Chatting with Clinical Notes: Incorporating LLM-Based Question-and-Answer Capabilities into the EMERSE Search Engine and Text Processing Tool

Presentation for the ITCR Annual Meeting
Cold Spring Harbor Laboratory
July 16, 2026

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Dept of Learning Health Sciences
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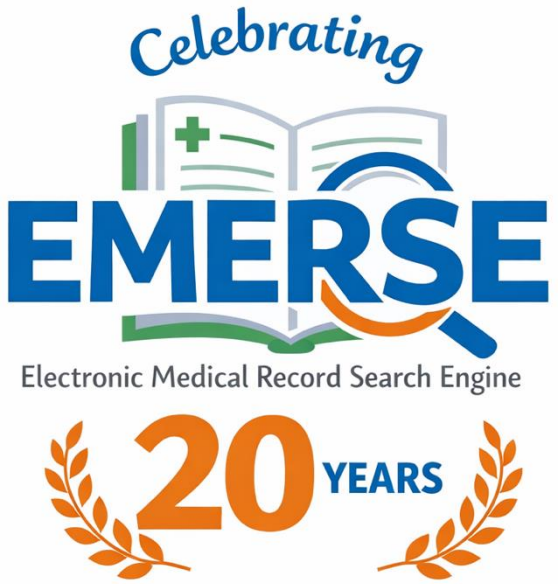
http://project-emerse.org/presentations.html

Acknowledgements



NCI-ITCR: U24CA269315
NCATS-CTSA: UM1TR004404

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http://project-emerse.org/presentations.html

What is EMERSE?

- Free text search and review platform designed to help clinical researchers find and abstract information found within electronic health records efficiently and securely

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What is EMERSE?

- Quickly searches large volumes of unstructured clinical text including notes, radiology & pathology reports, and more
- Supports discovery of cohorts, phenotypes, treatments, outcomes, adverse events, and related clinical details
- Designed for usability, auditability, and privacy-aware access to sensitive clinical data

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Value for Researchers

- Reduces manual chart review burden
- Supports iterative search strategies using query expansion and natural language processing (NLP)
- Facilitates reproducible patient chart reviews for translational and clinical cancer research

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80% of EHR data are in unstructured free-text

structured data

unstructured data/free text

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LLMs are changing how we work with text…do we even need search anymore?

Perspective

Search still matters: information retrieval in the era of generative AI

William Hersh, MD*

https://pmc.ncbi.nlm.nih.gov/articles/PMC11339511/pdf/ocae014.pdf
2024

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Current EMERSE efforts

- Leverage the existing platform
  - security model (roles, privileges, auditing)
  - rapid retrieval of clinical notes
  - simple user interface for researchers
- Extend the capabilities with LLMs in various areas of the application
- Supported with ITCR set-aside funds, collab with UCSF

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LLM agnostic

- We are not building our own LLM
- EMERSE should be flexible to connect to any LLM using APIs

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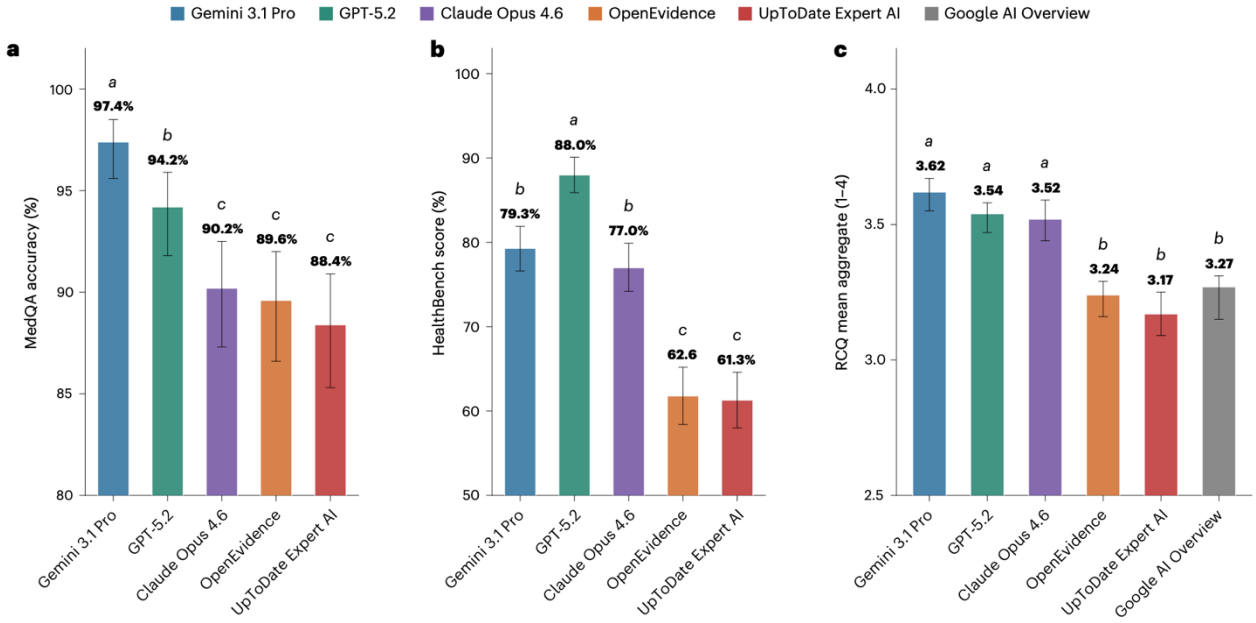
nature medicine

Brief Communication

https://doi.org/10.1038/s41591-026-04431-5

General-purpose large language models outperform specialized clinical AI tools on medical benchmarks



Initial thoughts: This should be easy

- LLMs are good at reading text
- Clinical notes are text
- Typical LLM paradigm:
  - paste note → ask question → get answer

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The reality: it's not so easy

- Patients have many notes over time
- Users ask multiple follow-up questions
- Clinical context matters
- Answers must be grounded in source documentation

- Need to track costs
- Need to control costs

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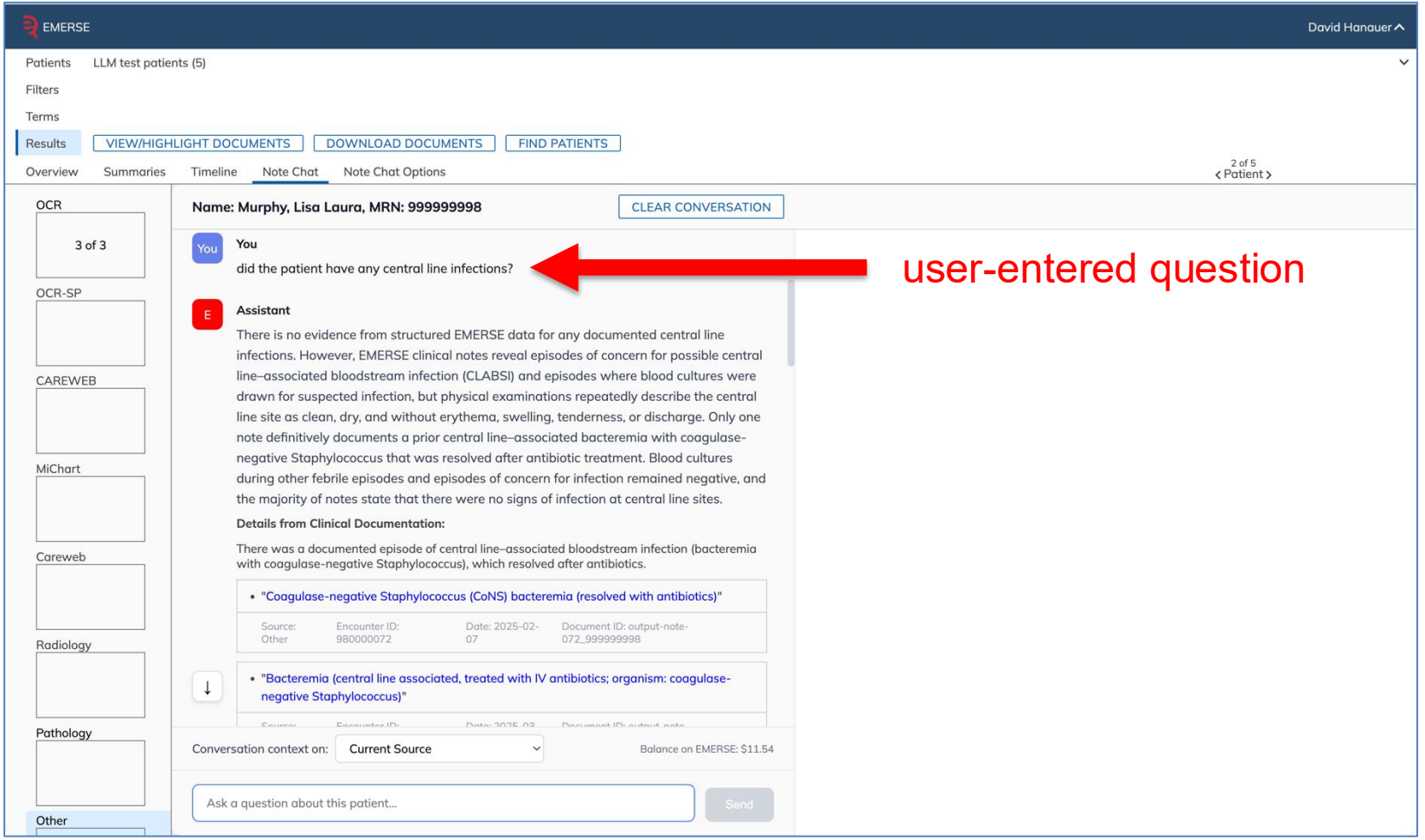
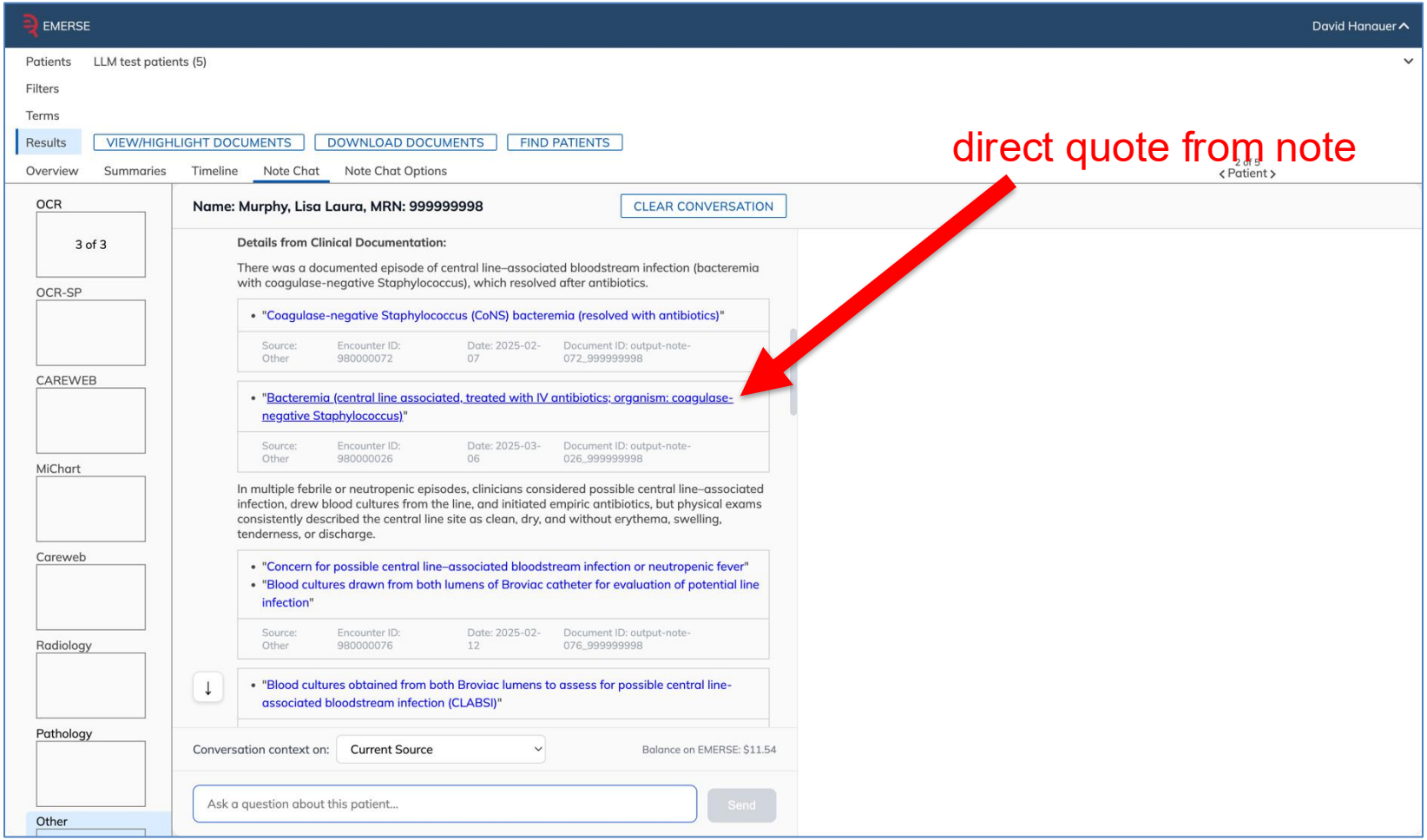
Note Chat


