

CURRICULUM VITAE

ELIZABETH S. CHEN, PHD, FACMI

1. NAME, POSITION, ACADEMIC DEPARTMENTS

Elizabeth S. Chen

Associate Professor of Medical Science, Section of Translational Medicine,
The Warren Alpert Medical School

Associate Professor, Department of Health Services, Policy and Practice,
School of Public Health

Interim Director, Brown Center for Biomedical Informatics (BCBI)

Director, Advance-CTR Biomedical Informatics, Bioinformatics, and
Cyberinfrastructure Enhancement (BIBCE) Core

2. CONTACT INFORMATION

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3. EDUCATION

1998	B.S.	Computer Science	Tufts University, Medford, MA
2000	M.A.	Biomedical Informatics	Columbia University, New York, NY
		Advisor: Kathleen R. McKeown, PhD (Computer Science)	
		<i>Thesis: Extending the MAGIC (Multimedia Abstract Generation for Intensive Care) Content Planner</i>	
2002	M.Phil.	Biomedical Informatics	Columbia University, New York, NY
		Advisor: James J. Cimino, MD (Biomedical Informatics)	
2004	Ph.D.	Biomedical Informatics	Columbia University, New York, NY
		Advisor: James J. Cimino, MD (Biomedical Informatics)	
		<i>Thesis: Knowledge Discovery in Clinical Information System Log Files and the Implications for Wireless Handheld Clinical Applications</i>	

4. PROFESSIONAL APPOINTMENTS

2004 – 2007	Associate Research Scientist , Department of Biomedical Informatics, Columbia University, New York, NY
2005 – 2007	Project Director , Vigilens Health Monitor, NewYork-Presbyterian Hospital, New York, NY
2006 – 2007	Assistant Clinical Director , Center for Advanced Information Management, Columbia University, New York, NY
2007 – 2008	Senior Medical Informatician , Enterprise Clinical Informatics Infrastructure Services, Clinical Informatics Research & Development, Partners HealthCare System, Wellesley, MA
2007 – 2008	Instructor , Division of General Internal Medicine, Brigham and Women's Hospital, Harvard Medical School, Boston, MA
2009 – 2011	Medical Informatician , Electronic Health Record Implementation, University of Vermont Medical Center, Burlington, VT

- 2009 – 2015 *Associate Director*, Biomedical Informatics Unit, Center for Clinical and Translational Science, University of Vermont, Burlington, VT
- 2009 – 2015 *Assistant Professor*, Center for Clinical and Translational Science, University of Vermont, Burlington, VT
- 2009 – 2015 *Assistant Professor*, Division of General Internal Medicine, Department of Medicine, University of Vermont, Burlington, VT
- 2009 – 2015 *Assistant Professor (secondary)*, Department of Computer Science, University of Vermont, Burlington, VT
- 2015 – 2020 *Adjunct Assistant Professor*, Division of General Internal Medicine, Department of Medicine, University of Vermont, Burlington, VT
- 2015 – 2016 *Assistant Professor of Medical Science*, Section of Translational Medicine, Warren Alpert Medical School, Brown University, Providence, RI
- 2015 – 2016 *Assistant Professor (secondary)*, Department of Health Services, Policy and Practice, School of Public Health, Brown University, Providence, RI
- 2015 – 2020 *Associate Director*, Center for Biomedical Informatics, Brown University, Providence, RI
- 2016 – 2020 *Associate Director*, Biomedical Informatics and Cyberinfrastructure Core, Advance Clinical and Translational Research (Advance-CTR), Providence, RI
- 2016 – pres. *Faculty Scholar*, Core Research and Evaluation Unit, Hassenfeld Child Health Innovation Institute, Brown University/Hasbro Children’s Hospital/Woman and Infants Hospital of Rhode Island, Providence, RI
- 2016 – pres. *Associate Professor of Medical Science (with Tenure)*, Section of Translational Medicine, Warren Alpert Medical School, Brown University, Providence, RI
- 2016 – pres. *Associate Professor (secondary)*, Department of Health Services, Policy and Practice, School of Public Health, Brown University, Providence, RI
- 2016 – pres. *Adjunct Associate Professor*, Division of General Internal Medicine, Department of Medicine, University of Vermont, Burlington, VT
- 2020 – pres. *Interim Director*, Center for Biomedical Informatics, Brown University, Providence, RI
- 2020 – pres. *Director*, Biomedical Informatics, Bioinformatics, and Cyberinfrastructure Core, Advance Clinical and Translational Research (Advance-CTR), Providence, RI

5. COMPLETED PUBLICATIONS

a. Chapters in Books

1. **Chen ES**. Data, Text, and Web Mining in Healthcare. In: Liu L, Özsu MT, editors. Encyclopedia of Database Systems. Springer; 2009:692-6.
2. **Chen ES**. Unix Primer. In: Sarkar IN, editor. Methods in Biomedical Informatics. Academic Press; 2013:433-50.
3. **Chen ES**. Ruby Primer. In: Sarkar IN, editor. Methods in Biomedical Informatics. Academic Press; 2013:451-500.
4. **Chen ES**. Database Primer. In: Sarkar IN, editor. Methods in Biomedical Informatics. Academic Press; 2013:501-34.
5. **Chen ES**. Web Services Primer. In: Sarkar IN, editor. Methods in Biomedical Informatics. Academic Press; 2013:535-50.
6. **Chen ES**, Sarkar IN. Mining the Electronic Health Record for Disease Knowledge. In: Kumar VD, Tipney HJ, editors. Methods in Molecular Biology: Biomedical Literature Mining. Humana Press; 2014:269-86. (**Chen ES**, Sarkar IN. Mining the electronic health record for disease knowledge. Methods Mol Biol. 2014;1159:269-86. doi: 10.1007/978-1-4939-0709-0_15. PubMed PMID: 24788272.)

7. **Chen ES**. What is Informatics? In: Tenenbaum J and Ranallo P, editors. *Mental Health Informatics: Enabling a Learning Mental Healthcare System*. Springer; 2021:31-54.

b. Refereed Journal and Conference Articles

1. McKeown K, Jordan D, Feiner S, Shaw J, **Chen E**, Ahmad S, Kushniruk A, Patel V. A study of communication in the Cardiac Surgery Intensive Care Unit and its implications for automated briefing. *Proc AMIA Symp*. 2000:570-4. PubMed PMID: 11079948; PubMed Central PMCID: PMC2244057.
2. Cimino JJ, **Chen ES**, McKnight LK, Stetson PD, Lei J, Mendonça EA. Mobile information and coordination for healthcare. In: Marin HF, Marques EP, Hovenga E, Goossen W, editors. *NI 2003. Proceedings of the 8th International Congress in Nursing Informatics; 2003 Jun 20-25; Rio de Janeiro, Brazil; 2003:285-9*.
3. **Chen ES**, Cimino JJ. Automated discovery of patient-specific clinician information needs using clinical information system log files. *AMIA Annu Symp Proc*. 2003:145-9. PubMed PMID: 14728151; PubMed Central PMCID: PMC1480002.
4. **Chen ES**, Mendonça EA, McKnight LK, Stetson PD, Lei J, Cimino JJ. PalmCIS: a wireless handheld application for satisfying clinician information needs. *J Am Med Inform Assoc*. 2004 Jan-Feb;11(1):19-28. PubMed PMID: 14527976; PubMed Central PMCID: PMC305454.
5. **Chen ES**, Cimino JJ. Patterns of usage for a Web-based clinical information system. *Stud Health Technol Inform*. 2004;107(Pt 1):18-22. PubMed PMID: 15360766.
6. Mendonça EA, **Chen ES**, Stetson PD, McKnight LK, Lei J, Cimino JJ. Approach to mobile information and communication for health care. *Int J Med Inform*. 2004 Aug;73(7-8):631-8. PubMed PMID: 15246044.
7. **Chen ES**, Bakken S, Currie LM, Patel VL, Cimino JJ. An automated approach to studying health resource and infobutton use. *Stud Health Technol Inform*. 2006;122:273-8. PubMed PMID: 17102263.
8. **Chen ES**, Hripcsak G, Friedman C. Disseminating natural language processed clinical narratives. *AMIA Annu Symp Proc*. 2006:126-30. PubMed PMID: 17238316; PubMed Central PMCID: PMC1839529.
9. Zhou L, Tao Y, Cimino JJ, **Chen ES**, Liu H, Lussier YA, Hripcsak G, Friedman C. Terminology model discovery using natural language processing and visualization techniques. *J Biomed Inform*. 2006 Dec;39(6):626-36. PubMed PMID: 16360342.
10. Bakken S, Roberts WD, **Chen E**, Dilone J, Lee NJ, Mendonca E, Markatou M. PDA-based informatics strategies for tobacco use screening and smoking cessation management: a case study. *Stud Health Technol Inform*. 2007;129(Pt 2):1447-51. PubMed PMID: 17911954.
11. **Chen ES**, Stetson PD, Lussier YA, Markatou M, Hripcsak G, Friedman C. Detection of practice pattern trends through Natural Language Processing of clinical narratives and biomedical literature. *AMIA Annu Symp Proc*. 2007 Oct 11:120-4. PubMed PMID: 18693810; PubMed Central PMCID: PMC2655911.
12. **Chen ES**, Hripcsak G, Xu H, Markatou M, Friedman C. Automated acquisition of disease drug knowledge from biomedical and clinical documents: an initial study. *J Am Med Inform Assoc*. 2008 Jan-Feb;15(1):87-98. PubMed PMID: 17947625; PubMed Central PMCID: PMC2274872.
13. **Chen ES**, Zhou L, Kashyap V, Schaeffer M, Dykes PC, Goldberg HS. Early experiences in evolving an enterprise-wide information model for laboratory and clinical observations. *AMIA Annu Symp Proc*. 2008 Nov 6:106-10. PubMed PMID: 18999078; PubMed Central PMCID: PMC2656065.
14. Lee NJ, **Chen ES**, Currie LM, Donovan M, Hall EK, Jia H, John RM, Bakken S. The effect of a mobile clinical decision support system on the diagnosis of obesity and overweight in acute and primary care encounters. *ANS Adv Nurs Sci*. 2009 Jul-Sep;32(3):211-21. PubMed PMID: 19707090.

