

EMERSE

Electronic Medical Record Search Engine

SOM CTU CME Series - Clinical Research education series

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Tuesday, October 29, 2024



Accreditation

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Disclosure Summary:

No one in a position to control the content of this educational activity has disclosed a relevant financial interest or relationship with any commercial interest

Activity Code

Activity Code: 24724

Instructions for claiming credits/contact hours can be found [here](#).

Who we are

Research and Clinical Trial Analytics

A multi-disciplinary team of specialists in human subject research data who support the School of Medicine's research community across the globe. Together we work to provide innovative solutions and find the best tools, systems and processes to reach your research goals.

We are a remote team that reports up through the University Health System Analytics and Reporting Team (ART) of the Quality and Performance Improvement (QPI) Department.

Director: Christine Kelly-Fisher

Manager: Deb Green

EMERSE Team

- Fauzia Khan
- Dave Guan
- Jackie Gravitt
- Misha Zimmel

Website: [Research Clinical Trials Analytics - EMERSE](#)

Other applications and services on our team:

- Advarra EDC
- MuSIC
- REDCap
- UVA Health Data (Data Requests, Cosmos, Epic Tools, EMERSE, OMOP, TriNetX) – **EMERSE Presentation today!**
- Caisis
- Cancer Research Data Mart (CRDM)
- CRConnect2/CRC2

A graphic consisting of numerous thin, orange lines radiating from a central point, forming a semi-circular sunburst shape. The word "Contents" is written in a bold, orange, serif font, centered within the sunburst.

Contents

1. What is EMERSE
2. Common Uses of EMERSE
3. How to use EMERSE
 - a. Access & Requirements
 - b. Self-Service & Resources
 - c. Search Notes in EMERSE
4. How to submit a request for Full-Service & Cost

1. What is EMERSE?

What is EMERSE?

EMERSE (Electronic Medical Record Search Engine) is software that helps researchers accurately find and extract important patient details like diagnoses, medications, procedures, and complications from clinical notes.

- Designed by University of Michigan in 2005 to help everyday users work with the free text documents (i.e., clinical notes) in medical records
- EMERSE is similar to natural language processing (NLP), but it's actually an information retrieval tool. That means it has a lot of similarities with software that users are already familiar with including Google. Another advantage of EMERSE over traditional NLP is how simple it is to use, and how little effort is required to get started with it.
- It is open source, free to use, and is accessible from any modern web browser, but requires a dedicated clinical IT team to install and securely manage the system.
- Engineered to be fast, powerful, and above all, easy to use. It has supported hundreds of research projects, leading to many peer-reviewed publications.
- Use cases range from operational to research
- It can handle free text data from any type of medical record system — if you can get the data out of your EHR, there should be a way to get it into EMERSE.
- Version EMERSE 6.6.6 (7/9/2024)
- Implemented at UVA in Feb 2024

EMERSE Features

- Color-Coded Search Terms
 - Saved, Shareable Search Terms
 - Data Visualization
 - Synonym (Term) Suggestions
 - Patient Lists
 - Find Patients
 - Trends
 - Compare Patient Lists
 - Advanced Search Capabilities
 - Filters
 - Auditing and Role-Based Access
- <https://project-emerse.org/features.html>

2. Common Use Cases of EMERSE

Use Cases

Keep in mind we will only use EMERSE for approved research studies at this time.

- Research (feasibility, research data)
- Infection Prevention – Prevent infection through lookback. When an infection is discovered, lookback through that patient's chart to determine when the infection started and for potential causes. Able to search multiple patient MRNs at a time, versus one by one.
- Coding Compliance – Looking for multiple term search simultaneously. Especially when patient has been in hospital for a long period for time, that means a lot more notes...EMERSE simplifies that.
- Cardiac Surgery Research – clinical outcomes (pre & post operatively). Targeted, Intext search. Great to meet deadlines like manuscript/abstract submissions
- https://project-emerse.org/use_cases.html

3. How to Use EMERSE

Access

EMERSE at UVA will provide a self-service web-based tool for authorized users (initially those with a HS account and IRB approval for a specific study)

