

**אבחון על סטרואידיים:
כשד"ר האוס, פרופ' Claude
ו Chat GPT נפגשים**



Presented by Or Ramni

Or Ramni

- BSc Computer Science, Cognitive science
- 6+ years experience with algorithms and ML
- Lead Data Scientist at Predicta Med



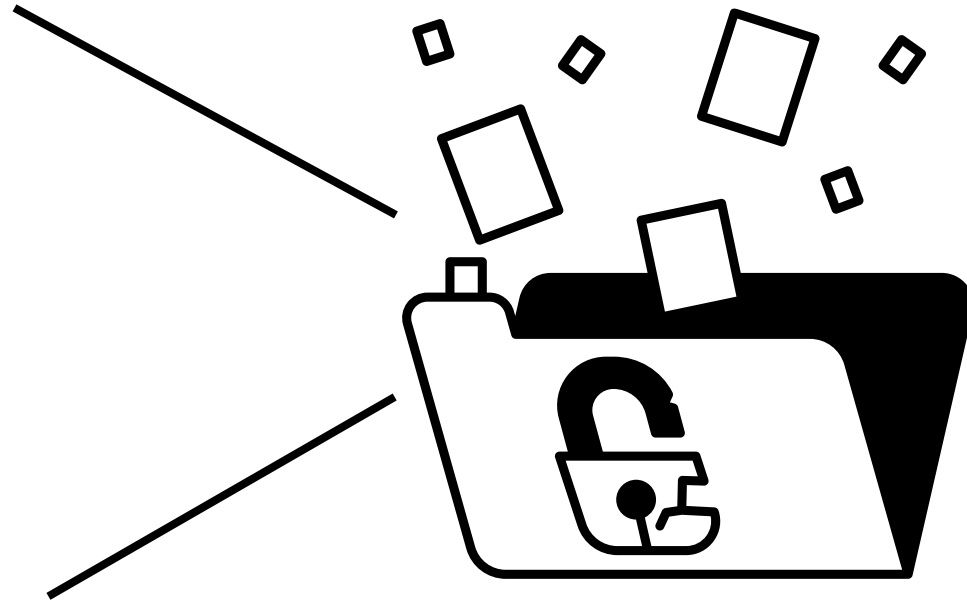


Structured
data

Tabular