EMERSE
David Hanauer
Patients
LLM test patients (5)
Filters
Terms
Results
VIEW/HIGHLIGHT DOCUMENTS
DOWNLOAD DOCUMENTS
FIND PATIENTS
Overview
Summaries
Timeline
Note Chat
Note Chat Options
2 of 5
Patient
OCR
3 of 3
OCR-SP
CAREWEB
MiChart
Careweb
Radiology
Pathology
Other
Name: Murphy, Lisa Laura, MRN: 999999998
CLEAR CONVERSATION
You
You
did the patient have any central line infections?
user-entered question
E
Assistant
There is no evidence from structured EMERSE data for any documented central line infections. However, EMERSE clinical notes reveal episodes of concern for possible central line–associated bloodstream infection (CLABSI) and episodes where blood cultures were drawn for suspected infection, but physical examinations repeatedly describe the central line site as clean, dry, and without erythema, swelling, tenderness, or discharge. Only one note definitively documents a prior central line–associated bacteremia with coagulase-negative Staphylococcus that was resolved after antibiotic treatment. Blood cultures during other febrile episodes and episodes of concern for infection remained negative, and the majority of notes state that there were no signs of infection at central line sites.
Details from Clinical Documentation:
There was a documented episode of central line–associated bloodstream infection (bacteremia with coagulase-negative Staphylococcus), which resolved after antibiotics.
"Coagulase-negative Staphylococcus (CoNS) bacteremia (resolved with antibiotics)"
Source: Other
Encounter ID: 980000072
Date: 2025-02-07
Document ID: output-note-072_999999998
"Bacteremia (central line associated, treated with IV antibiotics; organism: coagulase-negative Staphylococcus)"
Conversation context on:
Current Source
Balance on EMERSE: $11.54
Ask a question about this patient...
Send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direct quote from note
OCR
3 of 3
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Careweb
Radiology
Pathology
Other
Name: Murphy, Lisa Laura, MRN: 999999998
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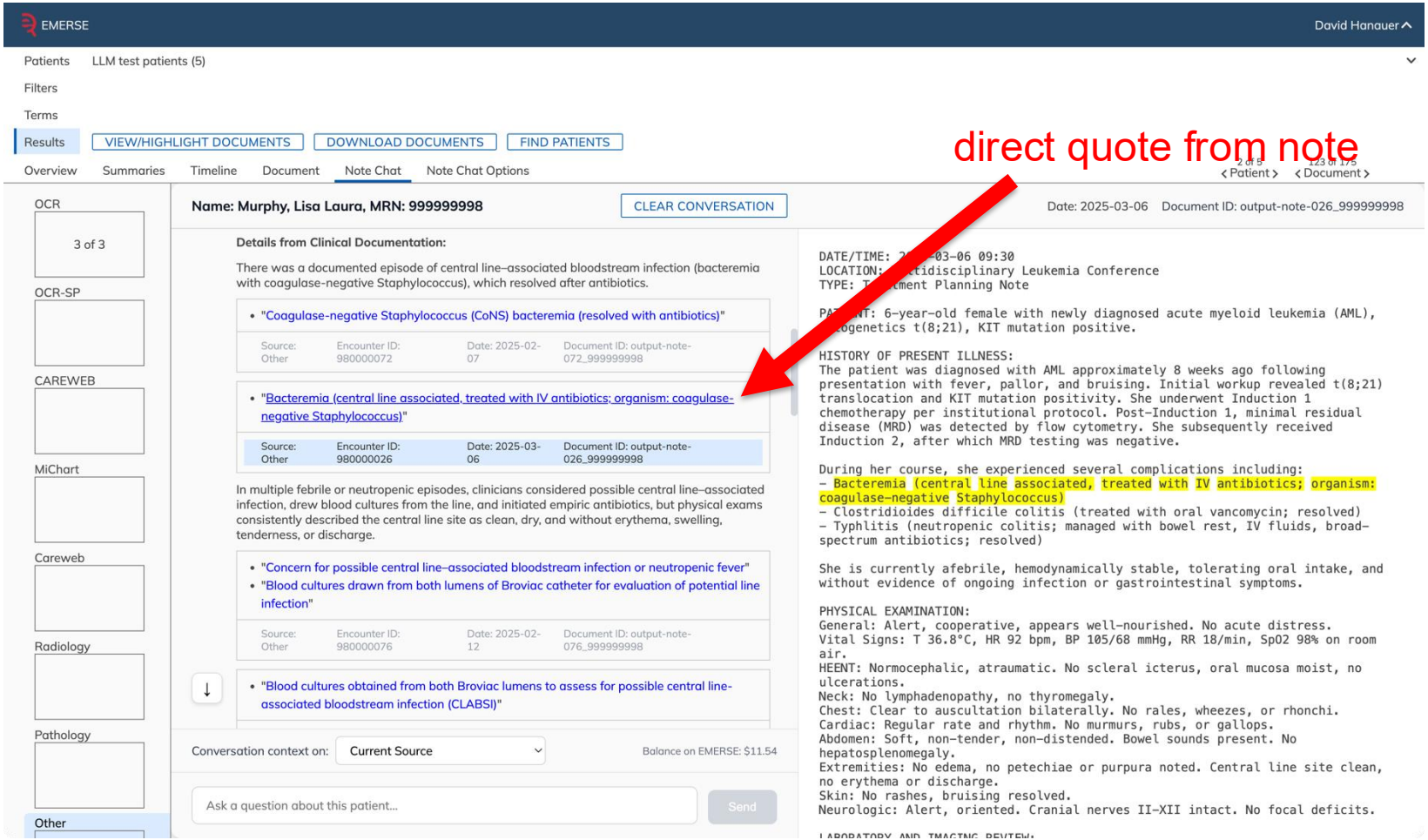
"Coagulase-negative Staphylococcus (CoNS) bacteremia (resolved with antibiotics)"
Source: Other
Encounter ID: 980000072
Date: 2025-02-07
Document ID: output-note-072_999999998
"Bacteremia (central line associated, treated with IV antibiotics; organism: coagulase-negative Staphylococcus)"
Source: Other
Encounter ID: 980000026
Date: 2025-03-06
Document ID: output-note-026_999999998
In multiple febrile or neutropenic episodes, clinicians considered possible central line–associated infection, drew blood cultures from the line, and initiated empiric antibiotics, but physical exams consistently described the central line site as clean, dry, and without erythema, swelling, tenderness, or discharge.
"Concern for possible central line–associated bloodstream infection or neutropenic fever"
"Blood cultures drawn from both lumens of Broviac catheter for evaluation of potential line infection"
Source: Other
Encounter ID: 980000076
Date: 2025-02-12
Document ID: output-note-076_999999998
"Blood cultures obtained from both Broviac lumens to assess for possible central line-associated bloodstream infection (CLABSI)"
Conversation context on:
Current Source
Balance on EMERSE: $11.54
Ask a question about this patient...
Send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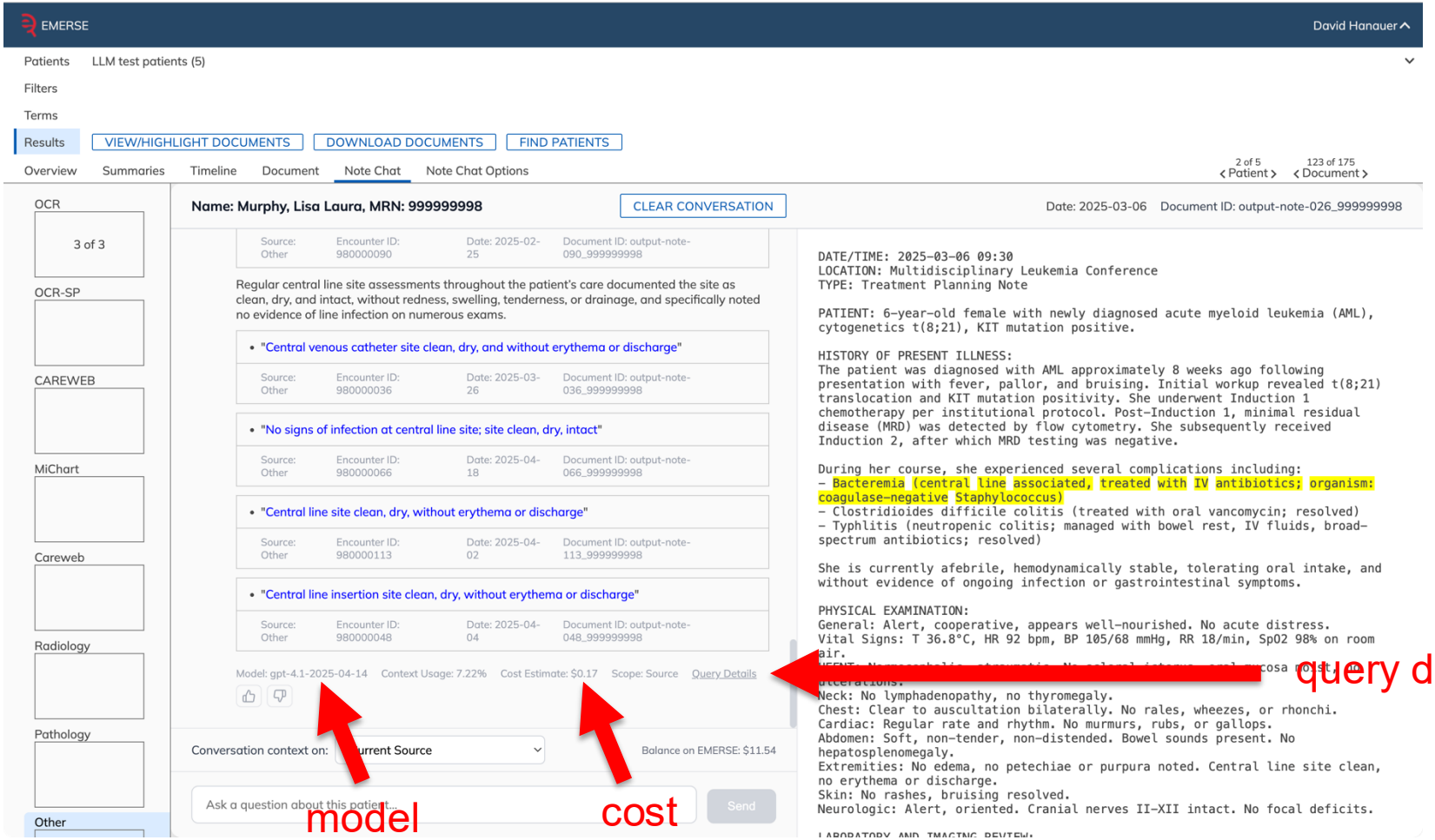
"Blood cultures obtained from both Broviac lumens to assess for possible central line-associated bloodstream infection (CLABSI)"
Conversation context on:
Current Source
Balance on EMERSE: $11.54
Ask a question about this patient...
Send
DATE/TIME: 2 03-06 09:30
LOCATION: tidisciplinary Leukemia Conference
TYPE: T ment Planning Note
PA NT: 6-year-old female with newly diagnosed acute myeloid leukemia (AML), ogenetics t(8;21), KIT mutation positive.
HISTORY OF PRESENT ILLNESS:
The patient was diagnosed with AML approximately 8 weeks ago following presentation with fever, pallor, and bruising. Initial workup revealed t(8;21) translocation and KIT mutation positivity. She underwent Induction 1 chemotherapy per institutional protocol. Post-Induction 1, minimal residual disease (MRD) was detected by flow cytometry. She subsequently received Induction 2, after which MRD testing was negative.
During her course, she experienced several complications including:
- Bacteremia (central line associated, treated with IV antibiotics; organism: coagulase-negative Staphylococcus)
- Clostridioides difficile colitis (treated with oral vancomycin; resolved)
- Typhlitis (neutropenic colitis; managed with bowel rest, IV fluids, broad-spectrum antibiotics; resolved)
She is currently afebrile, hemodynamically stable, tolerating oral intake, and without evidence of ongoing infection or gastrointestinal symptoms.
PHYSICAL EXAMINATION:
General: Alert, cooperative, appears well-nourished. No acute distress.
Vital Signs: T 36.8°C, HR 92 bpm, BP 105/68 mmHg, RR 18/min, SpO2 98% on room air.
HEENT: Normocephalic, atraumatic. No scleral icterus, oral mucosa moist, no ulcerations.
Neck: No lymphadenopathy, no thyromegaly.
Chest: Clear to auscultation bilaterally. No rales, wheezes, or rhonchi.
Cardiac: Regular rate and rhythm. No murmurs, rubs, or gallops.
Abdomen: Soft, non-tender, non-distended. Bowel sounds present. No hepatosplenomegaly.
Extremities: No edema, no petechiae or purpura noted. Central line site clean, no erythema or discharge.
Skin: No rashes, bruising resolved.
Neurologic: Alert, oriented. Cranial nerves II–XII intact. No focal deficits.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123 of 175 Document
OCR
3 of 3
OCR-SP
CAREWEB
MiChart
Careweb
Radiology
Pathology
Other
Name: Murphy, Lisa Laura, MRN: 999999998
CLEAR CONVERSATION
Date: 2025-03-06 Document ID: output-note-026_999999998
Source: Other
Encounter ID: 980000090
Date: 2025-02-25
Document ID: output-note-090_999999998
Regular central line site assessments throughout the patient's care documented the site as clean, dry, and intact, without redness, swelling, tenderness, or drainage, and specifically noted no evidence of line infection on numerous exams.
"Central venous catheter site clean, dry, and without erythema or discharge"
Source: Other
Encounter ID: 980000036
Date: 2025-03-26
Document ID: output-note-036_999999998
"No signs of infection at central line site; site clean, dry, intact"
Source: Other
Encounter ID: 980000066
Date: 2025-04-18
Document ID: output-note-066_999999998
"Central line site clean, dry, without erythema or discharge"
Source: Other
Encounter ID: 980000113
Date: 2025-04-02
Document ID: output-note-113_999999998
"Central line insertion site clean, dry, without erythema or discharge"
Source: Other
Encounter ID: 980000048
Date: 2025-04-04
Document ID: output-note-048_999999998
Model: gpt-4.1-2025-04-14
Context Usage: 7.22%
Cost Estimate: $0.17
Scope: Source
Query Details
Conversation context on:
urrent Source
Balance on EMERSE: $11.54
Ask a question about this patient...
Send
model
cost
query details
DATE/TIME: 2025-03-06 09:30
LOCATION: Multidisciplinary Leukemia Conference
TYPE: Treatment Planning Note
PATIENT: 6-year-old female with newly diagnosed acute myeloid leukemia (AML), cytogenetics t(8;21), KIT mutation positive.
HISTORY OF PRESENT ILLNESS:
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During her course, she experienced several complications including:
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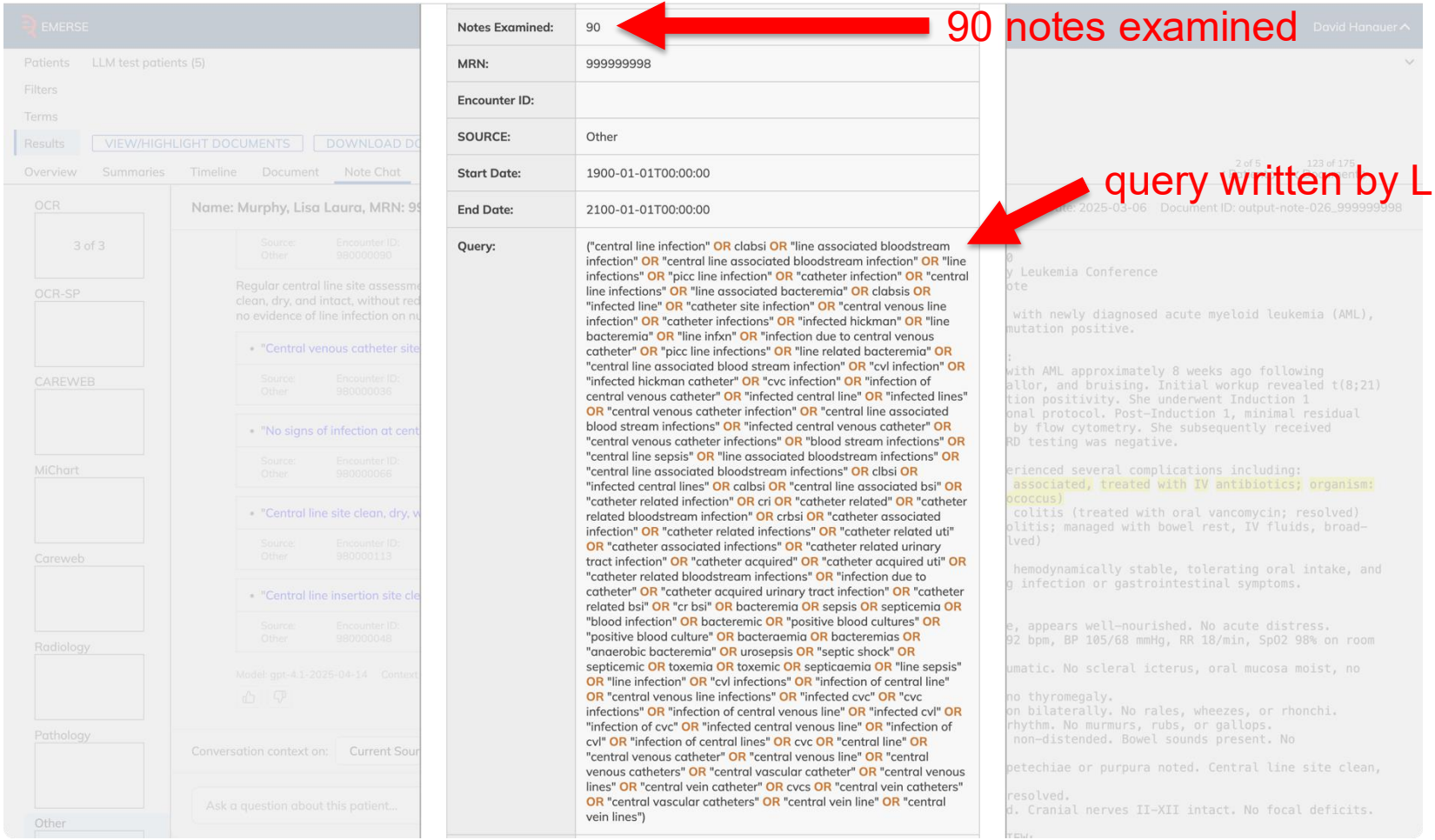
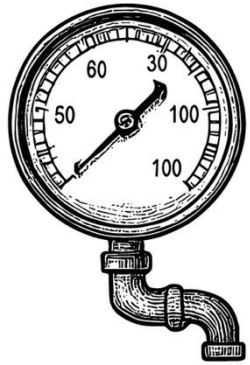
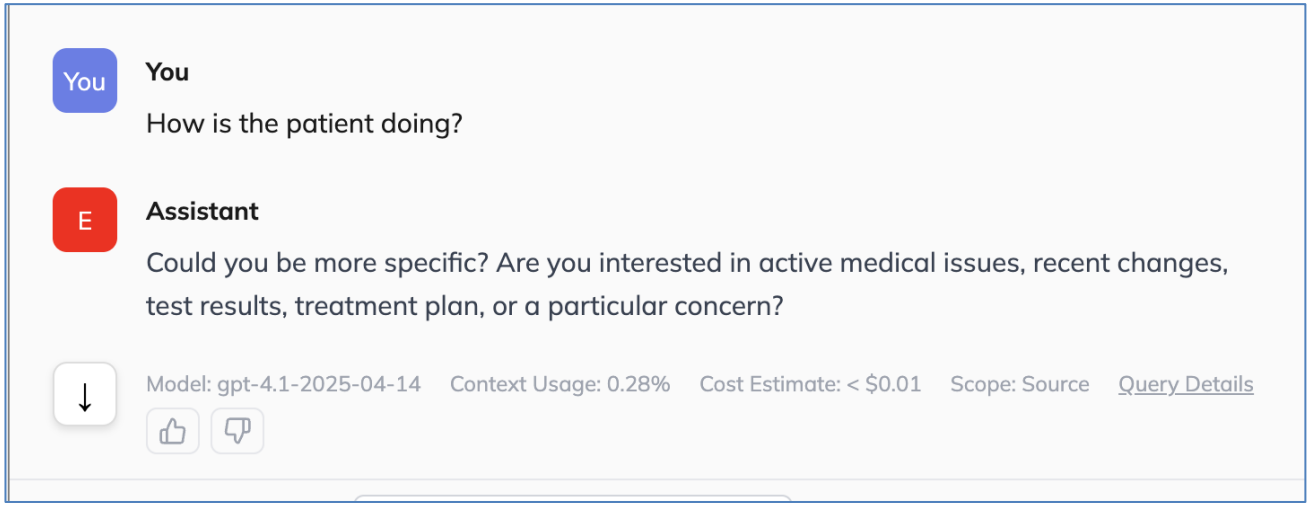