15. **Chen ES**, Maloney FL, Shilmayster E, Goldberg HS. Laying the groundwork for enterprise-wide medical language processing services: architecture and process. AMIA Annu Symp Proc. 2009 Nov 14;2009:97-101. PubMed PMID: 20351830; PubMed Central PMCID: PMC2815370.
16. **Chen ES**, Sarkar IN. MeSHing molecular sequences and clinical trials: a feasibility study. J Biomed Inform. 2010 Jun;43(3):442-50. PubMed PMID: 19850150; PubMed Central PMCID: PMC2878930.
17. Melton GB, Raman N, **Chen ES**, Sarkar IN, Pakhomov S, Madoff RD. Evaluation of family history information within clinical documents and adequacy of HL7 clinical statement and clinical genomics family history models for its representation: a case report. J Am Med Inform Assoc. 2010 May-Jun;17(3):337-40. PubMed PMID: 20442153; PubMed Central PMCID: PMC2995709. (Originally published in: Proceedings of the 2009 AMIA Fall Symposium; 2009 Nov 14-18; San Francisco, CA; 2009.).
18. **Chen ES**, Melton GB, Engelstad ME, Sarkar IN. Standardizing clinical document names using the HL7/LOINC Document Ontology and LOINC codes. AMIA Annu Symp Proc. 2010 Nov 13;2010:101-5. PubMed PMID: 21346949; PubMed Central PMCID: PMC3041326.
19. Wright A, **Chen ES**, Maloney FL. An automated technique for identifying associations between medications, laboratory results and problems. J Biomed Inform. 2010 Dec;43(6):891-901. PubMed PMID: 20884377.
20. **Chen ES**, Sarkar IN. Towards structuring unstructured GenBank metadata for enhancing comparative biological studies. AMIA Summits Transl Sci Proc. 2011;2011:6-10. PubMed PMID: 22211174; PubMed Central PMCID: PMC3248757.
21. **Chen ES**, Manaktala S, Sarkar IN, Melton GB. A multi-site content analysis of social history information in clinical notes. AMIA Annu Symp Proc. 2011;2011:227-36. PubMed PMID: 22195074; PubMed Central PMCID: PMC3243209. [*Distinguished Paper Award*]
22. Ye H, **Chen ES**. Attribute Utility Motivated k-anonymization of datasets to support the heterogeneous needs of biomedical researchers. AMIA Annu Symp Proc. 2011;2011:1573-82. PubMed PMID: 22195223; PubMed Central PMCID: PMC3243250. [*Student Paper Competition Finalist*]
23. **Chen ES**, Melton GB, Burdick TE, Rosenau PT, Sarkar IN. Characterizing the use and contents of free-text family history comments in the Electronic Health Record. AMIA Annu Symp Proc. 2012;2012:85-92. PubMed PMID: 23304276; PubMed Central PMCID: PMC3540518.
24. Melton GB, Manaktala S, Sarkar IN, **Chen ES**. Social and behavioral history information in public health datasets. AMIA Annu Symp Proc. 2012;2012:625-34. PubMed PMID: 23304335; PubMed Central PMCID: PMC3540479.
25. Sarkar IN, **Chen ES**. Determining compound comorbidities for heart failure from hospital discharge data. AMIA Annu Symp Proc. 2012;2012:809-18. PubMed PMID: 23304355; PubMed Central PMCID: PMC3540553.
26. Kost R, Littenberg B, **Chen ES**. Exploring generalized association rule mining for disease co-occurrences. AMIA Annu Symp Proc. 2012;2012:1284-93. PubMed PMID: 23304407; PubMed Central PMCID: PMC35404
27. **Chen E**, Garcia-Webb M. An analysis of free-text alcohol use documentation in the electronic health record: early findings and implications. Appl Clin Inform. 2014 Apr 16;5(2):402-15. doi: 10.4338/ACI-2013-12-RA-0101. PubMed PMID: 25024757; PubMed Central PMCID: PMC4081744.
28. Wang Y, Pakhomov S, Dale JL, **Chen ES**, Melton GB. Application of HL7/LOINC Document Ontology to a University-Affiliated Integrated Health System Research Clinical Data Repository. AMIA Jt Summits Transl Sci Proc. 2014 Apr 7;2014:230-4. PubMed PMID: 25954591; PubMed Central PMCID: PMC4419769.
29. Bill R, Pakhomov S, **Chen ES**, Winden TJ, Carter EW, Melton GB. Automated extraction of family history information from clinical notes. AMIA Annu Symp Proc. 2014:1709-17.

30. **Chen ES**, Carter EW, Sarkar IN, Winden TJ, Melton GB. Examining the use, contents, and quality of free-text tobacco use documentation in the Electronic Health Record. *AMIA Annu Symp Proc.* 2014 Nov 14;2014:366-74. PubMed PMID: 25954340; PubMed Central PMCID: PMC4419995.
31. Rajamani S, **Chen ES**, Wang Y, Melton GB. Extending the HL7/LOINC Document Ontology settings of care. *AMIA Annu Symp Proc.* 2014:994-1001.
32. Sarkar IN, **Chen ES**, Rosenau PT, Storer MB, Anderson B, Horbar JD. Using Arden Syntax to identify registry-eligible very low birth weight neonates from the Electronic Health Record. *AMIA Annu Symp Proc.* 2014:1028-36.
33. Zhang Y, Sarkar IN, **Chen ES**. PubMedMiner: mining and visualizing MeSH-based associations in PubMed. *AMIA Annu Symp Proc.* 2014:1990-99. [*Student Paper Competition Finalist*]
34. Bakken S, Jia H, **Chen ES**, Choi J, John RM, Lee NJ, Mendonca E, Roberts WD, Velez O, Currie LM. The effect of a mobile health decision support system on diagnosis and management of obesity, tobacco use, and depression in adults and children. *The Journal for Nurse Practitioners.* 2014:774-80.
35. **Chen ES**, Carter EW, Winden TJ, Sarkar IN, Wang Y, Melton GB. Multi-source development of an integrated model for family health history. *J Am Med Inform Assoc.* 2015 Apr;22(e1):e67-80. PubMed PMID: 25336591. [*Editor's Choice*]
36. Rajamani S, **Chen ES**, Akre ME, Wang Y, Melton GB. Assessing the adequacy of the HL7/LOINC Document Ontology Role axis. *J Am Med Inform Assoc.* 2015 May;22(3):615-20. PubMed PMID: 25352569.
37. Winden TJ, **Chen ES**, Wang Y, Sarkar IN, Carter EW, Melton GB. Towards the Standardized Documentation of E-Cigarette Use in the Electronic Health Record for Population Health Surveillance and Research. *AMIA Jt Summits Transl Sci Proc.* 2015 Mar 25;2015:199-203. eCollection 2015. PubMed PMID: 26306269; PubMed Central PMCID: PMC4525250.
38. **Chen ES**, Sarkar IN. *informatics: identifying and tracking informatics sub-discipline terms in the literature. *Methods Inf Med.* 2015 May 22;54(4). PubMed PMID: 25998007.
39. Melton GB, Wang Y, Arsoniadis E, Pakhomov SV, Adam TJ, Kwaan MR, Rothenberger DA, **Chen ES**. Analyzing Operative Note Structure in Development of a Section Header Resource. *Stud Health Technol Inform.* 2015;216:821-6. PubMed PMID: 26262166.
40. **Chen ES**, Melton GB, Wasserman RC, Rosenau PT, Howard DB, Sarkar IN. Mining and visualizing family history associations in the electronic health record: a case study for pediatric asthma. *AMIA Annu Symp Proc.* 2015:396-405. PubMed PMID: 26958171; PubMed Central PMCID: PMC4765567.
41. Carter EW, Sarkar IN, Melton GB, **Chen ES**. Representation of drug use in biomedical standards, clinical text, and research measures. *AMIA Annu Symp Proc.* 2015:376-85. PubMed PMID: 26958169; PubMed Central PMCID: PMC4765691.
42. Wang Y, **Chen ES**, Pakhomov S, Arsoniadis E, Carter EW, Lindemann E, Sarkar IN, Melton GB. Automated extraction of substance use information from clinical texts. *AMIA Annu Symp Proc.* 2015: 2121-30. PubMed PMID: 26958312; PubMed Central PMCID: PMC4765598.
43. Wang Y, **Chen ES**, Leppik I, Pakhomov S, Sarkar IN, Melton GB. Identifying family history and substance use associations for adult epilepsy from the electronic health record. *AMIA Jt Summits Transl Sci Proc.* 2016:250-259. [*Distinguished Paper Finalist*]
44. Aldekhyyel R, **Chen ES**, Rajamani S, Wang Y, Melton GB. Content and quality of free-text occupation documentation in the electronic health record. *AMIA Annu Symp Proc.* 2016:1708-1716. [*Student Paper Competition Finalist – First Place*]
45. Wang Y, **Chen ES**, Pakhomov S, Lindemann E, Melton GB. Investigating longitudinal tobacco use information from social history and clinical notes in the electronic health record. *AMIA Annu Symp Proc.* 2016:1209-1218.