- Initial approval to gain access to EMERSE is processed by Christine Kelly-Fisher or Deb Green
 - REDCap Tracker for approval process
 - Submit request (see Requirements slide)
- EMERSE account is created and marked to use LDAP for login
- Users Log in and select the appropriate study for that session on the Attestation page
 - Only active studies the user is listed on
 - One researcher can have multiple active research studies, user must use the honor system in accessing the system

Website: [Research Clinical Trials Analytics - EMERSE](#)

Requirements

Limited to Principal Investigators (PIs), Sub-PIs, or Study Coordinators for active IRB-approved studies. You will need to complete the [OMOP & EMERSE User Access Form](#) and have the following qualifications:

- You are listed as a PI, Sub-PI, or Study Coordinator on an active IRB-approved study
- You must provide Data Governance approval – [UVA Health Data Governance](#)
- You must follow CITI directive and HIT Security Rules in regards to research data usage in EMERSE: [CITI Program](#), take course IRB-HSR Researcher Basic Course
- You must only search key terms related to the research study selected during login attestation
- You must acknowledge you will cite EMERSE for any publications in which EMERSE data is used: [Citing EMERSE](#) (information is provided to the user in New Access Notification)
- You must have access to the UVA Health Network. Use this link to request [UVA Academic Sponsorship Request for Health System Network](#)

Attestation

The Attestation Page is the first page the user will land on after logging in to EMERSE. This is the page on which the user defines the specific reason for using EMERSE for that particular login session. This information is stored in the logs (audit trails) to capture specific use cases when looking up patient information. There is currently no way to change your Attestation selection once you have logged into EMERSE for a specific user-session. If you need to change it, log out of EMERSE and then log back in again. You can view your currently selected Attestation within EMERSE by clicking on the menu in the upper right section of the Navigation Panel. Enter the system with these UVA designated purposes for the login:

You will Attest through your Active IRB Study

Warning: Users cannot perform generic or unrelated searches in EMERSE, only those searches that are directly related to the research study they have attested to upon entry. The system is connected to the IRB data on a continuous basis, therefore, any studies that have expired, or which the user is no longer listed on, will automatically be removed from the Attestation list.

3b. Self Service & Resources

EMERSE User Guide Self-Service

UVA EMERSE User Guide

EMERSE (Electronic Medical Record Search Engine) is software that helps researchers accurately find and extract important patient details like diagnoses, medications, procedures, and complications from clinical notes. EMERSE is easy for non-technical people to use and enables health research that was previously inefficient or nearly impossible.

EMERSE is similar to natural language processing (NLP), but it's actually an information retrieval tool. That means it has a lot of similarities with software users are already familiar with including Google. Another advantage of EMERSE over traditional NLP is how simple it is to use, and how little effort is required to get started with it.

EMERSE is open source, free to use, and is accessible from any modern web browser. UVA EMERSE is administered and managed by the Research & Clinical Trials Analytics (RCTA) Team. The team will also provide the service of searching relevant notes for a fee upon request and after a cost estimate is signed by the customer.

Access for Research

Limited to PIs, Sub-PIs, or Study Coordinators for active IRB-approved Studies

You will need to complete the [QMOP & EMERSE User Access Form](#) and have the following qualifications:

1. You are listed as a PI, Sub-PI or Study Coordinator on an active IRB-approved
2. You must provide Data Governance approval – [UVA Health Data Governance](#)
3. You must follow CITI directive and HIT Security Rules in regards to research data usage in EMERSE: [CITI Program](#), take course [IRB-HSR RESEARCHER BASIC COURSE](#)
4. You must only search key terms related to the research study selected during login attestation
5. You must acknowledge you will cite EMERSE for any publications in which EMERSE data is used: [Citing EMERSE](#) (information is provided to the user in New Access Notification)
6. You must have access to the UVA Health Network. Use this link to request a [UVA Academic Sponsorship Request for Health System Network](#).

The EMERSE Administrator will review your request for qualifications. Once all the qualifications have been met, you will receive an email notification that access has been approved. The email notification will include the EMERSE Application Link and login instructions using your UVA Health System network user ID and password.