90 notes examined
query written by LLM
Notes Examined: 90
MRN: 999999998
Encounter ID:
SOURCE: Other
Start Date: 1900-01-01T00:00:00
End Date: 2100-01-01T00:00:00
Query: ("central line infection" OR clabsi OR "line associated bloodstream infection" OR "central line associated bloodstream infection" OR "line infections" OR "picc line infection" OR "catheter infection" OR "central line infections" OR "line associated bacteremia" OR clabsis OR "infected line" OR "catheter site infection" OR "central venous line infection" OR "catheter infections" OR "infected hickman" OR "line bacteremia" OR "line infxn" OR "infection due to central venous catheter" OR "picc line infections" OR "line related bacteremia" OR "central line associated blood stream infection" OR "cvl infection" OR "infected hickman catheter" OR "cvc infection" OR "infection of central venous catheter" OR "infected central line" OR "infected lines" OR "central venous catheter infection" OR "central line associated blood stream infections" OR "infected central venous catheter" OR "central venous catheter infections" OR "blood stream infections" OR "central line sepsis" OR "line associated bloodstream infections" OR "central line associated bloodstream infections" OR clbsi OR "infected central lines" OR calbsi OR "central line associated bsi" OR "catheter related infection" OR cri OR "catheter related" OR "catheter related bloodstream infection" OR crbsi OR "catheter associated infection" OR "catheter related infections" OR "catheter related uti" OR "catheter associated infections" OR "catheter related urinary tract infection" OR "catheter acquired" OR "catheter acquired uti" OR "catheter related bloodstream infections" OR "infection due to catheter" OR "catheter acquired urinary tract infection" OR "catheter related bsi" OR "cr bsi" OR bacteremia OR sepsis OR septicemia OR "blood infection" OR bacteremic OR "positive blood cultures" OR "positive blood culture" OR bacteraemia OR bacteremias OR "anaerobic bacteremia" OR urosepsis OR "septic shock" OR septicemic OR toxemia OR toxemic OR septicaemia OR "line sepsis" OR "line infection" OR "cvl infections" OR "infection of central line" OR "central venous line infections" OR "infected cvc" OR "cvc infections" OR "infection of central venous line" OR "infected cvl" OR "infection of cvc" OR "infected central venous line" OR "infection of cvl" OR "infection of central lines" OR cvc OR "central line" OR "central venous catheter" OR "central venous line" OR "central venous catheters" OR "central vascular catheter" OR "central venous lines" OR "central vein catheter" OR cvcs OR "central vein catheters" OR "central vascular catheters" OR "central vein line" OR "central vein lines")