46. Winden TJ, **Chen ES**, Melton GB. Representing residence, living situation, and living conditions: an evaluation of terminologies, standards, guidelines, and measures/surveys. *AMIA Annu Symp Proc.* 2016:2072-2081.
47. Haddad JM, **Chen ES**. Identifying psychiatric comorbidities for obstructive sleep apnea in the biomedical literature and electronic health record. *AMIA Jt Summits Transl Sci Proc.* 2017:502-511. [*Student Paper*]
48. Lindemann EA, **Chen ES**, Rajamani S, Manohar N, Wang Y, Melton GB. Assessing the Representation of Occupation Information in Free-Text Clinical Documents Across Multiple Sources. *Stud Health Technol Inform.* 2017;245:486-490.
49. Rajamani S, **Chen ES**, Lindemann E, Aldekhyyel R, Wang Y, Melton GB. Representation of occupational information across resources and validation of the occupational data for health model. *J Am Med Inform Assoc.* 2017 Apr 22. doi: 10.1093/jamia/ocx035. [Epub ahead of print] PubMed PMID: 28444213.
50. Eisman A, Weiner R, **Chen ES**, Stey P, Wadhwa RK, Kithcart AP, Sarkar IN. An Automated System for Categorizing Transthoracic Echocardiography Indications According to the Appropriate Use Criteria. *AMIA Annu Symp Proc.* 2017:670-678. [*Student Paper*]
51. Winden TJ, **Chen ES**, Wang Y, Lindemann E, Melton GB. Residence, Living Situation, and Living Conditions Information Documentation in Clinical Practice. *AMIA Annu Symp Proc.* 2017:1766-1775.
52. Lindemann EA, **Chen ES**, Wang Y, Skube SJ, Melton G. Representation of Social History Factors Across Age Groups: A Topic Analysis of Free-Text Social Documentation. *AMIA Annu Symp Proc.* 2017:1169-1178.
53. Durand WM, Stey PC, **Chen ES**, Sarkar IN. Trend Analysis of Aggregate Outcomes in Complex Health Survey Data. *AMIA Jt Summits Transl Sci Proc.* 2018 May 18;2017:349-358.
54. Anand RS, Stey P, Jain S, Biron DR, Bhatt H, Monteiro K, Feller E, Ranney ML, Sarkar IN, **Chen ES**. Predicting Mortality in Diabetic ICU Patients Using Machine Learning and Severity Indices. *AMIA Jt Summits Transl Sci Proc.* 2018 May 18;2017:310-319.
55. Winden TJ, **Chen ES**, Monsen KA, Wang Y, Melton GB. Evaluation of Flowsheet Documentation in the Electronic Health Record for Residence, Living Situation, and Living Conditions. *AMIA Jt Summits Transl Sci Proc.* 2018 May 18;2017:236-245.
56. Arias SA, Boudreaux ED, **Chen E**, Miller I, Camargo CA Jr, Jones RN, Uebelacker L. Which Chart Elements Accurately Identify Emergency Department Visits for Suicidal Ideation or Behavior? *Arch Suicide Res.* 2018 May 23:1-14. doi: 10.1080/13811118.2018.1472691. [Epub ahead of print]
57. Jain S, Sarkar IN, Stey P, Anand RS, Biron DR, **Chen ES**. Using Demographic Factors and Comorbidities to Develop a Predictive Model for ICU Mortality in Patients with Acute Exacerbation COPD. *AMIA Annu Symp Proc.* 2018:1319-1328.
58. Coppersmith NA, Sarkar IN, **Chen ES**. Quality Informatics: The Convergence of Healthcare Data, Analytics, and Clinical Excellence. *Appl Clin Inform.* 2019 Mar;10(2):272-277. doi: 10.1055/s-0039-1685221. Epub 2019 Apr 24. PubMed PMID: 31018233; PubMed Central PMCID: PMC6482041.
59. Ding T, **Chen ES**. Mining Drugs and Indications for Suicide-Related Adverse Events. *AMIA Annu Symp Proc.* 2020;2019:1011-1020.
60. Li C, **Chen E**, Savova G, Fraser H, Eickhoff C. Mining Misdiagnosis Patterns from Biomedical Literature. *AMIA Jt Summits Transl Sci Proc.* 2020;2020:360-366.
61. Sinha I, Aluthge DP, **Chen ES**, Sarkar IN, Ahn SH. Machine Learning Offers Exciting Potential for Predicting Postprocedural Outcomes: A Framework for Developing Random Forest Models in IR. *J Vasc Interv Radiol.* 2020;31(6):1018-1024.e4. doi:10.1016/j.jvir.2019.11.030
62. Bhatia K, Tanch J, **Chen ES**, Sarkar IN. Applying FAIR Principles to Improve Data Searchability of Emergency Department Datasets: A Case Study for HCUP-SEDD. *Methods Inf Med.* 2020;10.1055/s-0040-1712510.

63. Brown K, Sarkar IN, **Chen ES**. Mental Health Comorbidity Analysis in Pediatric Patients with Autism Spectrum Disorder Using Rhode Island Medical Claims Data. AMIA Annu Symp Proc. 2021 Jan 25;2020:263-272. [*Student Paper Competition Finalist – Third Place*]
64. Buckland R, Hogan J, **Chen ES**. Selection of Clinical Text Features for Classifying Suicide Attempts. AMIA Annu Symp Proc. 2021 Jan 25;2020:273-282.
65. Karagounis S, Sarkar IN, **Chen ES**. Coding Free-Text Chief Complaints from a Health Information Exchange: A Preliminary Study. AMIA Annu Symp Proc. 2021 Jan 25;2020:638-647.
66. Eisman AS, Shah NR, Eickhoff C, Zerveas G, **Chen ES**, Wu WC, Sarkar IN. Extracting Angina Symptoms from Clinical Notes Using Pre-Trained Transformer Architectures. AMIA Annu Symp Proc. 2021 Jan 25;2020:412-421.
67. Akiki RK, Anand RS, Borrelli M, Sarkar IN, Liu PY, **Chen ES**. Predicting open wound mortality in the ICU using machine learning. J Emerg Crit Care Med. 2021 Apr;5:13.
68. Chen JS, Clarke R, Haddad AF, Wang EJ, Lacroix M, Sarkar IN, Zand R, **Chen ES**, Toms SA. The effect of levetiracetam treatment on survival in patients with glioblastoma: a systematic review and meta-analysis. J Neurooncol. 2022 Jan;156(2):257-267.
69. Eisman AS, Brown K, **Chen ES**, Sarkar IN. Clinical Note Section Detection Using a Hidden Markov Model of Unified Medical Language System Semantic Types. AMIA Annu Symp Proc. 2022 Feb 21;2021:418-427.
70. Brown K, Sarkar IN, Crowley KM, Aluthge D, **Chen ES**. An Unsupervised Cluster Analysis of Post-COVID-19 Mental Health Outcomes and Associated Comorbidities. AMIA Annu Symp Proc. 2022. (*in press*)
71. Aluthge DP, Brown KA, Crowley KM, **Chen ES**, Sarkar IN. Using Supervised Machine Learning to Predict Problems and Medications from Health Information Exchange Data. AMIA Annu Symp Proc. 2023. (*submitted*)
72. Brown KA, Donise KR, Cancilliere MK, Aluthge DP, **Chen ES**. Characterizing Autism Spectrum Disorder and Predicting Suicide Risk for Pediatric Psychiatric Emergency Services Encounters. AMIA Annu Symp Proc. 2023. (*submitted*)

c. Non-Refereed Journal Articles

1. **Chen ES**, Melton GB, Sarkar IN. Translating standards into practice: experiences and lessons learned in biomedicine and health care. J Biomed Inform. 2012 Aug;45(4):609-12. doi: 10.1016/j.jbi.2012.06.006. Epub 2012 Jun 30. PubMed PMID: 22750046. [*Editorial*]

d. Abstracts (for Podium and Poster Presentations)