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Medical
Notes
Free text



Headache

Low
Vitamin
D

Tired

Vomiting

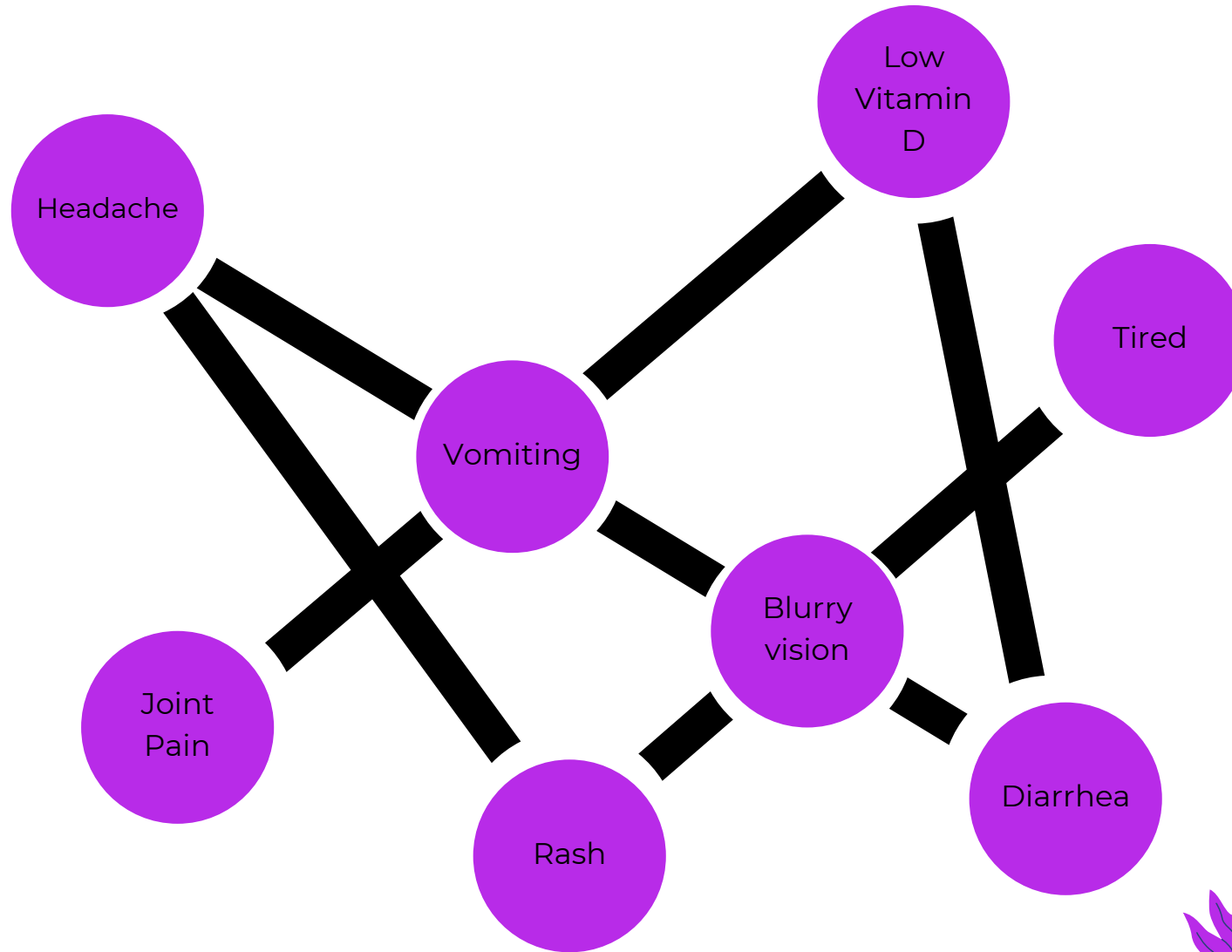
Blurry
vision

Joint
Pain

Diarrhea

Rash





1 in 10

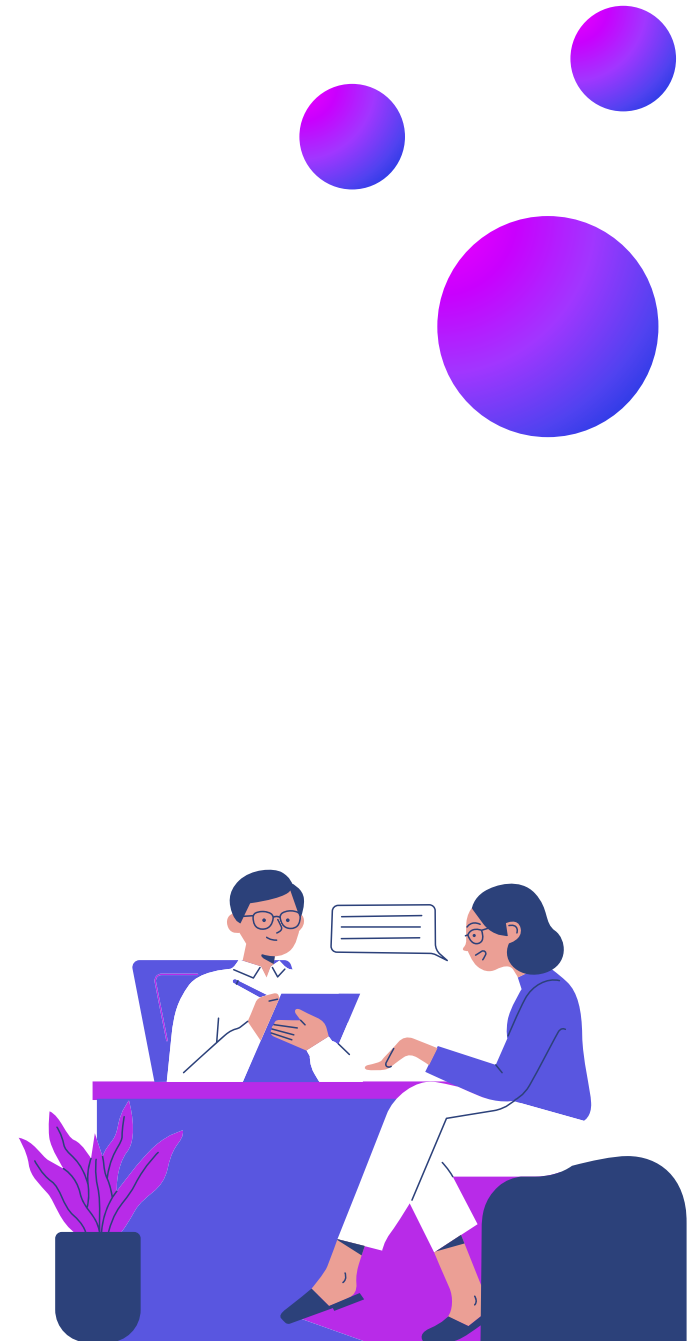
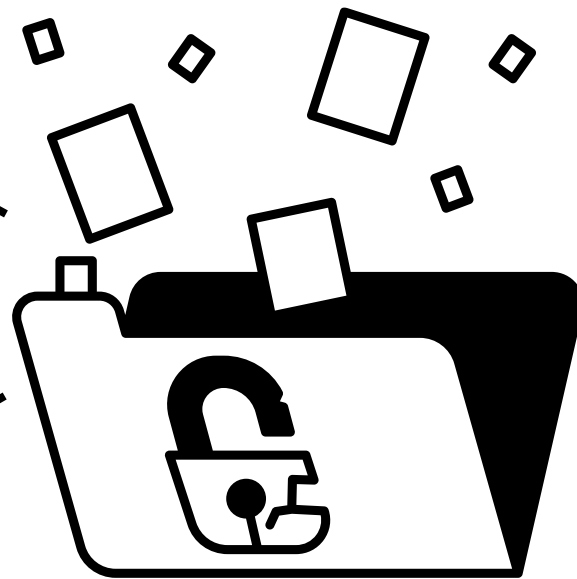