How does it all work?



1. User asks a question
2. LLM evaluates question for specificity
    - If too vague, it will ask for more details



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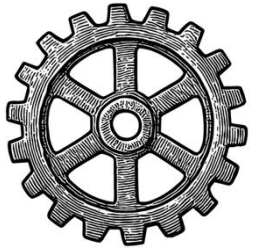
How does it all work?



3. LLM decides if reporting database (e.g., Epic Clarity) should be queried for any known details about the patient
    - demographics, diagnoses, medications, etc.
    - usually not enough to answer the question, but will be used to help the LLM focus on the right details.
4. LLM writes an initial free text search query (no RAG/embeddings), using the structured data as a guide, if available

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How does it all work?

5. LLM will then use available Synonyms to expand the query with additional terms
6. LLM evaluates the expanded query to remove terms likely to be vague, which could lead to excess false positives/noise
   - e.g., ‘ca’ could be cancer, calcium, catheter-associated, etc

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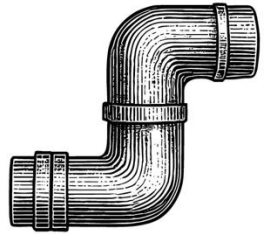
How does it all work?



7. LLM queries EMERSE notes (stored in Solr) to retrieve up to 800 notes (controlled by user preferences)
8. Snippets from each note are extracted with 1,000 characters on each end of the search terms

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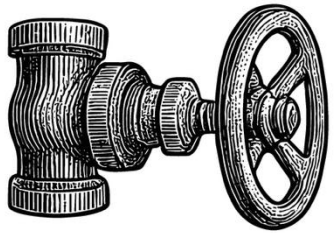
How does it all work?



9. Snippets, along with note metadata, are sent back to the LLM for synthesis and answering the question
   - LLM is instructed to extract exact quotes from notes as supporting evidence
10. Results are returned in a structured (JSON) format and presented to the user in a consistent manner

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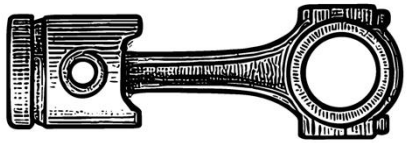
How does it all work?