1. Tahil FA, **Chen ES**, Starren J, Bakken S. Decision modeling for partial left ventriculectomy: An experimental alternative to heart transplantation for cardiomyopathy? In: Lorenzi NM, editor. Proceedings of the 1999 AMIA Fall Symposium; 1999 Nov 7-10; Washington, DC; 1999. p.1176.
2. **Chen ES**, Cimino JJ. Use of wireless technology for reducing medical errors. J Am Med Inform Assoc 2002 Nov-Dec;9(6 Suppl):S54-5. (Originally published as: **Chen ES**, Cimino JJ. Use of wireless technology for reducing medical errors. In: Bakken S, editor. Proceedings of the 2001 AMIA Fall Symposium; 2001 Nov 3-7; Washington, DC; 2001. p. 877.)
3. Stetson PD, McKnight LK, **Chen E**, Cimino JJ. Design of a Web-based care team scheduler for PalmCIS. In: Kohane IS, editor. Proceedings of the 2002 AMIA Fall Symposium; 2002 Nov 9-13; San Antonio, TX; 2002. p. 1172.
4. McKnight LK, Stetson PD, **Chen E**, Cimino JJ. Improving clinical communication with a virtual whiteboard. In: Kohane IS, editor. Proceedings of the 2002 AMIA Fall Symposium; 2002 Nov 9-13; San Antonio, TX; 2002. p. 1102.

5. **Chen ES**, McKnight LK, Stetson PD, Cimino JJ. Issues in developing clinical applications for the wireless environment. In: Kohane IS, editor. Proceedings of the 2002 AMIA Fall Symposium; 2002 Nov 9-13; San Antonio, TX; 2002. p. 995.
6. Lei J, **Chen ES**, Stetson PD, McKnight LK, Mendonça EA, Cimino JJ. Development of infobuttons in a wireless environment. In: Musen MA, editor. Proceedings of the 2003 AMIA Fall Symposium; 2003 Nov 8-12; Washington, DC; 2003. p. 906.
7. **Chen ES**, Hripcsak G, Patel VL, Sengupta S, Gallagher RJ, Cimino JJ. Automated identification of shortcuts to patient data for a wireless handheld clinical information system. In: Musen MA, editor. Proceedings of the 2003 AMIA Fall Symposium; 2003 Nov 8-12; Washington, DC; 2003. p. 809.
8. Lei J, Stetson PD, **Chen ES**, McKnight LK, Mendonca EA, Cimino JJ. Structured data entry of cross coverage notes using a PDA. In: Fieschi M, Coiera E, Li Y-CJ, editors. Medinfo 2004. Proceedings of the 11th World Congress on Medical Informatics; 2004 Sep 11-14; San Francisco, CA; 2004. p. 1712.
9. Bakken S, **Chen E**, Choi J, Currie LM, Lee N-J, Roberts WD, Soupios M. Mobile decision support for advanced practice nurses. In: Park H-A, editor. NI 2006. Proceedings of the 9th International Congress on Nursing Informatics; 2006 Jun 11-14; Seoul, Korea; 2006. p. 1002.
10. **Chen ES**, Wajngurt D, Qureshi K, Hyman S, Hripcsak G. Automated real-time detection and notification of positive infection cases. In: Bates DW, editor. Proceedings of the 2006 AMIA Fall Symposium; 2006 Nov 11-15; Washington, DC; 2006. p. 883.
11. **Chen ES**. The use of log files in the system development life cycle for nurses. In: Murphy J, editor. Proceedings of the 2007 AMIA Spring Congress; 2007 May 22-24; Orlando, FL; 2007.
12. Lee NJ, Currie L, John RM, **Chen E**, Joyce M, Bakken S. Heuristic evaluation of a Web-based prototype for a PDA-DSS for the Management of Obesity. In: McCray A, Marin H, editors. Medinfo 2007. Proceedings of the 12th World Congress on Medical Informatics; 2007 Aug 20-24; Brisbane, Australia; 2007.
13. **Chen ES**, Borlowsky T, Qureshi K, Li J, Lussier YA, Hripcsak G. Monitoring the function and use of a clinical decision support system. In: Teich JM, editor. Proceedings of the 2007 AMIA Fall Symposium; 2007 Nov 10-14; Chicago, IL; 2007. p. 902.
14. Currie LM, **Chen ES**. Technology evaluation for a mobile fall-injury risk assessment instrument. In: Teich JM, editor. Proceedings of the 2007 AMIA Fall Symposium; 2007 Nov 10-14; Chicago, IL; 2007. p. 922.
15. Lee NJ, **Chen E**, Mendonca E, Velez O, Bakken S. Database design and implementation for a PDA-based decision support system for screening and tailored care planning. In: Teich JM, editor. Proceedings of the 2007 AMIA Fall Symposium; 2007 Nov 10-14; Chicago, IL; 2007. p. 1025.
16. **Chen ES**, Paterno MD, Doroshenko V, Schaeffer M, Goldberg HS. Towards enterprise clinical services to enhance decision support: strategies and challenges. IAIMS Poster Session, 2007 AMIA Fall Symposium; 2007 Nov 13; Chicago, IL; 2007.
17. **Chen ES**, Wright A, Maloney FL, Van Putten C, Paterno MD, Goldberg HS. Enhancing clinical problem lists through data mining and natural language processing. Proceedings of the 2008 AMIA Fall Symposium; 2008 Nov 8-12; Washington, DC; 2008. p. 901.
18. Paterno MD, Schaeffer M, Van Putten C, Wright A, **Chen ES**, Goldberg HS. Challenges in creating an enterprise clinical rules service. Proceedings of the 2008 AMIA Fall Symposium; 2008 Nov 8-12; Washington, DC; 2008. p. 1086.
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 24. **Chen ES**, Carter EW, Winden TJ, Sarkar IN, Melton GB. Development of a comprehensive family health history information model. Proceedings of the 2013 AMIA Annual Symposium; 2013 Nov 14-18; Washington, DC; 2011. p. 210. [*Podium*]
 25. Sarkar IN, **Chen ES**, Kappel SJ. Resolving and standardizing providers within administrative data. Proceedings of the 2013 AMIA Annual Symposium; 2013 Nov 14-18; Washington, DC; 2011. p. 1239. [*Podium*]
 26. Winden TJ, **Chen ES**, Lindemann E, Wang Y, Carter EW, Melton GB. Evaluating living situation, occupation, and hobby/activity information in the Electronic Health Record. Proceedings of the 2014 AMIA Annual Symposium; 2014 Nov 15-19; Washington, DC; 2014. p. 139. [*Podium*]
 27. Peterson D, Burdick TE, Cohen J, Sarkar IN, Lin JH, Plante DA, **Chen ES**. Surveying problem list perceptions and use in the electronic health record. Proceedings of the 2015 AMIA Annual Symposium; 2015 Nov 14-18; San Francisco, CA; 2015:1629.
 28. **Chen ES**, Melton GB, Howison M, Knoll E, Lee A, Sarkar IN. Mining and visualizing sequential patterns in the electronic health record: a case study for asthma with and without mental disorders. AMIA Annu Symp Proc. 2016:25-26. [*Podium*]
 29. Rajamani S, **Chen ES**, Aldekhyyel, Wang Y, Melton GB. Validating the Occupational Data for Health Model: an analysis of occupational information in reports, standards, surveys, and measures. AMIA Annu Symp Proc. 2016:115-116. [*Podium*]
 30. Rosenau PT, Howard DB, Melton GB, **Chen ES**. Family history by any other name: a preliminary comparison of structured and free-text sources in the electronic health record. AMIA Annu Symp Proc. 2016:1575.
 31. Nam E, Sarkar IN, Stey P, **Chen ES**. Predicting asthma risk using social, behavioral, and environmental factors. AMIA Annu Symp Proc. 2016. [*poster for High School Scholars Program*]
 32. Nguyen C, Sarkar IN, **Chen ES**. Summarizing and Comparing Drug Adverse Events: Case Studies for Diabetes Mellitus and Parkinson Disease. AMIA Annu Symp Proc. 2016. [*poster for High School Scholars Program*]
 33. Lindemann EA, **Chen ES**, Rajamani S, Manohar N, Wang Y, Melton GB. Representation of Occupation Information in Clinical Texts: An Analysis of Free-Text Clinical Documentation in Multiple Sources. AMIA Jt Summits Transl Sci Proc. 2017:364-365. [*Podium*]
 34. Thorsen MM, Sarkar IN, **Chen ES**, Fontaine E, Walker G, Ranney ML. Assessing Data Quality within Health Information Exchanges: A Case Study for Supporting Emergency Department Research. AMIA Annu Symp Proc. 2017:2207.
 35. Lee AS, Sarkar IN, Melton GB, Liu Y, Sharma V, **Chen ES**. Comorbidity Miner: An Open Source Interactive Tool for Mining Disparate Electronic Health Data Sources. AMIA Annu Symp Proc. 2017:119-20. [*Podium*]
 36. Haddad JM, **Chen ES**. Psychiatric Comorbidities Associated with Obstructive Sleep Apnea: A Preliminary Analysis and Comparison of Biomedical and Clinical Data Sources. SLEEP 2017 31st Annual Meeting of the Associated Professional Sleep Societies, LLC.

