

# EMERSE: an easy-to-use, self-service search engine and chart review tool for EHR notes



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# Disclosures



Funding: NIH (NCI, NCATS)

Licenses/Royalties: EMERSE “Synonyms”  
(used for query expansion) which is  
licensed by the U of Michigan

Free for academic use  
within EMERSE

# Unstructured vs Structured Data

| EMERSE is for this...   | ...not this  |
|---|--|
| <i>Unstructured Data (free-text)</i>  | <i>Structured Data</i>   |
| Mrs. Jones is a 56 year old female with a history of HTN, hypercholesterolemia, and T2DM who comes to the clinic today with a 3 day h/o dizziness and severe headache on the left side. | WBC: 5.6<br>Total cholesterol: 182<br>Weight: 67.4<br>AST: 30<br>ALT: 52 |

# The EMERSE solution



- A system “for the people”
- Users search the notes on their own
  - No need to wait in a queue for an analyst or a data scientist
- Easy-to-use for non-technical researchers
- Unlike with some EHRs, EMERSE can search across all notes and all patients at once



# Find cohorts

EMERSE

dev-emerse.med.umich.edu/emerse/patient-lists/saved/10051/view?pl=10051&qk=3051&mode=mosaic

EMERSE Emerse Default

PATIENTS Demo List (16)

FILTERS

TERMS "ct scan" "liver cancer" emesis hepatic carcinoma smoker ultrasound prednisone steroids insomnia biopsy arrythmia ...chemo SHOW ALL

OVERVIEW TEMPORARY PATIENT LIST **SAVED PATIENT LISTS** ALL PATIENTS

Demo List

- Name/Description
- Add/Upload Patients
- View Patients**
- Sharing
- Clear/Delete
- Export

## View Patients

HIGHLIGHT DOCUMENTS FIND PATIENTS

| MRN       | Patient Name    | Age      | DOB        | Comment                            | Tag                                 | Action |
|-----------|-----------------|----------|------------|------------------------------------|-------------------------------------|--------|
| 100006810 | Dudley, Gabriel | 82 Years | 07/10/1938 | not eligible for study<br>22 / 255 | <input type="checkbox"/>            | Remove |
| 100006606 | Perry, Kiana    | 25 Years | 08/09/1995 | 0 / 255                            | <input checked="" type="checkbox"/> | Remove |
| 100005304 | Kimura, Luciano | 39 Years | 04/17/1981 | 0 / 255                            | <input checked="" type="checkbox"/> | Remove |

# Find cohorts

It's perfect for finding rare things...



...like rare cancers such as  
cutaneous leiomyosarcoma

See this talk for more details:

<https://vimeo.com/677482835>

“Using EMERSE to Improve Research  
Involving Rare Cancers”

# Highlight documents for chart review

Thoracocentesis confirmed the recurrence of mantle cell lymphoma. Disease restaging work-up revealed multicompartment lymphadenopathy in the neck, mediastinal, retrocrural, retroperitoneal and pelvic regions. Bone marrow was also involved. The patient was treated with a total of six cycles of rituximab, cyclophosphamide, vincristine, doxorubicin and dexamethasone (R-HyperCVAD) completed in January 2007. That treatment led to complete remission that lasted until October 2008, when the disease was found to have recurred in the left pleural space and retroperitoneum without bone marrow involvement.



# Synonyms

EMERSE

dev-emerse.med.umich.edu/emerse/terms/temporary/3051/manage-terms?pl=10051&qk=3051&mode=mosaic

EMERSE Emerse Default

PATIENTS Demo List (16)

FILTERS

TERMS "ct" arrhythmia chemo SHOW ALL

OVERVIEW

Temporary Terms

- Name/Description
- Manage Terms
- View Terms
- Sharing
- Clear/Delete

### Synonyms for "shortness of breath"

Click individual terms to highlight or de-highlight.

Synonyms (28) HIGHLIGHT ALL HIGHLIGHT NONE

air hunger breathing difficulties breathing difficulty breathless breathlessly breathlessness  
difficulties breathing difficulty breathing dyspnea dyspneic dyspnoea dyspnoeic gasping  
gasping for air out of breath s o b short of breath short of breath on exertion  
short of breath with exertion short on breath shortness of breath on exertion  
shortness of breath with exertion sob sob on exertion sob with exertion soboe trouble breathing  
winded

Spelling Alternatives (30) HIGHLIGHT ALL HIGHLIGHT NONE

dyspnea dsynpeic dsypnea dsypnea dsyspnea dypspnea dypnea dypnic dypsnea dypsneic  
dypsnic dypsnoea dypsnoeic dysnea dyspnea dysonea dyspea dyspena dyspenia dyspenic  
dyspne dyspnia dyspnic dyspnoic dysponea esob shorthness of breath soa soib sypnea

**ADD HIGHLIGHTED TERMS (58)** CANCEL



# Where is EMERSE?

Locations of the sites that have EMERSE installed (📍) or are currently working on installing (🟡)



[project-emerse.org](http://project-emerse.org)



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