11. User can click on supporting quotes to review the text in the original note
    - The quoted text is highlighted with deterministic highlighter
    - If text cannot be highlighted deterministically, the LLM may have paraphrased, so text and note is sent to LLM to try to highlight
    - If text still cannot be highlighted it could represent a hallucination and user is warned

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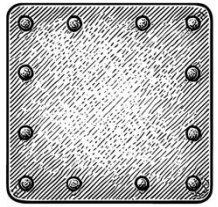
Additional details



- Workflow engine ties distinct LLM calls together
- Conversational memory is maintained, but only within a patient, and only per-conversation
- To encourage reproducibility a temperature of 0 is initially used
  - If LLM returns invalid JSON, and it cannot be repaired, the system will retry at higher temperatures to obtain a valid response

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Additional details

- System maintains detailed accounting of input/output tokens, with estimated costs available for each answer and as a running ledger per user

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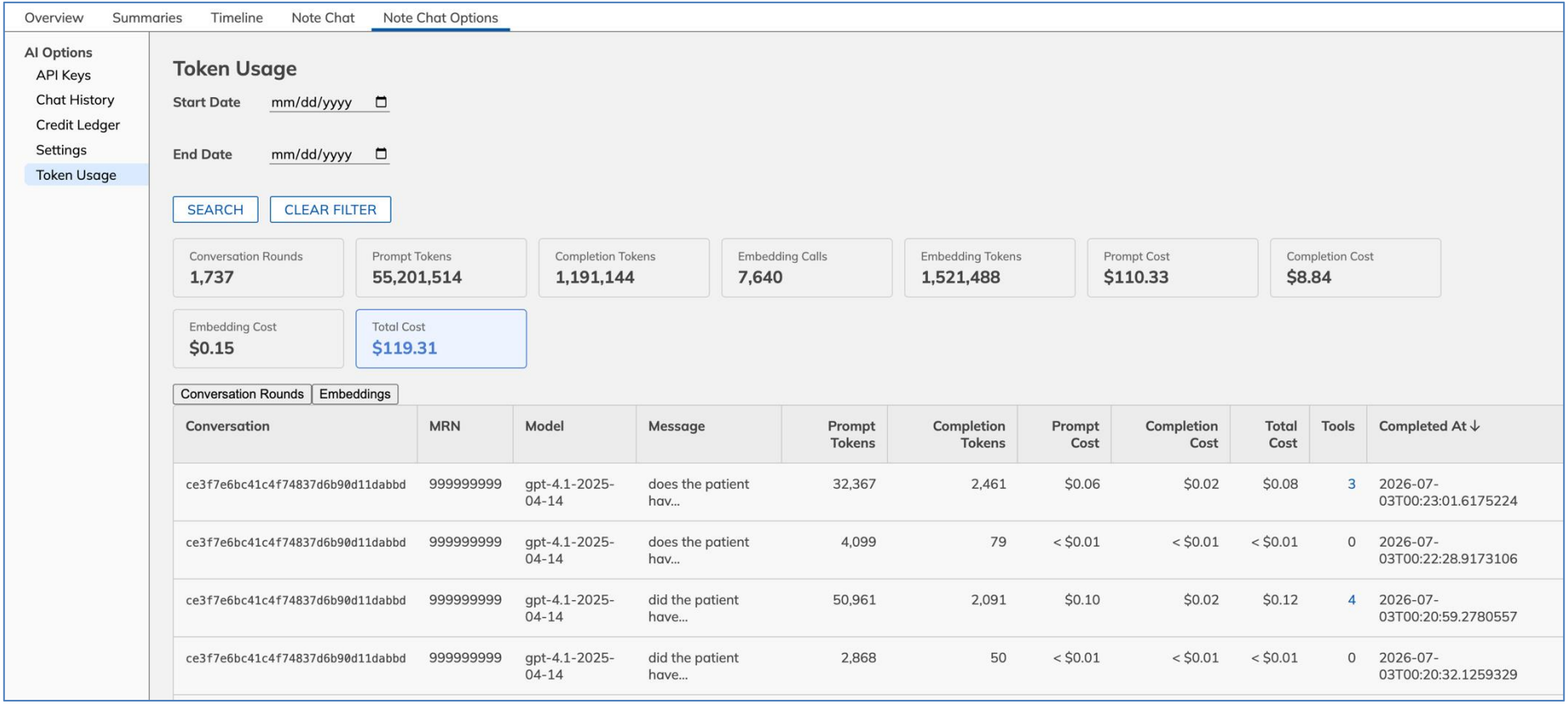

Overview
Summaries
Timeline
Note Chat
Note Chat Options
AI Options
API Keys
Chat History
Credit Ledger
Settings
Token Usage
Token Usage
Start Date
mm/dd/yyyy
End Date
mm/dd/yyyy
SEARCH
CLEAR FILTER
Conversation Rounds
1,737
Prompt Tokens
55,201,514
Completion Tokens
1,191,144
Embedding Calls
7,640
Embedding Tokens
1,521,488
Prompt Cost
$110.33
Completion Cost
$8.84
Embedding Cost
$0.15
Total Cost
$119.31
Conversation Rounds
Embeddings
Conversation
MRN
Model
Message
Prompt Tokens
Completion Tokens
Prompt Cost
Completion Cost
Total Cost
Tools
Completed At ↓
ce3f7e6bc41c4f74837d6b90d11dabbd
999999999
gpt-4.1-2025-04-14
does the patient hav...
32,367
2,461
$0.06
$0.02
$0.08
3
2026-07-03T00:23:01.6175224
ce3f7e6bc41c4f74837d6b90d11dabbd
999999999
gpt-4.1-2025-04-14
does the patient hav...
4,099
79
< $0.01
< $0.01
< $0.01
0
2026-07-03T00:22:28.9173106
ce3f7e6bc41c4f74837d6b90d11dabbd
999999999
gpt-4.1-2025-04-14
did the patient have...
50,961
2,091
$0.10
$0.02
$0.12
4
2026-07-03T00:20:59.2780557
ce3f7e6bc41c4f74837d6b90d11dabbd
999999999
gpt-4.1-2025-04-14
did the patient have...
2,868
50
< $0.01
< $0.01
< $0.01
0
2026-07-03T00:20:32.1259329

Overview | Summaries | Timeline | Note Chat | Note Chat Options

AI Options

- API Keys
- Chat History
- Credit Ledger
- Settings
- Token Usage

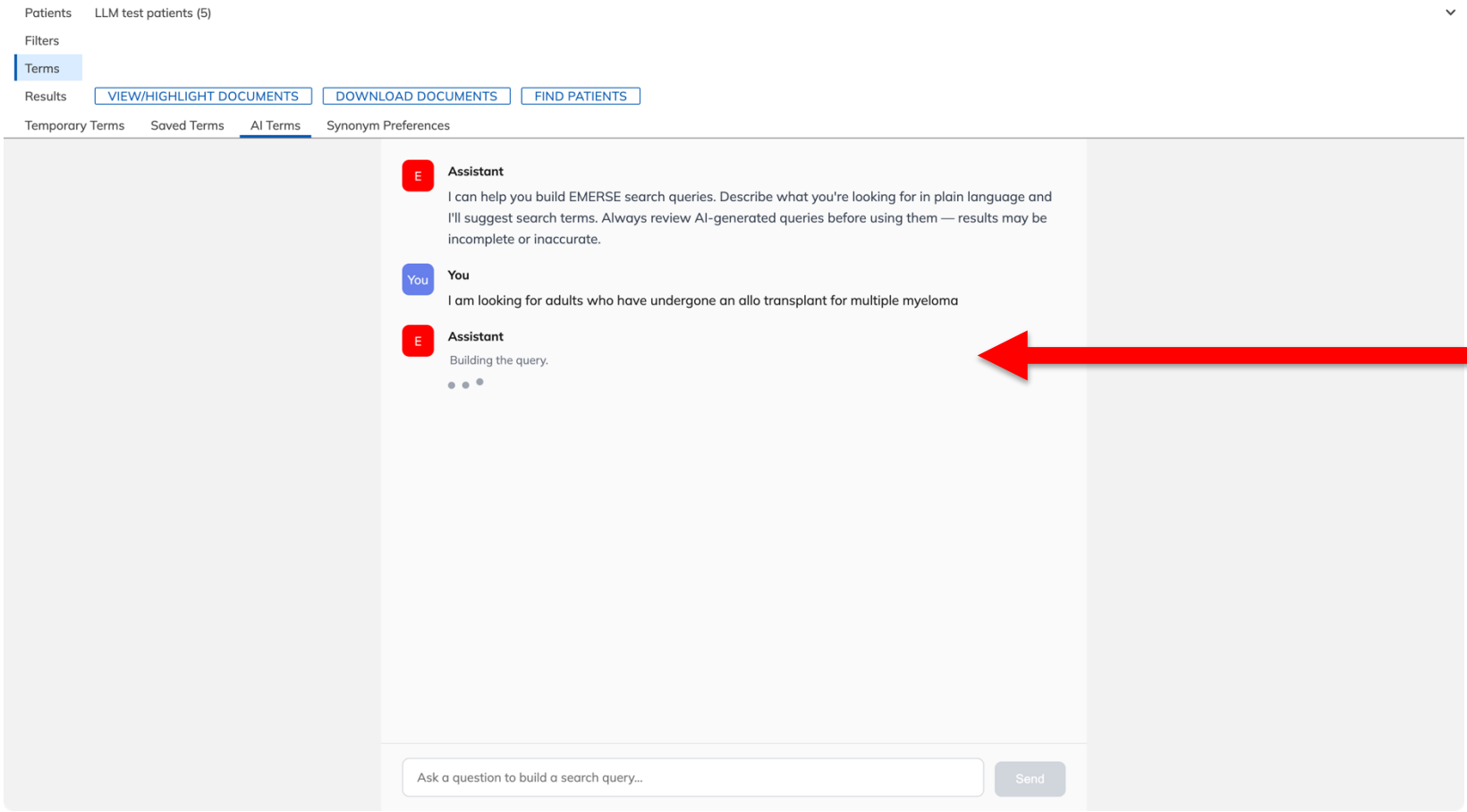
Account: EMERSE (EMERSE)