37. Guo AY, **Chen ES**, Sarkar IN, Walker J, Li WQ, Stey P, Qureshi AA. Impact of Ultraviolet Exposure on Malignant Merkel Cell Carcinoma Long-term Survival. 7th International Investigative Dermatology (IID) Meeting. 2018. [Poster]
38. Kleiner J, Cohen M, Aluthge D, Sinha I, Sarkar IN, **Chen ES**, Roque D. Predicting Thromboembolism after Vaginal and Laparoscopic Hysterectomy in Gynecologic Oncology Patients using Machine Learning. AMIA Annu Symp Proc. 2018:2029. [Poster]
39. Vu J, Aluthge D, Sinha I, **Chen ES**, Sarkar IN. Predicting the Costs of Medical Liability Using Artificial Neural Networks. AMIA Annu Symp Proc. 2018:1864-1865. [Podium]
40. Choi D, **Chen ES**. Investigating Adverse Events of Common Prescription Opioids Reported in Australia, Canada, and the United States. AMIA Annu Symp Proc. 2018. [poster for High School Scholars Program]
41. Restrepo MI, McGrath MC, Sarkar IN, **Chen ES**. Web-Based Visualization of MeSH-Based PubMed/MEDLINE Statistics. Stud Health Technol Inform. 2019 Aug 21;264:1490-1491. doi: 10.3233/SHTI190499. PubMed PMID: 31438196. [Poster]
42. Buckland R, **Chen ES**. A Computational Approach for Improving EHR-based Classification of Suicidal Thoughts and Behaviors. New England Statistics Symposium. 2019. [Poster]
43. Buckland R, **Chen ES**. A Computational Approach for Improving EHR-based Classification of Suicidal Thoughts and Behaviors. Technology in Psychiatry Summit. 2019. [Podium]
44. Brown K, Donise K, Hoffman P, **Chen ES**. Clinical Workflow Analysis and Modeling of Pediatric Behavioral Health Emergency Service. The Patient and the Practitioner in the Age of Technology: Promoting Healing Relationships. 2021. [Abstract]
45. Aluthge D, **Chen ES**, Sarkar IN. Putting the Theory of SMART-on-FHIR into Practice for an HIE. AMIA Clinical Informatics Conference. 2022. [Abstract]
46. Eisman A, **Chen ES**, Crowley KM, Sarkar IN. Characterizing Population Cardiovascular Disease Risk and Primary Prevention Practices with Health Information Exchange Mapped to the Observational Medical Outcomes Partnership Common Data Model. AMIA Annu Symp Proc. 2023. [Podium] (submitted)
47. **Chen ES**, Anzalone AJ, Beasley WH, Mays MH. Building a Collaborative Informatics Ecosystem Across the IDeA-CTR Networks: Experiences and Lessons Learned from N3C. AMIA Annu Symp Proc. 2023. [Panel] (submitted)

e. Invited Lectures

1. (2000) **Department Seminar**, “Evaluating the Content of a Multimedia Briefing System”, Department of Biomedical Informatics, Columbia University, New York, NY.
2. (2002) **Department Seminar**, “Wireless Technology and Its Use in Healthcare”, Department of Biomedical Informatics, Columbia University, New York, NY
3. (2002) **Seminar**, “PalmCIS: Palm-based Clinical Information System”, Health Sciences Library, Columbia University, New York, NY
4. (2002) **Department Seminar**, “Developing a Wireless Clinical Application: PalmCIS”, Department of Biomedical Informatics, Columbia University, New York, NY
5. (2003) **Meeting Presentation**, “Analysis of Clinical Information System Log Files to Uncover Clinician Usage Patterns”, National Library of Medicine Training Directors’ Meeting, Bethesda, MD
6. (2003) **Conference Presentation**, “Automated Discovery of Patient-Specific Clinician Information Needs Using Clinical Information System Log Files”, AMIA 2003 Annual Symposium, Washington, DC
7. (2004) **Conference Presentation**, “Patterns of Usage for a Web-based Clinical Information System”, 11th World Congress on Medical Informatics (Medinfo 2004), San Francisco, CA
8. (2006) **Conference Presentation**, “An Automated Approach to Studying Health Resource and Infobutton Use”, 9th International Congress on Nursing Informatics (NI 2006), Seoul, Korea

9. (2006) **Seminar**, “Delivering Relevant Clinical Information at the Point of Care”, Countway Medical Library, Harvard Medical School, Boston, MA
10. (2006) **Conference Presentation**, “Disseminating Natural Language Processed Clinical Narratives”, AMIA 2006 Annual Symposium, Washington, DC
11. (2007) **Conference Presentation**, “The Use of Log Files in the System Development Life Cycle for Nurses”, AMIA 2007 Spring Congress, Orlando, FL
12. (2007) **Seminar**, “Linking Clinicians to Relevant Information at the Point of Care”, Clinical Informatics Research & Development (CIRD), Partners HealthCare System, Wellesley, MA
13. (2007) **Conference Presentation**, “Detection of Practice Pattern Trends through Natural Language Processing of Clinical Narratives and Biomedical Literature”, AMIA 2007 Annual Symposium, Chicago, IL
14. (2008) **Seminar**, “Building Blocks for Structuring Clinical Documents and Information”, Clinical Informatics Research & Development (CIRD), Partners HealthCare System, Wellesley, MA
15. (2008) **Invited Presentation**, “Medical Language Processing Services: From Free-Text to Structured Clinical Statements”, Information Systems Research Council (ISRC) Symposium, Boston, MA
16. (2008) **Invited Presentation**, “Agile Methodology at Partners HealthCare System (PHS)”, Partners HealthCare Information Systems 5th Annual Technology Summit, Needham, MA
17. (2008) **Conference Presentation**, “Early Experiences in Evolving an Enterprise-Wide Information Model for Laboratory and Clinical Observations”, AMIA 2008 Annual Symposium, Washington, DC
18. (2009) **Department Seminar**, “Data, Text, and Web Mining in Healthcare”, Department of Computer Science, University of Vermont, Burlington, VT
19. (2009) **Conference Presentation**, “Laying the Groundwork for Enterprise-Wide Medical Language Processing Services: Architecture and Process”, AMIA 2009 Annual Symposium, Washington, DC
20. (2010) **Invited Presentation**, “Clinical Informatics: From Patient Care to Research”, Department of Medicine Fellows’ Research Seminar Series, University of Vermont, Burlington, VT
21. (2010) **Conference Presentation**, “Standardizing Clinical Document Names Using the HL7/LOINC Document Ontology and LOINC Codes”, AMIA 2010 Annual Symposium, Washington, DC
22. (2011) **Seminar**, “Towards Structuring and Standardizing Information Within Clinical Notes in the EHR”, Informatics Grand Rounds, University of Vermont, Burlington, VT [September 14, 2011]
23. (2011) **Conference Presentation**, “A Multi-Site Content Analysis of Social History Information in Clinical Notes”, AMIA 2011 Annual Symposium, Washington, DC [October 25, 2011]
24. (2012) **Conference Presentation**, “Characterizing the Use and Contents of Free-Text Family History Comments in the Electronic Health Record”, AMIA 2012 Annual Symposium, Chicago, IL [November 5, 2012]
25. (2013) **Invited Presentation**, “Studying the Documentation of Family and Social History Information in the Electronic Health Record”, Division of Health and Biomedical Informatics, Department of Preventive Medicine, Northwestern University, Chicago, IL [October 17, 2013]
26. (2013) **Conference Presentation**, “Development of a Comprehensive Family Health History Information Model”, AMIA 2013 Annual Symposium, Washington, DC [November 19, 2013]
27. (2014) **Invited Presentation**, “Studying the Documentation of Family and Social History Information in the Electronic Health Record”, Department of Biomedical Informatics, The Ohio State University, Columbus, OH [February 25, 2014]

