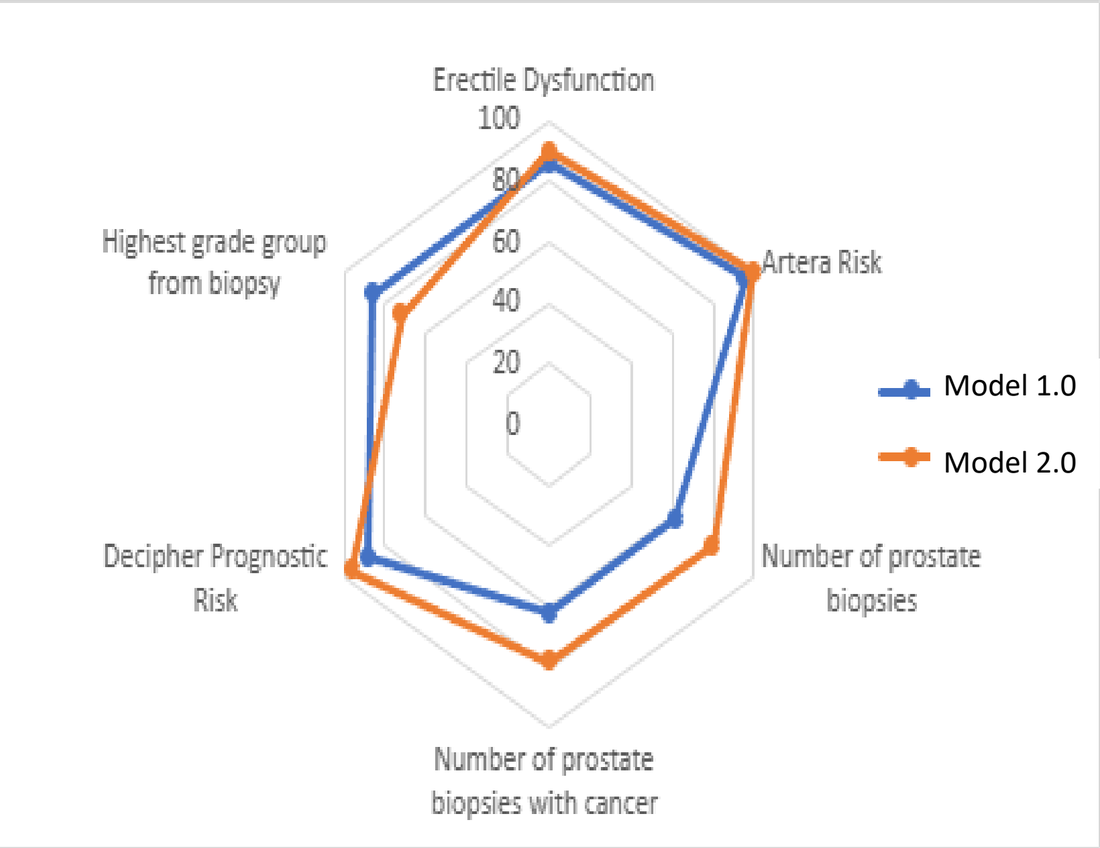

**CONTEXT**

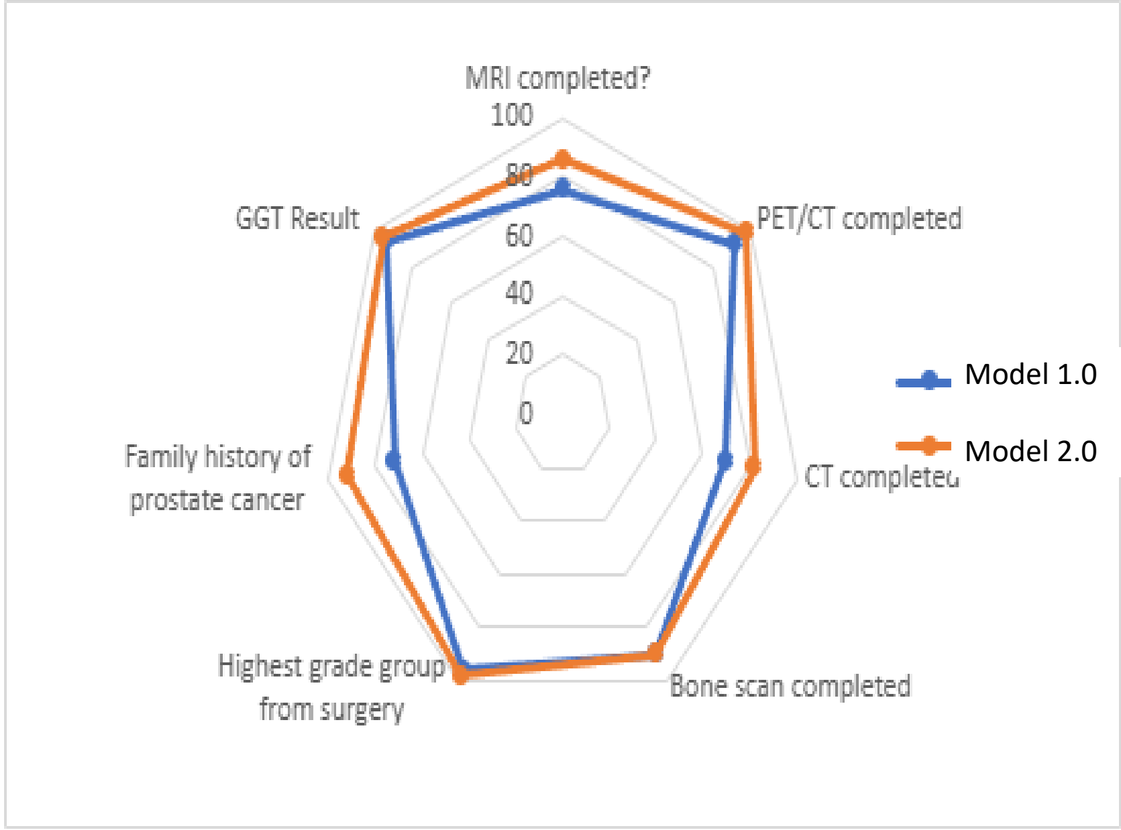
Comparable prior AI evaluations in cancer cohorts have reported **~65%** accuracy.

## +25% accuracy vs. traditional NLP methods

# Iterative evaluation. When the model versions evolve.

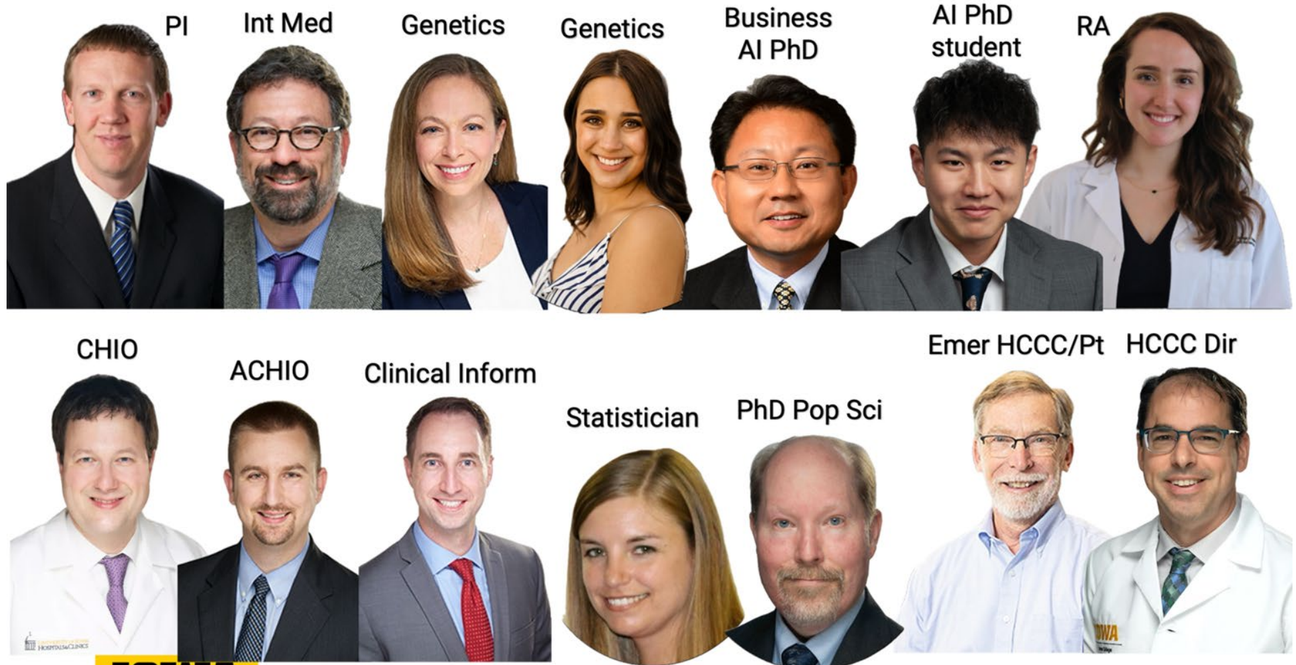
Same prompt, same patients.



# Building the Team: Innovation and Support attracts Talent.

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



# 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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