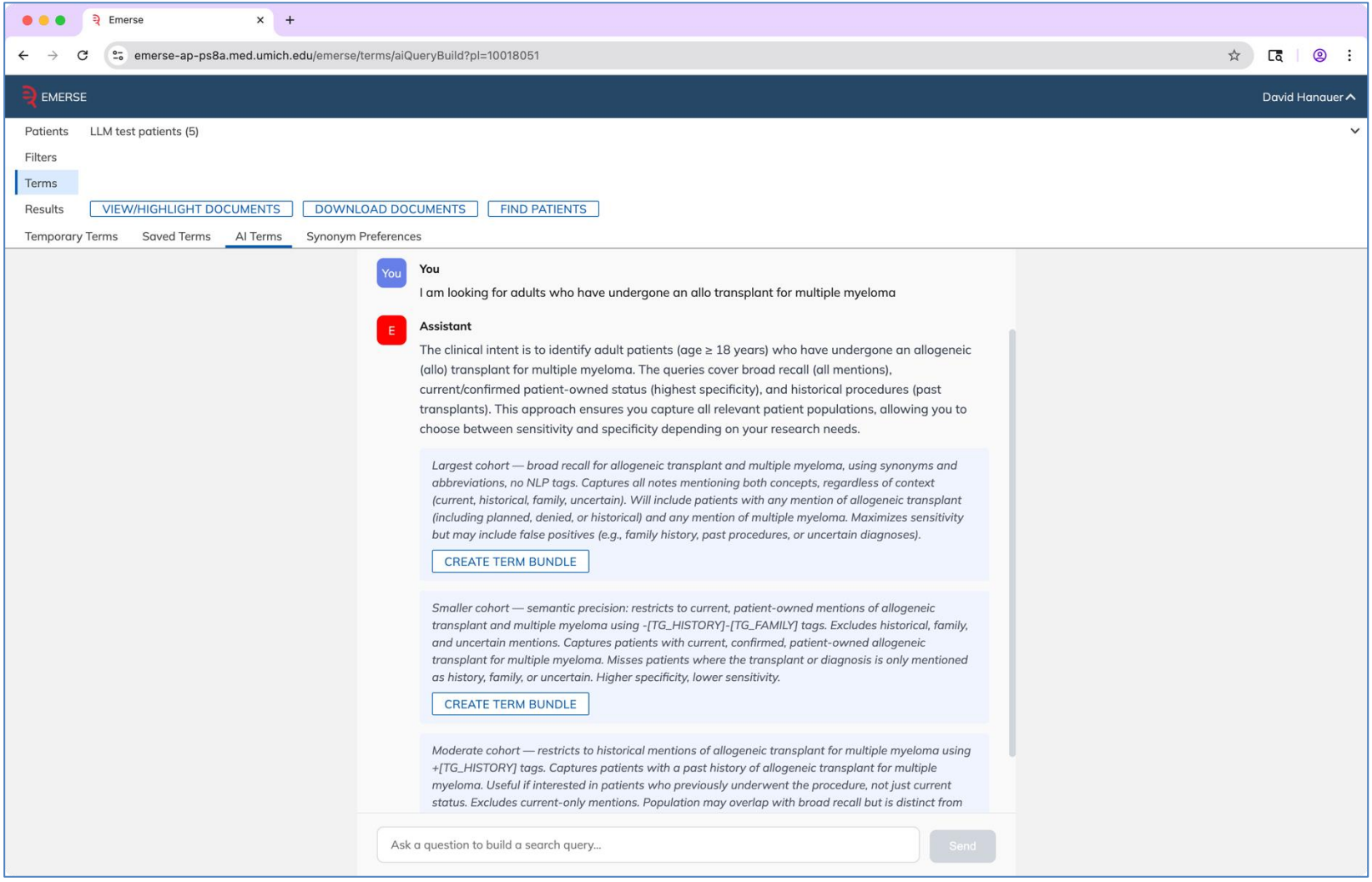
Current Balance
$11.33

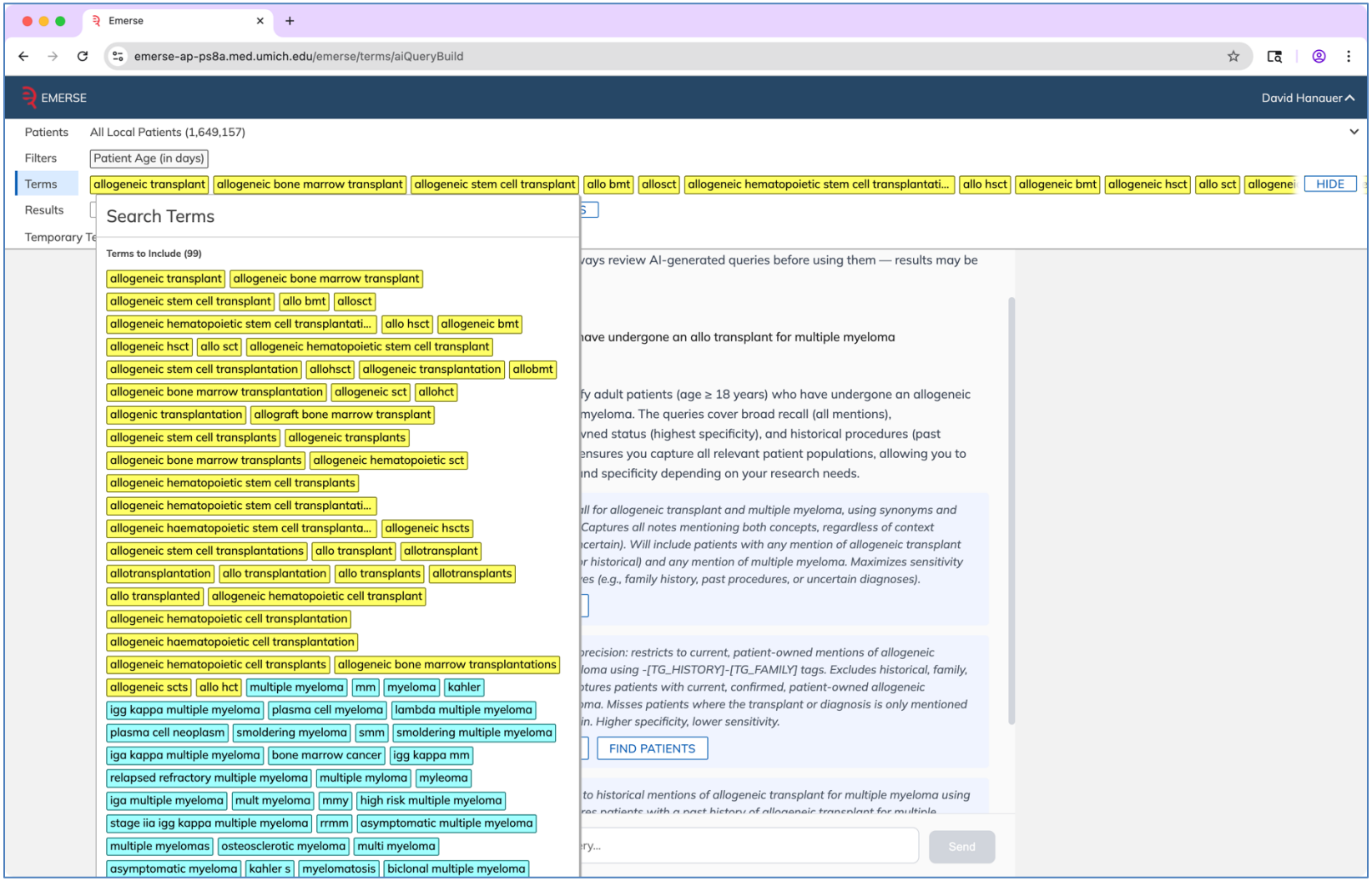
From mm/dd/yyyy To mm/dd/yyyy CLEAR

Date ↓	Type	Amount	Remaining Balance	Reference ID	Created By	Note
2026-07-03 00:23	Chat	-$0.09	$11.33	15835	SYSTEM	
2026-07-03 00:20	Chat	-$0.13	$11.42	15833	SYSTEM	
2026-07-03 00:07	Chat	-$0.17	$11.54	15830	SYSTEM	
2026-07-02 12:33	Chat	-$0.09	$11.72	15744	SYSTEM	
2026-07-02 12:31	Chat	-$0.13	$11.81	15739	SYSTEM	
2026-07-02 10:04	Chat	-$0.01	$11.93	15726	SYSTEM	
2026-07-02 09:37	Chat	-$0.16	$11.95	15712	SYSTEM	
2026-07-02 09:34	Chat	-$0.16	$12.10	15707	SYSTEM	
2026-07-01 19:53	Chat	-$0.01	$12.26	15705	SYSTEM	
2026-07-01 19:53	Chat	-$0.30	$12.27	15704	SYSTEM	
2026-06-24 22:08	Chat	-$0.01	$12.57	15257	SYSTEM	