28. (2014) **Conference Presentation**, “PubMedMiner: Mining and Visualizing MeSH-based Associations in PubMed”, AMIA 2014 Annual Symposium, Washington, DC [November 16, 2014]
29. (2014) **Conference Presentation**, “Examining the Use, Contents, and Quality of Free-Text Tobacco Use Documentation in the Electronic Health Record”, AMIA 2014 Annual Symposium, Washington, DC [November 18, 2014]
30. (2015) **Invited Presentation**, “Analyzing Family and Social History in the Electronic Health Record”, Brown Institute for Translational Science & Rhode Island Center for Clinical and Translational Science, Brown University, Providence, RI [March 16, 2015]
31. (2015) **Seminar**, “Analyzing Tobacco Use and Family History Documentation in the Electronic Health Record”, Center for Statistical Sciences and Department of Biostatistics, School of Public Health, Brown University, Providence, RI [November 2, 2015]
32. (2016) **Seminar**, “Electronic Health Records: From Patient Care to Research,” Division of Pulmonary, Critical Care and Sleep Medicine, Department of Medicine, Brown University, Providence, RI [April 11, 2016]
33. (2016) **Conference Presentation**, “Mining and Visualizing Sequential Patterns in the Electronic Health Record: A Case Study for Asthma With and Without Mental Disorders”, AMIA 2016 Annual Symposium, Chicago, IL [November 14, 2016]
34. (2017) **Invited Presentation**, “Leveraging the EHR to Collect and Analyze Social, Behavioral & Familial Factors,” National Library of Medicine Board of Regents Meeting, Bethesda, MD [February 7, 2017]
35. (2018) **Invited Presentation**, “Knowledge Discovery in Clinical and Biomedical Data: Case Studies in Pediatrics and Mental Health,” National Library of Medicine Biomedical Informatics & Data Science Lecture, Bethesda, MD [November 14, 2018]
36. (2019) **Invited Presentation**, “Knowledge Discovery in Electronic Health Record Data,” Society for Prevention Research 2019 Annual Meeting, San Francisco, CA [May 30, 2019]
37. (2020) **Seminar** (with Rani Elwy, PhD and Neil Sarkar, PhD, MLIS), “Bridging Informatics and Implementation Science for Learning Health Systems,” Informatics and Implementation Science Learning Series (I²S²), Brown University, Providence, RI [November 6, 2020]
38. (2021) **Invited Keynote**, “Artificial Intelligence in Health Care,” Fair February (Theme: Computation and Health), Data Science Initiative (DSI), Brown University, Providence, RI [January 27, 2021]
39. (2021) **Seminar**, “Knowledge Discovery in Electronic Health Data,” Data Science Program Speaker Series, University of Rhode Island, Kingston, RI [February 25, 2021]
40. (2021) **Seminar**, “Artificial Intelligence in Health Care: Challenges, Opportunities, and Highlights,” Translational Data Analytics Institute (TDAI) Speaker Series, The Ohio State University, Columbia, OH [April 29, 2021]
41. (2021) **Seminar**, “Mining Associations and Sequences in Electronic Health Data,” Biomedical Informatics Research (BMIR) Colloquia & Research in Progress, Stanford University, San Francisco, CA [June 3, 2021]
42. (2021) **Seminar**, “Knowledge Discovery in Electronic Health Record (EHR) Data,” Advance-CTR Translational Research Seminar Series, Brown University, Providence, RI [December 9, 2021]
43. (2022) **Invited Presentation**, “Clinical Informatics Innovation and Implementation (CI³) Research Lab: Current Research Progress,” Basic & Translational Research Program, Brown University, Providence, RI [July 12, 2022]
44. (2022) **Seminar**, “Brown Center for Biomedical Informatics: Who We Are and What We Do,” BCBI Health Informatics Seminar Series, Brown University, Providence, RI [September 23, 2022]

45. (2023) **Invited Presentation** (with Karen Crowley, MS, PhD), “Electronic Health Records: Methods, Applications, and Resources,” Carney Institute Methods Meetup, Brown University, Providence, RI [February 16, 2023]

f. Other

1. **Chen ES**. Technology and Data in Mental Health: Applications for Suicide Prevention. NLM Musings from the Mezzanine (Innovations in Health Information from the Director of the U.S. National Library of Medicine). Guest Blog Post 2018 Oct 30.
<https://nlmdirector.nlm.nih.gov/2018/10/30/technology-and-data-for-suicide-prevention/>

6. RESEARCH GRANTS

a. Current Grants

- 2016 – “Advance Clinical and Translational Research (Advance-CTR)”
 2026 NIH/NIGMS U54 GM115677 07/01/2016 – 07/31/2026
Director, Biomedical Informatics, Bioinformatics, and Cyberinfrastructure Enhancement Core (20% effort); PI: Sharon I. Rounds
Provide infrastructure to support, train and educate investigators conducting clinical and translational research in Rhode Island.
- 2017 – “Rhode Island Asthma Integrated Response Program (RI-AIR)”
 2023 NIH/NHLBI U01 HL138677 08/15/2017 – 06/30/2023
Co-Investigator (5% effort); PI: Elizabeth McQuaid/Daphne Koinis Mitchell
Establish a coordinated screening and response system to enable the delivery of home and school-based asthma management interventions.
- 2020 – “Children’s Behavioral Health and Clinical Services: Lifespan Pediatric Behavioral
 2025 Health Emergency Services (LPBHES) Database”
 SAMHSA 01/15/2020 – 01/14/2025
Co-Investigator (2% effort); PI: Kathleen Donise
Develop a database for the Lifespan Pediatric Behavioral Health Emergency Services to address clinical, quality, and research needs.
- 2020 – “Developing a Realtime Monitoring System and Program to Improve COVID-19 Testing
 2023 for Latinx Populations”
 NIH/NIGMS U54GM115677-06S3 09/22/2020 – 01/06/2023 (NCE)
Co-I (8.33% effort); PI: Sharon I. Rounds / Indra Neil Sarkar
Develop a population level decision support system to identify SARS-CoV-2 testing patterns that are aligned with social factors that are impacting health equity.
- 2021 – “Understanding and addressing hesitancy and barriers to COVID-19 vaccination for
 2022 Hispanic/Latinx communities”
 NIH/NIGMS U54GM115677-06S4 08/10/2021 – 07/31/2022 (NCE)
Co-I (5% effort); PI: Sharon I. Rounds / Indra Neil Sarkar
Enhance a statewide system to monitor COVID-19 testing and vaccination patterns for guiding improvements in access to testing and vaccine awareness.
- 2021 – “Expanding a Statewide Realtime Monitoring System and Program to Improve COVID-19
 2023 Testing and Vaccination for High Risk Children”
 NIH/NIGMS U54GM115677-06S2 09/10/2021 – 09/09/2023
Co-I (7.5% effort); PI: Sharon I. Rounds / Indra Neil Sarkar
Enhance a statewide system to monitor COVID-19 patterns to guide improvements in access to testing and vaccine uptake among high-risk pediatric populations.
- 2022 – “The National Center for Health and Justice Integration for Suicide Prevention
 2027 (NCHATS)”
 NIH/NIMH P50MH127512 03/01/2022 – 02/28/2027

- Co-I** (15% effort): PI: Jennifer Johnson / Lauren Weinstock / Brian Ahmedani
Advance population-level suicide prevention efforts to better integrate suicide risk detection and prevention across health and criminal justice systems.
- 2022 – “Puerto Rico Asthma Integrated Response Program (PR-AIR)”
 2027 NIH/NHLBI R01HL159701 09/01/2022 – 07/31/2027
- Co-I** (5% effort): PI: Daphne Koinis Mitchell/G Canino/LM Chavaz/Elizabeth McQuaid
Establish a coordinated screening and response system to enable the delivery of asthma management interventions in Puerto Rico.
- 2022 – “Advance Clinical and Translational Research (Advance-CTR): SARS-Cov-2 Variant
 2023 Sequence Surveillance Among Underserved Populations in Rhode Island”
 NIH/NIGMS U54GM115677-07S2 09/01/2022 – 07/31/2023
- Co-I/Co-Lead** (5% effort): PI: Sharon I. Rounds / Edward Hawrot
Generate and use an integrated database of SARS-CoV-2 variant sequences with demographic and geolocation data.
- 2022 – “Advance Clinical and Translational Research (Advance-CTR): Advance Clinical and
 2023 Translational Research (Advance-CTR): Supporting and Advancing Research with the National COVID Cohort Collaborative (N3C)”
 NIH/NIGMS U54GM115677 08/01/2022 – 07/31/2023
- Co-I/Co-Lead** (5% effort): PI: Sharon I. Rounds
Establish local analytic support, continue EHR data contribution, and prepare for sustainability of N3C research.
- 2023 “Enabling Digital Transition of Care for High Need Patients”
 HRSA 04/01/2023 – 06/30/2023
- Co-I** (2% effort): PI: Indra Neil Sarkar
Design, develop, deploy, and evaluate a digital system to improve workflow and quality of care for residents of skilled nursing facilities, home health agencies, and hospice/palliative care facilities across Rhode Island.