Structured
data

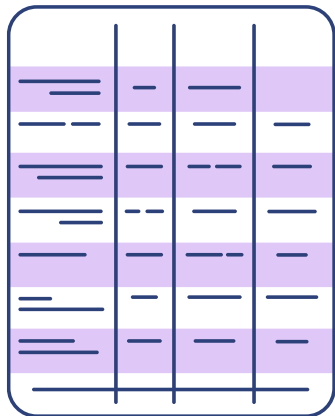
Tabular

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Medical
Notes
Free text

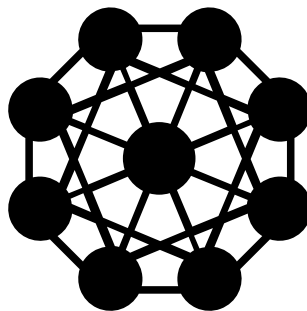


Structured data
Tabular



Labs
Measurements
Drugs
Demographics
Symptoms

GBDT



Prediction



Age	Gender	Weight	WBC	Ferritin
54	Female	67	3.7	70
63	Male	78	4.5	122

G
T
P
o
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N
e
g

xM

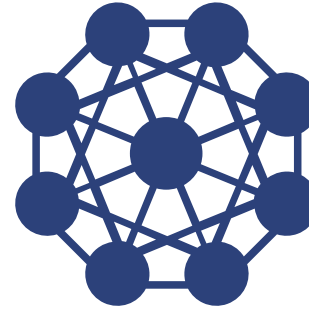
xN

Structured data
Tabular

Labs
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GBDT



Prediction

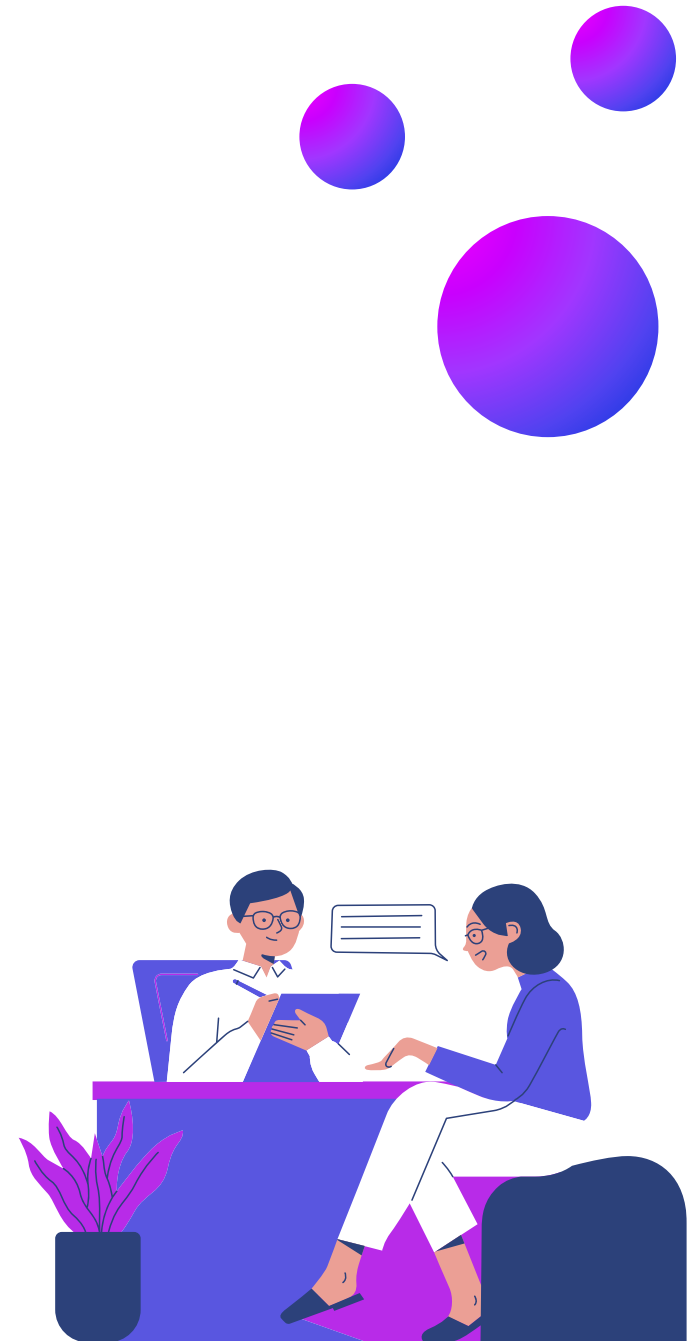
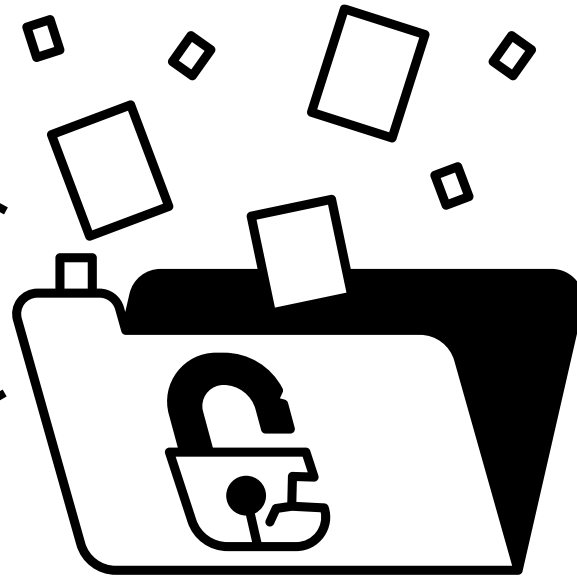
A lot of data is missing.

Structured
data

Tabular

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Medical
Notes
Free text





Hugging Face

Gemini

cohere



LLaMA 🦙

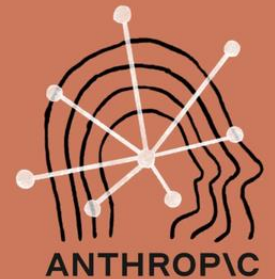
LLMs



**MISTRAL
AI_**



ChatGPT



ANTHROPIC

Challenges



**Closed environment,
private data**



**Unstructured text
historical facts, negated
symptoms, abbreviations,
family history**



Misdiagnosis liability

Pt Name: J. Smith

DOB: 3/12/1976

Date: 5/2/2024

CC: Abdmnl pain

HPI: 45 y/o M c/o episodic, non-radiating abdmnl pain x 3 days. Denies nausea, vmitng. No diarrh, constip. Pain mod, imprpovs w/ OTC analgs. No app chngs.