Query Generation




Emerse
emerse-ap-ps8a.med.umich.edu/emerse/terms/aiQueryBuild?pl=10018051
EMERSE
David Hanauer
Patients
LLM test patients (5)
Filters
Terms
Results
VIEW/HIGHLIGHT DOCUMENTS
DOWNLOAD DOCUMENTS
FIND PATIENTS
Temporary Terms
Saved Terms
AI Terms
Synonym Preferences
You
You
I am looking for adults who have undergone an allo transplant for multiple myeloma
E
Assistant
The clinical intent is to identify adult patients (age ≥ 18 years) who have undergone an allogeneic (allo) transplant for multiple myeloma. The queries cover broad recall (all mentions), current/confirmed patient-owned status (highest specificity), and historical procedures (past transplants). This approach ensures you capture all relevant patient populations, allowing you to choose between sensitivity and specificity depending on your research needs.
Largest cohort — broad recall for allogeneic transplant and multiple myeloma, using synonyms and abbreviations, no NLP tags. Captures all notes mentioning both concepts, regardless of context (current, historical, family, uncertain). Will include patients with any mention of allogeneic transplant (including planned, denied, or historical) and any mention of multiple myeloma. Maximizes sensitivity but may include false positives (e.g., family history, past procedures, or uncertain diagnoses).
CREATE TERM BUNDLE
Smaller cohort — semantic precision: restricts to current, patient-owned mentions of allogeneic transplant and multiple myeloma using -[TG_HISTORY]-[TG_FAMILY] tags. Excludes historical, family, and uncertain mentions. Captures patients with current, confirmed, patient-owned allogeneic transplant for multiple myeloma. Misses patients where the transplant or diagnosis is only mentioned as history, family, or uncertain. Higher specificity, lower sensitivity.
CREATE TERM BUNDLE
Moderate cohort — restricts to historical mentions of allogeneic transplant for multiple myeloma using +[TG_HISTORY] tags. Captures patients with a past history of allogeneic transplant for multiple myeloma. Useful if interested in patients who previously underwent the procedure, not just current status. Excludes current-only mentions. Population may overlap with broad recall but is distinct from
Ask a question to build a search query...
Send


Emerse
emerse-ap-ps8a.med.umich.edu/emerse/terms/aiQueryBuild
EMERSE
David Hanauer
Patients
All Local Patients (1,649,157)
Filters
Patient Age (in days)
Terms
allogeneic transplant
allogeneic bone marrow transplant
allogeneic stem cell transplant
allo bmt
allosct
allogeneic hematopoietic stem cell transplantati...
allo hsct
allogeneic bmt
allogeneic hsct
allo sct
allogenei
HIDE
Results
Temporary Te
Search Terms
Terms to Include (99)
allogeneic transplant
allogeneic bone marrow transplant
allogeneic stem cell transplant
allo bmt
allosct
allogeneic hematopoietic stem cell transplantati...
allo hsct
allogeneic bmt
allogeneic hsct
allo sct
allogeneic hematopoietic stem cell transplant
allogeneic stem cell transplantation
allohsct
allogeneic transplantation
allobmt
allogeneic bone marrow transplantation
allogeneic sct
allohct
allogenic transplantation
allograft bone marrow transplant
allogeneic stem cell transplants
allogeneic transplants
allogeneic bone marrow transplants
allogeneic hematopoietic sct
allogeneic hematopoietic stem cell transplants
allogeneic hematopoietic stem cell transplantati...
allogeneic haematopoietic stem cell transplanta...
allogeneic hscts
allogeneic stem cell transplantations
allo transplant
allotransplant
allotransplantation
allo transplantation
allo transplants
allotransplants
allo transplanted
allogeneic hematopoietic cell transplant
allogeneic hematopoietic cell transplantation
allogeneic haematopoietic cell transplantation
allogeneic hematopoietic cell transplants
allogeneic bone marrow transplantations
allogeneic scts
allo hct
multiple myeloma
mm
myeloma
kahler
igg kappa multiple myeloma
plasma cell myeloma
lambda multiple myeloma
plasma cell neoplasm
smoldering myeloma
smm
smoldering multiple myeloma
iga kappa multiple myeloma
bone marrow cancer
igg kappa mm
relapsed refractory multiple myeloma
multiple myloma
myleoma
iga multiple myeloma
mult myeloma
mmy
high risk multiple myeloma
stage iia igg kappa multiple myeloma
rrmm
asymptomatic multiple myeloma
multiple myelomas
osteosclerotic myeloma
multi myeloma
asymptomatic myeloma
kahler s
myelomatosis
biclonal multiple myeloma
ways review AI-generated queries before using them — results may be
have undergone an allo transplant for multiple myeloma
fy adult patients (age ≥ 18 years) who have undergone an allogeneic
myeloma. The queries cover broad recall (all mentions),
vned status (highest specificity), and historical procedures (past
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Captures all notes mentioning both concepts, regardless of context
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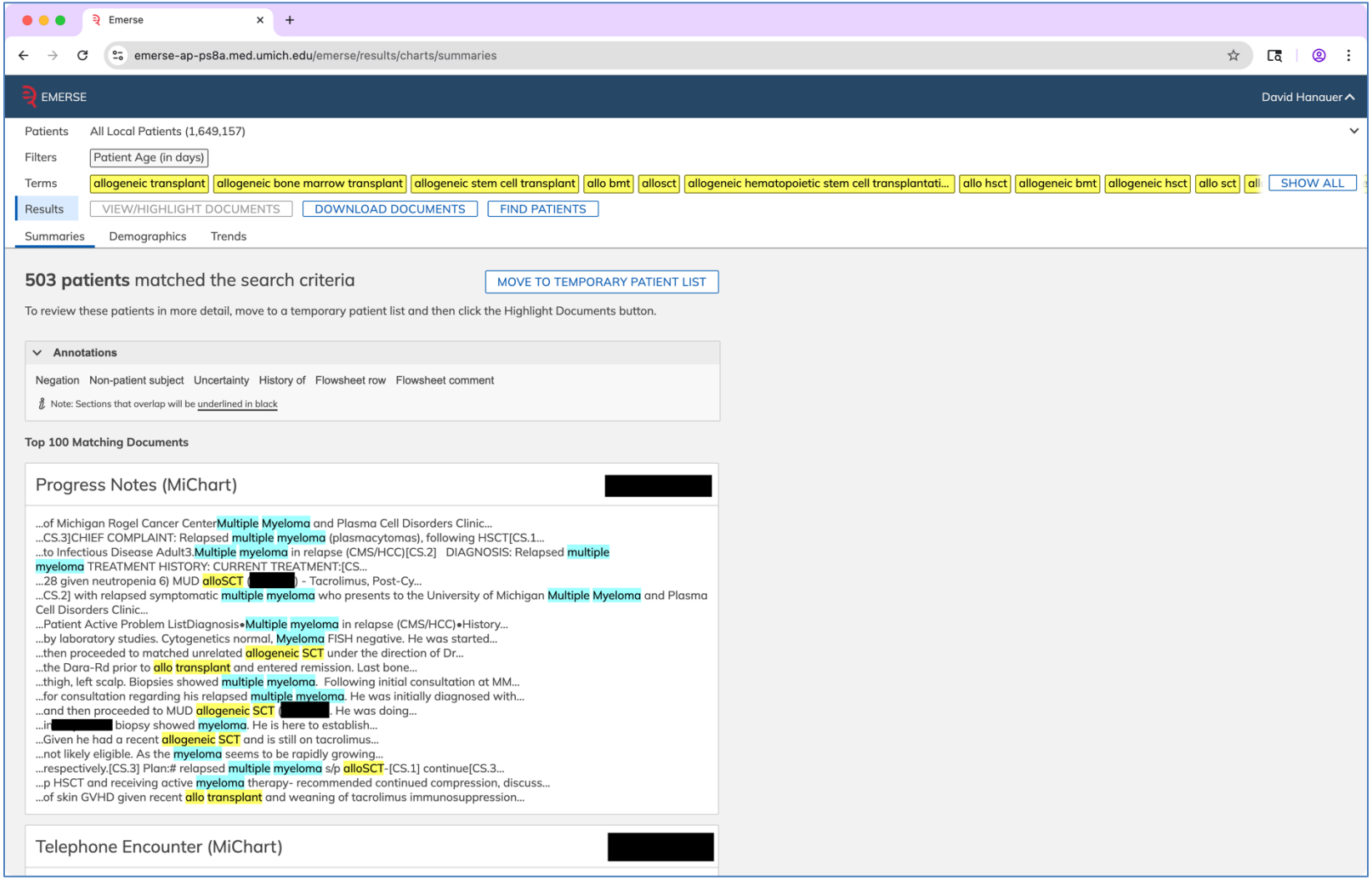
recision: restricts to current, patient-owned mentions of allogeneic
loma using -[TG_HISTORY]-[TG_FAMILY] tags. Excludes historical, family,
tures patients with current, confirmed, patient-owned allogeneic
oma. Misses patients where the transplant or diagnosis is only mentioned
in. Higher specificity, lower sensitivity.
FIND PATIENTS
to historical mentions of allogeneic transplant for multiple myeloma using
ery...
Send