Production EMERSE site: <https://hitemerse1.hscs.virginia.edu/emerse>

Attestation

The Attestation Page is the first page you will land on after logging in to EMERSE. Select the IRB-approved research study that you are using EMERSE for that login session. Please note that your attestation is stored in the application logs (audit trail) to capture specific use cases when looking up patient information. There is currently no way to change your Attestation selection once you have logged into EMERSE for a specific user-session. If you need to change it, log out of EMERSE and then log

Training Assistance: iTHRIV

- Provide researcher support and training for [Patient Data Exploration and Analysis tools and platforms](#)
- This team holds open office hours each Wednesday from 12-1 pm EST over [zoom](#). We encourage you to bring your research teams to office hours for support related to any of the above. If you are unable to join at that time, please send your request to iTHRIVAdmin@uvahealth.org.
- iTHRIV Informatics Consults: UVA Researchers? [iTHRIV - Resource/Event Details](#)

Data Export:

- Email RCTA Team when EMERSE search is ready for export researchdata@uvahealth.org
- There is a cost associated with this service. Current Rate is \$77/Hour

3c. Search Notes in EMERSE

Patients All Local Patients (10,946)

Filters

Terms

cancer

Results

HIGHLIGHT DOCUMENTS

FIND PATIENTS

Temporary Terms

Saved Terms

Advanced Terms

Synonym Preferences

Temporary Terms

Name/Description

Manage Terms

Sharing

Clear/Delete

Export

UPLOAD TERMS

SAVE TERMS

Terms to include

Please add terms or multi-word phrases, one at a time using the field below.

Add term

diabetes

ADD

Included terms

 cancer

Phrases to exclude

Please add phrases to exclude one at a time using the field below.

Add Phrase

ADD

Excluded phrases

None

Patients All Local Patients (10,946)

Filters

Terms

diabetes

cancer

Results

HIGHLIGHT DOCUMENTS

FIND PATIENTS

Summaries

Demographics

Trends

1,126 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.

Top 100 Matching Documents

Nursing Note (Other)

01/28/2016

...an association between type 2 diabetes and pancreatic cancer but the complex and multidirectional...
...We summarized epidemiological evidence on diabetes and pancreatic cancer exploring the time-risk relationship...
...described mechanisms linking long-standing diabetes to pancreatic cancer. We discussed pancreatic cancer-associated diabetes and its implication in the...
...the early detection of pancreatic cancer. Expert opinion: The markedly increased risk of pancreatic cancer in patients with new-onset diabetes compared with long-standing diabetes observed in several epidemiological studies...
...bidirectional connection, with long-standing diabetes being a predisposing factor for pancreatic cancer (increasing the risk of the...
...2-fold) and new-onset diabetes an early manifestation of the...
...and biomarkers to distinguish pancreatic cancer-associated diabetes from type 2 diabetes is an important goal to...
...management and survival of this cancer. Imaging (MRI) for middle-age...
...age patients with new-onset diabetes may be considered...

Patients

Temporary List (1,126)

Filters

Terms

diabetes

cancer

Results

HIGHLIGHT DOCUMENTS

FIND PATIENTS

No real patient information
displayed

Temporary Patient List

Saved Patient Lists

All Local Patients

Network

Temporary List

Name/Description

Add/Upload Patients

View Patients

Patient Demographics

Sharing

Clear

Export

CONVERT TO SAVED PATIENT LIST

MRN	Name	Birth Date	Age	Action
100004581	Mcguire, Rachel	12/18/1956	66 Years	Remove
100000195	Mathews, Freya	01/01/1997	26 Years	Remove
100000258	Sanford, Alexzander	09/07/1974	49 Years	Remove
100000284	Charles, Paul	03/21/1987	36 Years	Remove
100000629	Hodge, Ali	05/28/2009	14 Years	Remove
100000637	Best, Shepard	05/22/1973	50 Years	Remove
100001145	House, Faith	11/03/1960	62 Years	Remove
100001165	Gould, Alia	07/21/1931	92 Years	Remove
100001317	Huffman, Ryder	03/09/2007	16 Years	Remove
100001324	Mendoza, Armani	12/21/1971	51 Years	Remove
100001374	Conley, Mina	11/06/1927	95 Years	Remove

Patients

Temporary List (1,126)