PMHx: HTN, DM2.

Meds: Metformin, Lisinopril.

FHx: Mother w/ breast CA, father w/ HTN, no DM.

SHx: No tob, EtOH on weekends. Works in construc.

ROS: (-) fevr, (-) wt loss. (+) fatgue last 2 wks.

PE: BP 130/85, HR 78, afebrile. Abd tender LLQ, no rebnd, no guarding.

A/P: 1. Likely gastroenteritis, r/o appdx. Cntd analg, hydratr.

2. Follow up if symt worsen or no resol w/in 48 hrs.

Motivation: Find more diagnosis



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Identify Diagnoses:

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Exclude any findings that pertain to family members or have been ruled out

Format Requirements:

Produce the output as a list of dictionary objects. Each dictionary should contain the following key-value pairs:

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Instructions:

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The respond should only contain the instructed list of dictionaries based on the content of the medical note provided.

Note example:

Pt bib self for c/o "black out" without passing out 2 days ago, labs show Vitamin D deficiency;

pt overweight and obese BMI; was in MVC on 29th, seen on 30th in urgent care, recommended her to return if pain persists.

Output Example:

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[[{"note_number": '9AF7B3F', 'diagnosis': 'Syncope', 'excerpt': '"black out" without passing out'}],
```

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```

```
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Prompt

Role

Clear task

Pitfalls

Formatting

Grounding

Fewshots

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HUGGING FACE: Open Source Models

- Unformatted
- Unnecessary
- Hallucinations
- Low coverage

Llama2 7B

AlphaMonarch-7B

BioMistral -7B

Asclepius-13B

Motivation: Find more diagnosis



HUGGING FACE: Open Source Models

- Unformatted
- Unnecessary
- Hallucinations
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Llama2 7B

AlphaMonarch-7B

BioMistral -7B

Asclepius-13B



BEDROCK: Managed Models

- Formatted
- Concise
- Show excerpt
- Good coverage

Anthropic - Claude

Cohere - Command

Llama3 - 70B

How good is good?