Emerse
emerse-ap-ps8a.med.umich.edu/emerse/results/charts/summaries
EMERSE
David Hanauer
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All Local Patients (1,649,157)
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allo sct
SHOW ALL
Results
VIEW/HIGHLIGHT DOCUMENTS
DOWNLOAD DOCUMENTS
FIND PATIENTS
Summaries
Demographics
Trends
503 patients matched the search criteria
MOVE TO TEMPORARY PATIENT LIST
To review these patients in more detail, move to a temporary patient list and then click the Highlight Documents button.
Annotations
Negation
Non-patient subject
Uncertainty
History of
Flowsheet row
Flowsheet comment
Note: Sections that overlap will be underlined in black
Top 100 Matching Documents
Progress Notes (MiChart)
[redacted]
...of Michigan Rogel Cancer CenterMultiple Myeloma and Plasma Cell Disorders Clinic...
...CS.3]CHIEF COMPLAINT: Relapsed multiple myeloma (plasmacytomas), following HSCT[CS.1...
...to Infectious Disease Adult3.Multiple myeloma in relapse (CMS/HCC)[CS.2] DIAGNOSIS: Relapsed multiple myeloma TREATMENT HISTORY: CURRENT TREATMENT:[CS...
...28 given neutropenia 6) MUD alloSCT ([redacted]) - Tacrolimus, Post-Cy...
...CS.2] with relapsed symptomatic multiple myeloma who presents to the University of Michigan Multiple Myeloma and Plasma Cell Disorders Clinic...
...Patient Active Problem ListDiagnosis•Multiple myeloma in relapse (CMS/HCC)•History...
...by laboratory studies. Cytogenetics normal. Myeloma FISH negative. He was started...
...then proceeded to matched unrelated allogeneic SCT under the direction of Dr...
...the Dara-Rd prior to allo transplant and entered remission. Last bone...
...thigh, left scalp. Biopsies showed multiple myeloma. Following initial consultation at MM...
...for consultation regarding his relapsed multiple myeloma. He was initially diagnosed with...
...and then proceeded to MUD allogeneic SCT ([redacted]. He was doing...
...ir[redacted] biopsy showed myeloma. He is here to establish...
...Given he had a recent allogeneic SCT and is still on tacrolimus...
...not likely eligible. As the myeloma seems to be rapidly growing...
...respectively.[CS.3] Plan:# relapsed multiple myeloma s/p alloSCT-[CS.1] continue[CS.3...
...p HSCT and receiving active myeloma therapy- recommended continued compression, discuss...
...of skin GVHD given recent allo transplant and weaning of tacrolimus immunosuppression...
Telephone Encounter (MiChart)
[redacted]

Initial Experiences

- LLMs are powerful but multiple challenges remain
  - Cost
  - Speed
  - Completeness
  - Accuracy
    - Invalid JSON
    - Paraphrasing instead of direct quotes
  - Hallucinations – rare

emerse
ELECTRONIC MEDICAL RECORD SEARCH ENGINE

Context window limitations

- 1 million token limit for context window
- A quick check of our EHR identifies:
  - Patient with 9377 notes, 4.6 million tokens
  - Patient with 8675 notes, 7.5 million tokens
- Need to sample, no guarantee it can be “complete”

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LLM work remains in progress

- We are excited and optimistic about what will be possible
- Users are eager to test the upcoming capabilities

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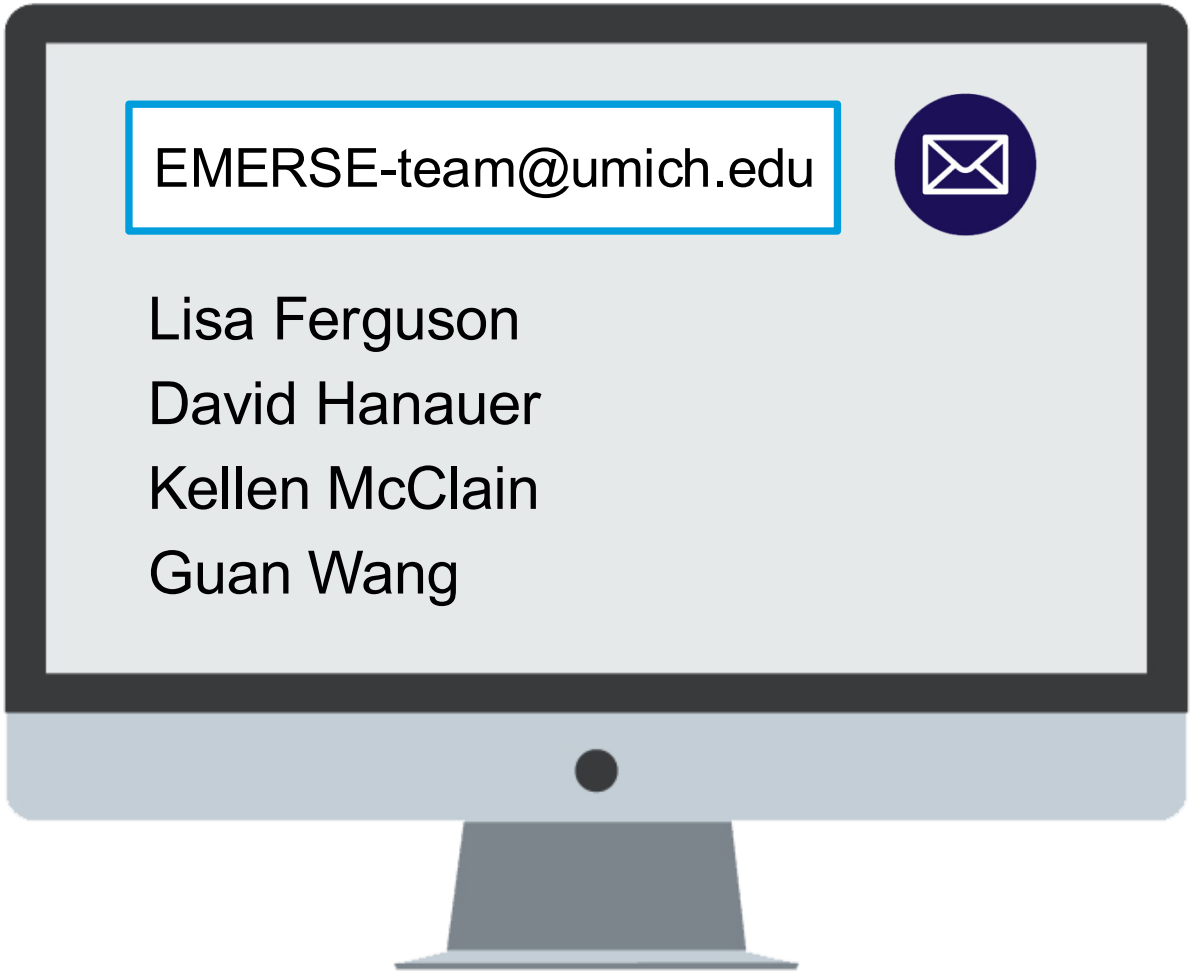
ELECTRONIC MEDICAL RECORD SEARCH ENGINE

http://project-emerse.org/presentations.html



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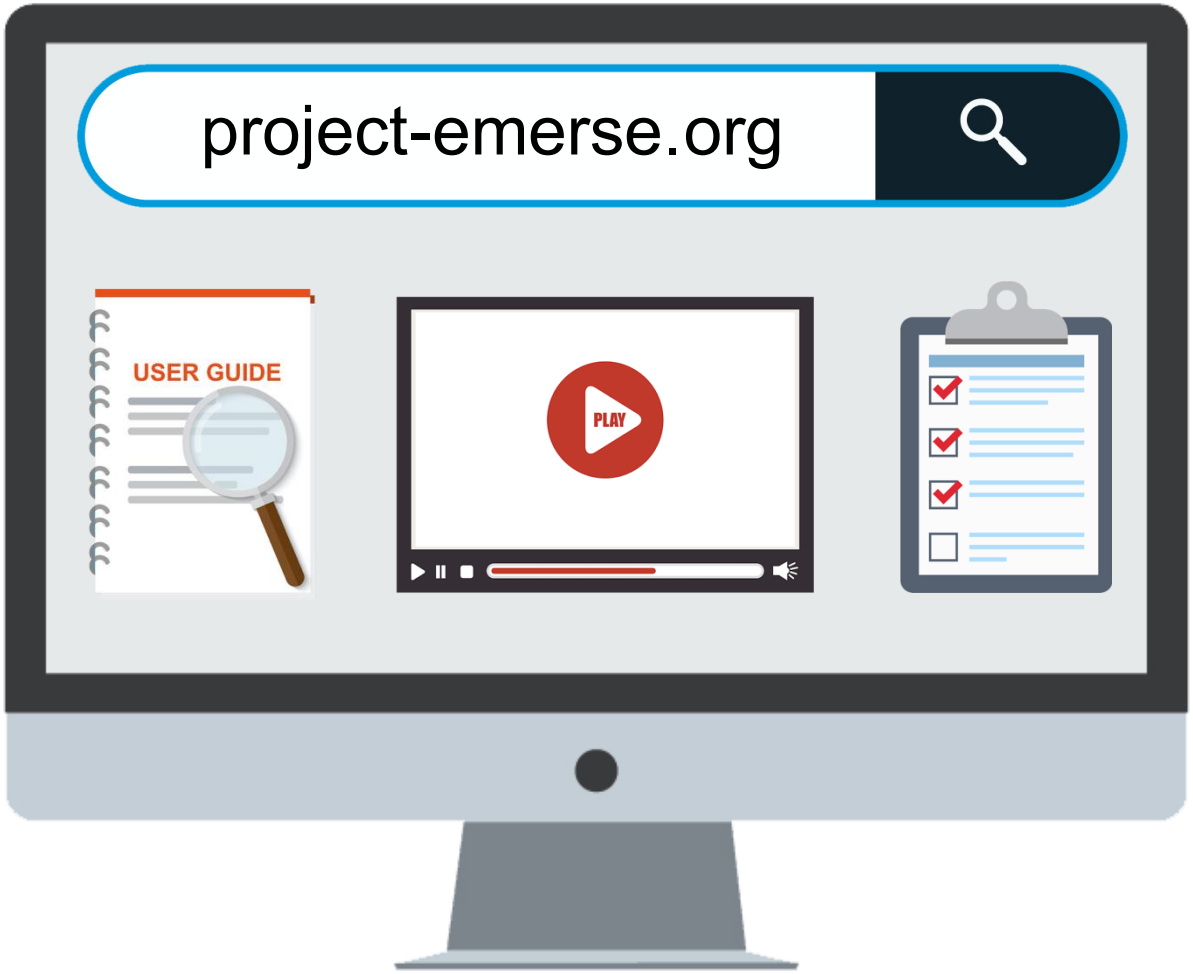
http://project-emerse.org/presentations.html

THANK YOU!



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ELECTRONIC MEDICAL RECORD SEARCH ENGINE

http://project-emerse.org/presentations.html