b. Completed Grants

- 2004 – “Infobuttons to Improve Information Access in Order Entry”
 2005 NIH/NLM R01 LM007593 09/01/2002 – 01/16/2009
Associate Research Scientist; PI: James Cimino (Columbia University)
The goal of the project is to reduce the occurrence of an important proximal cause of medical errors: inadequate access to required information when making decisions.
- 2005 – “Mobile Decision Support for Advanced Practice Nursing”
 2007 NIH/NINR R01 NR008903 05/13/2005 – 10/30/2008
Co-Investigator; PI: Suzanne Bakken (Columbia University)
This RCT evaluates the effect of PDA-based decision support on guideline adherence for 3 screening guidelines: obesity, depression, and smoking cessation.
- 2005 – “Capturing and Linking Genomic and Clinical Information”
 2007 NIH/NLM R01 LM007659 08/01/2003 – 07/31/2008
Associate Research Scientist; PI: Carol Friedman (Columbia University)
The long-term aim of this project is to use natural language processing (NLP) to build a high throughput tool for facilitating cancer research by automatically extracting and organizing clinical and genetic information from the Electronic Medical Record and from journal articles.
- 2008 “Enhancing Clinical Problem Lists Through Automated Techniques”
 Partners-Siemens Research Council 03/03/2008 – 03/02/2009
Principal Investigator (20% effort); Co-PI: Adam Wright (Partners HealthCare)
The goal of the project is to explore and apply automated techniques (i.e., natural language processing and data mining) to structured (e.g., medications and laboratory

- results) and unstructured (e.g., outpatient notes or discharge summaries) data for enhancing existing clinical problem lists.*
- 2008 “Medical Language Processing Services: From Free-Text to Structured Clinical Statements”
Partners-Siemens Research Council 01/14/2008 – 01/13/2009
Project Director (30% effort); PI: Howard Goldberg (Partners HealthCare)
The goal of the project is to develop an architecture and initial set of components for an MLP service to extract, encode, and structure clinical statements (e.g., problems and observations) from clinical text for a variety of subsequent applications (e.g., patient care, decision support, quality reporting, and research).
- 2010 “Create Decision Support Systems, quality and cost data analysis to support state sponsored and other program beneficiaries in receiving the highest quality and most cost effective services”
Vermont Agency of Human Services 01/01/2010 – 08/31/2010
Co-Investigator (15% effort); PI: Judith Shaw/Indra Neil Sarkar (University of Vermont)
This project aims to establish an extensible research data warehouse that will ultimately serve researchers and government officials for the State of Vermont.
- 2010 – “Planning Vermont’s Healthcare Workforce Future”
2011 HRSA P50 HP20996 09/2010 – 09/2011
Investigator (10% effort); PI: Charles MacLean (University of Vermont)
Planning grant to convene representatives from the healthcare and education sectors in order to expand healthcare workforce planning efforts and improve the coordination with other Vermont healthcare system innovations.
- 2010 – “Mental Health Intergovernmental Service System Interactive Online Network for
2011 Vermont (MHISSION-VT)”
SAMHSA/CMHS H79 SM058809 09/30/2008 – 09/29/2013
Investigator (10% effort); PI: Thomas Simpatico (University of Vermont)
Through an intergovernmental partnership that strives to build community and informatics infrastructure for mental health, the goal of this project is to address the needs of Vermont veterans and other adults with trauma spectrum illness who are also involved with the criminal justice system.
- 2010 – “A Curriculum for Clinical Research Training in Vermont”
2013 NIH/NCATS K30 TR000097 08/01/2010 – 05/30/2013
Faculty (10% effort); PI: Benjamin Littenberg (University of Vermont)
The overall goal is to effectively and efficiently transform clinicians and other young academics into successful independent clinical investigators.
- 2011 “Clinical Testing of a CDSS for Tobacco Use Treatment”
NIH/NCI R21 CA134817 09/15/2008 – 08/31/2011
Informatician (5% effort; 2011); PI: Theodore Marcy (University of Vermont)
This project evaluates whether a decision support system on a personal digital assistant enhances physician tobacco-use brief interventions, a preventive service that is known to reduce smoking, the most common cause of preventable death in the U.S.
- 2013 – “Data Abstraction Project”
2015 Vermont Oxford Network (VON) 07/01/2013 – 06/30/2015
Co-Investigator (15% effort); PI: Indra Neil Sarkar (University of Vermont)
The long-term goal is to leverage data that are collected as part of the VON database in combination with data within electronic health records to support quality improvement reporting activities of the VON membership, as well as clinical, epidemiological, and informatics research initiatives.
- 2012 – “Leveraging the EHR to Collect and Analyze Social, Behavioral & Familial Factors”
2017 NIH/NLM R01 LM011364 09/01/2012 – 08/31/2017

- Principal Investigator** (20% effort); Co-PI: Genevieve Melton (University of Minnesota)
The overall goal of this project is to use EHR data and computational techniques to study interactions among social, behavioral, and familial factors for conditions such as pediatric asthma and adult epilepsy. This project, called “Social and Family History – Extraction, Representation, and Evaluation” (SFHERE), represents a collaborative effort between Brown University, University of Minnesota, and University of Vermont.
 [Priority Score: 25 (5th percentile)]
- 2014 – “In-Silico Identification of Phyto-Therapies”
 2017 NIH/NLM R01 LM011963 09/01/2014 – 08/31/2017
Co-Investigator (10% effort); PI: Indra Neil Sarkar
The overall goal of this project is to develop a semantically integrated framework that could be used to identify and validate potential phyto-therapies embedded within ethnobotanical and biomedical knowledge sources, and thus encourage the conservation of this knowledge and biodiversity. [Priority Score: 25 (7th percentile)]
- 2017 – “Training and Teaching for Transforming Big Data to Knowledge
 2020 NIH/NIMH R25 MH116440 09/13/2017 – 08/31/2020
Trainer (5% effort); PI: IN Sarkar/J Hogan/S Istrail/J Pipher/B Sandstede
The overall goal is to address an acute need for developing educational opportunities in data science that incorporate pragmatic research experiences for the biomedical researchers of tomorrow.
- 2020 – “IDeA Clinical and Translational Research Units join the National COVID Cohort
 2021 Collaborative”
 NIH/NIGMS U54GM104942-05S2 07/01/2020 – 06/30/2021
Site PI/Co-I (8.3% effort); PI: Sally Hodder (WVU)
The overall goal is to enable rapid contribution of COVID-19 patient data to N3C while enabling a CTR consortium to address COVID-19 data projects among IDeA states.
- 2020 – “A Learning Healthcare System in Rhode Island for COVID-19”
 2021 Brown COVID-19 Research Seed Fund 05/15/2020 – 05/15/2021 (NCE)
Principal Investigator
Establish an inter-institutional informatics infrastructure to support COVID-19 research in Rhode Island.
- 2020 – “RAPID: Information Retrieval and Graph Mining Techniques to Enable Self-
 2022 Assessment and Clinical Monitoring of Emergent Infectious Diseases”
 NSF/CISE/IIS 2027892 07/01/2020 – 06/30/2021 (NCE)
Co-PI (5% effort); PI: Indra Neil Sarkar
Develop a system for enabling patients to enter and monitor possible symptoms associated with COVID-19.
- 2021 – “IDeA-CTRs Ensuring the Inclusion of Underserved Populations through Participation
 2022 and Leadership in the National COVID Cohort Collaborative”
 NIH/NIGMS U54GM104942-06S4 07/01/2021 – 06/30/2022
Site PI/Co-I (5% effort); PI: Sally Hodder (WVU)
Support increased IDeA-CTR participation in the N3C initiative while building IDeA-CTR network infrastructure and growing IDeA investigator engagement in N3C.