Evaluation Time

100 Doctors

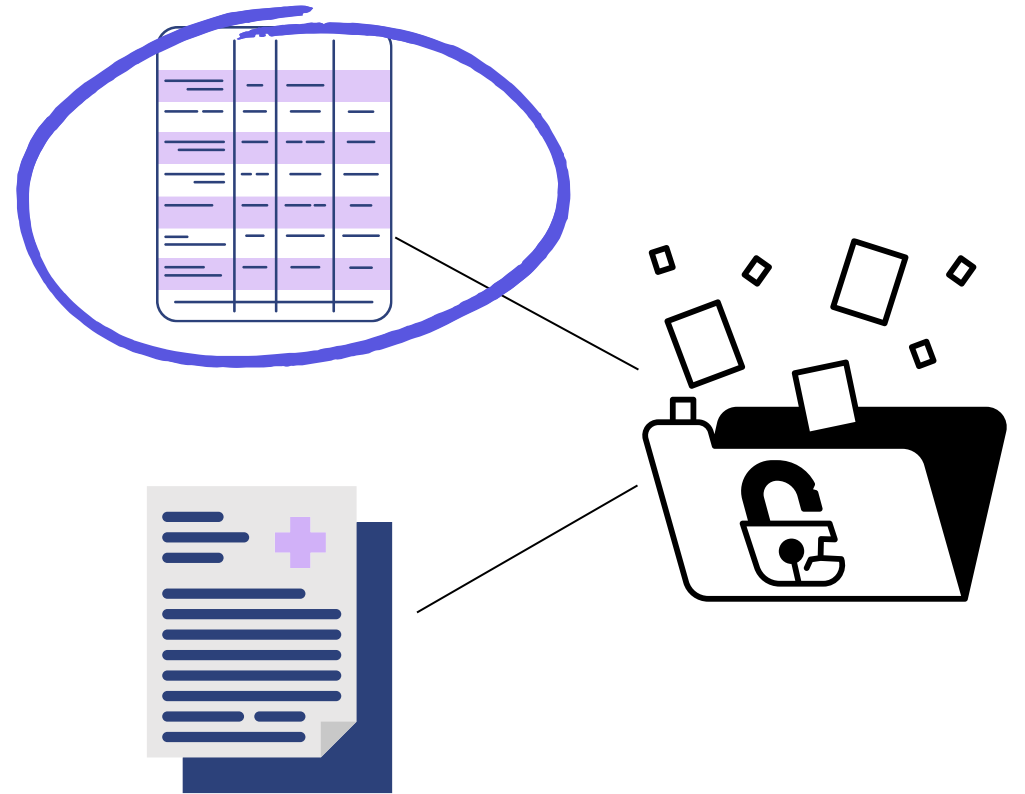
Tag notes
Gold standard

Precision/Recall

Silver Standard

Diagnosis

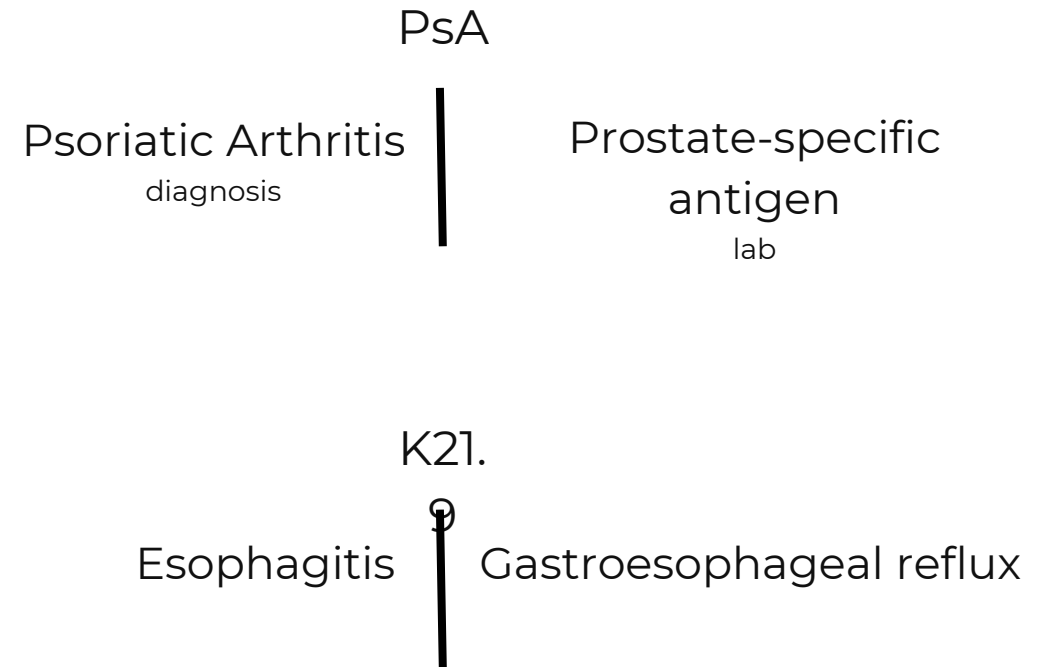
Autoimmune Angioedema
Autoimmune progesterone dermatitis
Autoimmune urticaria
Bullous pemphigoid
Cicatricial pemphigoid
Dermatitis herpetiformis
Discoid lupus erythematosus
Epidermolysis bullosa acquisita
Erythema nodosum
Gestational pemphigoid
Hidradenitis suppurativa
Lichen planus
Lichen sclerosus
Linear IgA disease (LAD)
Morphea
Pemphigus vulgaris
Pityriasis lichenoides et varioliformis acuta
Mucha-Habermann disease
Psoriasis



Silver Standard

Diagnosis

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Autoimmune progesterone dermatitis
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Bullous pemphigoid
Cicatricial pemphigoid
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Pemphigus vulgaris
Pityriasis lichenoides et varioliformis acuta
Mucha-Habermann disease
Psoriasis