Filters

Terms

diabetes

cancer

Results

HIGHLIGHT DOCUMENTS

FIND PATIENTS

Temporary Patient List

Saved Patient Lists

All Local Patients

Network

Temporary List

Name/Description

Add/Upload Patients

View Patients

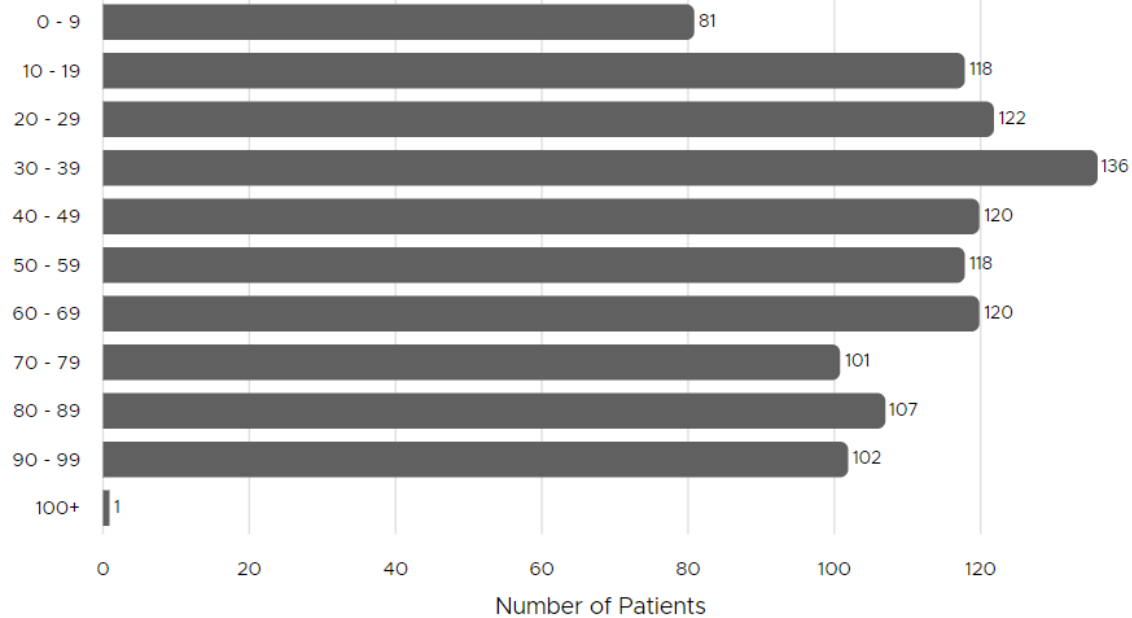
Patient Demographics

Sharing

Clear

Export

Birth Date



Saving & Requesting Results

You do not have the ability to export these records. You can save the Patients, Terms and Filters. If you need to export the notes, you will need to contact the RCTA team.

- Patients – This is the base population, later saved as a list after Terms and/or Filters are applied.
- Filters – Further filters down the population search (you will be able to save filters in the future)
- Terms – Key terms you will search on your Patients base population. Save terms individually.

You can save the searched criteria (Filters, Terms) and save the resulting Patients list. Note that each is saved separately. Please use a good naming convention so that you can piece back together the search details if needed.

Email RCTA Team when EMERSE search is ready for export researchdata@uvahealth.org
There will be a cost for the export, \$77/Hour.

4. How to submit a request for Full-Service & Cost

Requirements for Full-Service

1. 1. Email RCTA Team to request EMERSE Full-Service for a cost estimate: researchdata@uvahealth.org
2. Requirements:
 - IRB approval/assurance document
 - Data governance needed – if you plan on sharing the data out of UVA
3. After a Consultation the RCTA Team will provide you a cost estimate for your work effort
 - Cost is \$77/hour
4. After the cost estimate is signed by your team, your work will be prioritized within current workload of assigned staff member
5. Full-Service means, our team will gather requirements from you, extract data, and submit to you for review and validation. Then the final dataset is delivered through DropBox or other agreed upon and allowable data sharing platform.
6. Customer is Invoiced for services provided

Activity Code

Activity Code: 24724

Instructions for claiming credits/contact hours can be found [here](#).



Questions?