Silver Standard

Diagnosis	ICD-9 Code	ICD-10 Code
Autoimmune Angioedema	995.1	T78.01
Autoimmune progesterone dermatitis	279.49	D89.89
Autoimmune urticaria	708	L50
Bullous pemphigoid	694.5	L10.5
Cicatricial pemphigoid	694.61	L12.0
Dermatitis herpetiformis	694	L10-L14
Discoid lupus erythematosus	695.4	L40.52
Epidermolysis bullosa acquisita	694.8	L10.8
Erythema nodosum	695.2	L40.1
Gestational pemphigoid	646.8	O99.89
Hidradenitis suppurativa	705.83	L74.3
Lichen planus	697	L30.8
Lichen sclerosus	701	L94
Linear IgA disease (LAD)	646.8	O99.89
Morphea	701	L90
Pemphigus vulgaris	694.4	L10.4
Pityriasis lichenoides et varioliformis acuta	696.2	L40.59
Mucha-Habermann disease	696.2	L40.59
Psoriasis	696	L40

Extracting codes - More prompts

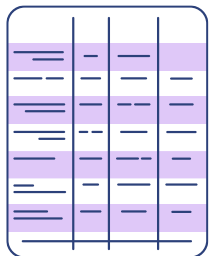
Excerpt: "Labs otherwise with mild AKI, and significant transaminitis and elevated lipase but otherwise without anemia or electrolyte derangement"

Diagnosis: "Transaminitis"



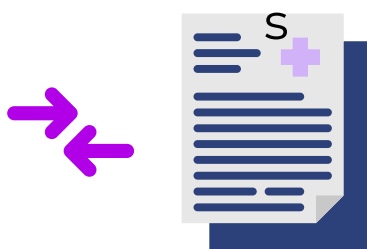
ICD Code: "K76.9"

K76.9

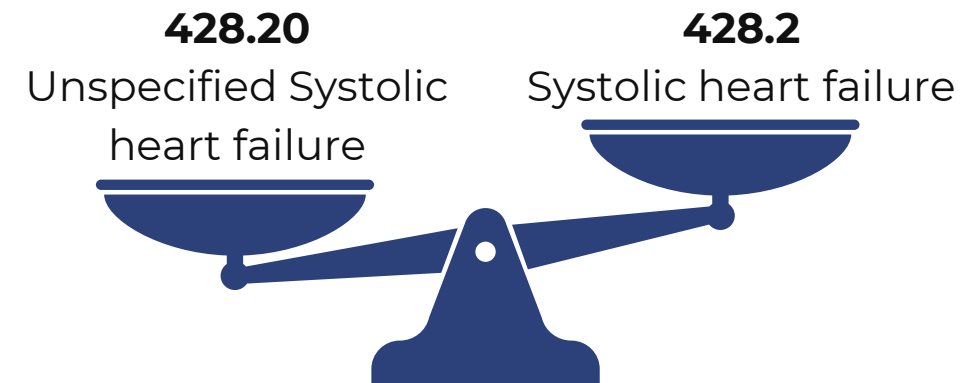
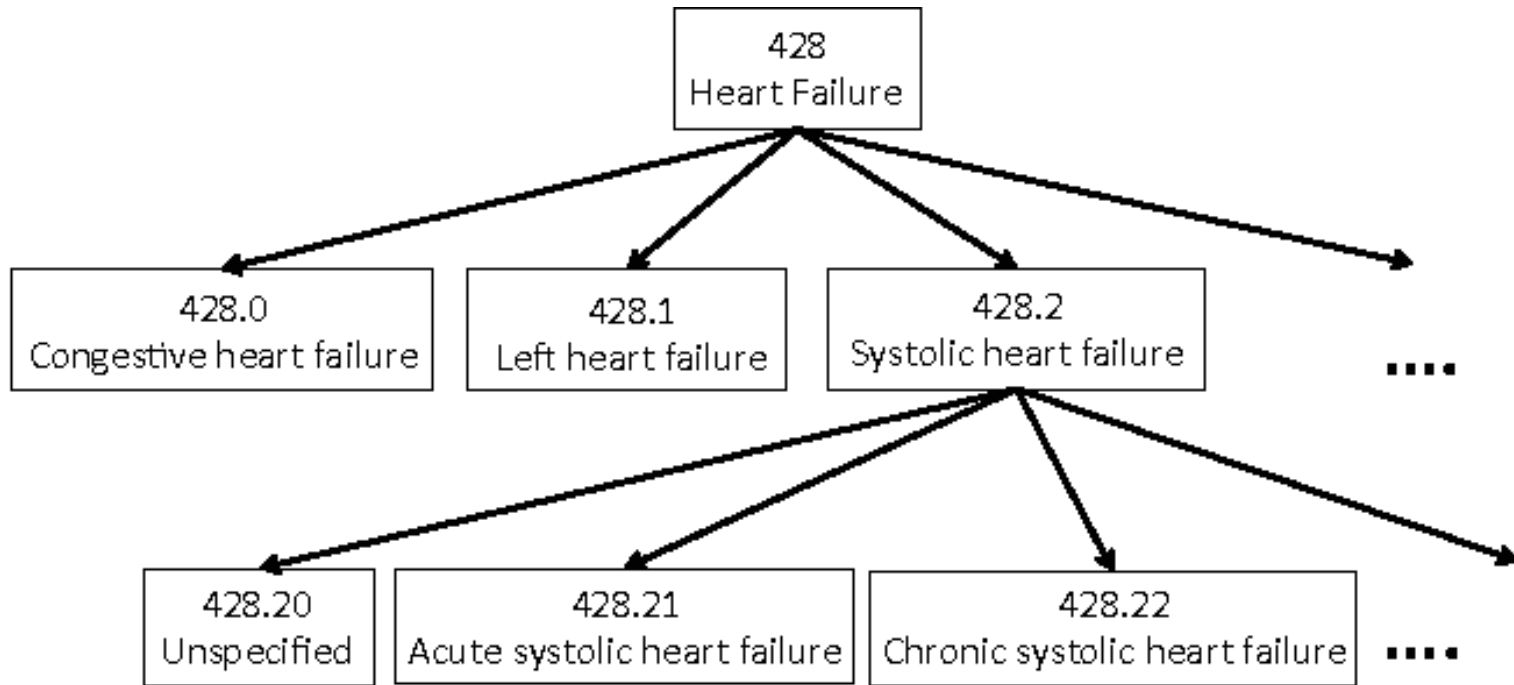


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Transaminiti

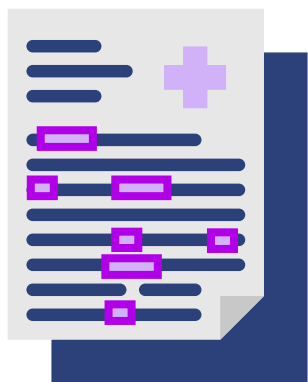


Comparing codes





Evaluation complete



Age	Gender	Weight	WBC	Ferritin	Diags
-----	--------	--------	-----	----------	-------

54	Female	67	3.7	70	XXX
----	--------	----	-----	----	-----



63	Male	78	4.5	122	YYY
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G
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S
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g

xM

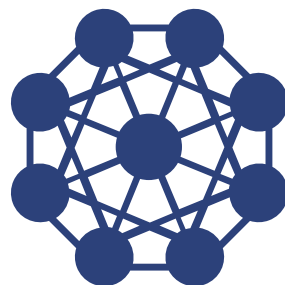
xN



Evaluation complete

Age	Gender	Weight	WBC	Ferritin	Diags
....
....
....
....

....



Predictio
n

Some examples

“**Abd pain** since last night that started after she ate dinner”

-->

**Abdominal
pain**

“Recent measurements: **5 feet 6 inches, 242 pounds**”

-->

Overweight

“Has hard time **opening jars**. Too painful”

-->

Joint Pain

“Pt now receiving ordered litre of **NS bolus**”

-->

Dehydration

RECAP

Understanding the data
limitations

Breaking down the task

Choosing the right tool

Prompt engineering

Evaluation

Thank You



Or Ramni

orr@predicta-med.com