7. SERVICE

a. To the University

- 2002 – 2003 **Senior Student Representative**, Department of Biomedical Informatics, Columbia University, New York, NY
- 2002 – 2003 **Member**, Graduate Student Advisory Council (GSAC), GradWeb committee, Columbia University, New York, NY

- 2010 – 2013 **Member**, Faculty Senate Educational & Research Technologies Committee, University of Vermont, Burlington, VT
- 2010 – 2011 **Member**, University-wide Workgroup on Privacy, Information Security and Data Retention, University of Vermont, Burlington, VT
- 2011 – 2015 **Member**, Committee on Human Research in the Medical Sciences (Institutional Review Board), University of Vermont and University of Vermont Medical Center, Burlington, VT
- 2016 – pres. **Member**, Academic Oversight Committee for the Masters Program in Clinical and Translational Research, School of Public Health, Providence, RI
- 2016 – pres. **Co-Chair**, GIS and Informatics Committee, Hassenfeld Child Health Innovation Institute, Brown University/Hasbro Children’s Hospital/Woman and Infants Hospital of Rhode Island, Providence, RI
- 2018 – pres. **Member**, Research Advisory Board, Office of the Vice President for Research, Brown University, Providence, RI
- 2019 – 2020 **Member**, Open Access Committee, Brown University, Providence, RI
- 2020 **Member**, Teaching Scholar Search Committee, Department of Biostatistics, Brown University, Providence, RI
- 2020 **Member**, Undergraduate Teaching and Research Award (UTRA) Review Committee, Brown University, Providence, RI
- 2020 – pres. **Member**, Didactic Interactions Planning Committee, Learning Health Systems Rehabilitation Research Network (LeaRRn), Brown University/Boston University/University of Pittsburgh
- 2020 – pres. **Member**, COBRE for Computational Biology of Human Disease Internal Advisory Committee, Brown University, Providence, RI
- 2021 – 2022 **Member**, Technology for Education (Tech4Ed), Faculty Executive Committee, Brown University, Providence, RI
- 2022 – pres. **Member**, Research Computing Advisory Committee, Office of the Vice President for Research, Brown University, Providence, RI

b. To the Profession

Professional Societies

- 2000 – pres. **Member**, American Medical Informatics Association (AMIA)
- 2006 – 2011 **Member**, Meetings Committee
- 2010 – 2013 **Member**, Education Committee
- 2010 – 2013 **Primary Representative** (*University of Vermont*), Academic Forum
- 2012 – 2013 **Member**, Publications Committee
- 2014 – 2020 **Member**, Awards Committee
- 2014 – 2020 **Member**, Membership and Outreach Committee
- 2016 – 2020 **Chair**, Membership and Outreach Committee
- 2017 – 2020 **Member**, Mentoring, Networking, and Pipeline Subcommittee, Women in AMIA Task Force
- 2016 – pres. **Fellow**, American College of Medical Informatics (ACMI)
- 2021 – 2022 **Member**, Elections and Nominations Committee

Editorial Responsibilities

- 2008 – pres. **Member**, Editorial Advisory Board, The Open Medical Informatics Journal
- 2011 – 2012 **Lead Guest Editor**, Special Issue on “Translating Standards into Practice: Experiences and Lessons Learned in Biomedicine and Health Care”, Journal of Biomedical Informatics
- 2013 – 2020 **Member**, Editorial Board, Methods of Information in Medicine

2020 – pres. *Associate Editor*, Methods of Information in Medicine
 2021 – 2022 *Member*, Editorial Board, Journal of Biomedical Informatics

Journal / Conference Reviews

World Congress on Medical and Health Informatics (MEDINFO)
 International Congress of the European Federation of Medical Informatics (MIE)
 AMIA Annual Symposium
 AMIA Joint Summits on Translational Science (Translational Bioinformatics and Clinical Research Informatics)
 Applied Clinical Informatics
 Artificial Intelligence in Medicine
 BMC Medical Informatics and Decision Making
 Computer Methods and Programs in Biomedicine
 Computers in Biology and Medicine
 IEEE Transactions on Information Technology in Biomedicine
 Human-Computer Interaction and Knowledge Discovery and Data Mining (HCI-KDD) Conference
 International Journal of Data Mining and Bioinformatics
 Journal of Biomedical Informatics
 Journal of Healthcare Engineering
 Journal of Medical Systems
 Journal of the American Medical Informatics Association
 Methods of Information in Medicine
 Open Medical Informatics Journal
 PLOS ONE

Grant Reviews

2008 *Reviewer*, Disease Management of Chronic Diseases (DMCZ) program, The Netherlands Organisation for Health Research and Development (ZonMw)
 2009 *Reviewer*, Challenge Grants (Emerging Technologies and Training in Neurosciences [ETTN], Bioengineering Sciences and Technologies [BST], Healthcare Delivery and Methodologies [HDM], National Institutes of Health
 2009 *Ad hoc Member*, Computer & Information Science & Engineering, National Science Foundation
 2010 *Reviewer*, American Institute of Biological Sciences (contracted by the U.S. Air Force Surgeon General for review of unsolicited research proposals)
 2010 *Reviewer*, Challenge Grants (Oncology 1 – Basic Translational IRG [OBT]), National Institutes of Health
 2011 *Ad hoc Member*, Institutional Grants for Research Training in Biomedical Informatics (T15), National Library of Medicine, National Institutes of Health [ZLM1 AP-T (01); July 14-15, 2011]
 2012 *Ad hoc Member*, Special Emphasis Panel (K22/K99/R01), National Library of Medicine, National Institutes of Health [ZLM1 ZH-C (01); May 17, 2012]
 2012 *Ad hoc Member*, Novel Presentation of Health Related Data (NPHRD) Program, American Institute of Biological Sciences (contracted by the U.S. Army Medical Research and Materiel Command [USAMRMC] and the Telemedicine and Advanced Technology Research Center [TATRC], Joint Program Committee for Medical Training and Health Information Sciences [JPC-1]) [July 9-11, 2012]
 2012 *Ad hoc Member*, NLM Information Resource Grants to Reduce Health Disparities (G08), National Library of Medicine, National Institutes of Health [ZLM1 ZH-G (01); Oct 11-12, 2012]

- 2012 *Ad hoc Member*, Special Emphasis Panel (R01/R12/G13), National Library of Medicine, National Institutes of Health [ZLM1 ZH-C (01); October 26, 2012]
- 2013 *Ad hoc Chair*, Special Emphasis Panel (K22/R01), National Library of Medicine, National Institutes of Health [ZLM1 ZH-C (01); January 26, 2013]
- 2013 *Reviewer*, Loan Repayment Program, National Institute of General Medical Sciences, National Institutes of Health [ZGM1 TRN-0 (LR); May 8, 2013]
- 2013 *Ad hoc Member*, Clinical Trials Units for NIAID Networks, National Institute of Allergy and Infectious Diseases, National Institutes of Health [ZAI1 SV-A (S1); June 18, 2013]
- 2013 *Ad hoc Member*, Special Emphasis Panel (K99/R13/R21/R01), National Library of Medicine, National Institutes of Health [ZLM1 ZH-C (01); June 26, 2013]
- 2013 *Ad hoc Member*, JPC-1 Health Information Technology Program, American Institute of Biological Sciences (contracted by USAMRMC and TATRC) [August 21, 2013]
- 2013 *Ad hoc Member*, Special Emphasis Panel (K22/R01), National Library of Medicine, National Institutes of Health [ZLM1 ZH-C (01); October 30, 2013]
- 2014 *Ad hoc Chair*, Special Emphasis Panel (K01/R21/R01), National Library of Medicine, National Institutes of Health [ZLM1 ZH-C (01); February 19, 2014]
- 2014 *Ad hoc Member*, NIH Health Care Systems Research Collaboratory - Demonstration Projects for Pragmatic Clinical Trials Focusing on Multiple Chronic Conditions (UH2/UH3), National Institutes of Health [ZAT1 SM (32); March 21, 2014]
- 2014 *External Reviewer*, Multi-Disciplinary Research Cluster Development Seed Fund Program, University of Southern Maine
- 2014 *Ad hoc Member*, Mobile Health: Technology and Outcomes in Low and Middle Income Countries (R21), Fogarty International Center, National Institutes of Health [ZRG1 IMST-K (50); June 16-17, 2014]
- 2014 *Ad hoc Member*, Biodata Management and Analysis (BDMA), National Institutes of Health [October 1-2, 2014]
- 2014 *Ad hoc Member*, NLM Information Resource Grants to Reduce Health Disparities (G08), National Library of Medicine, National Institutes of Health [October 23-24, 2014]
- 2014 *Ad hoc Member*, Special Emphasis Panel (K01/R21/R01), National Library of Medicine, National Institutes of Health [ZLM1 ZH-C (01); December 10, 2014]
- 2015 *Ad hoc Member*, Special Emphasis Panel (R21/R01), National Library of Medicine, National Institutes of Health [ZLM1 ZH-C (01); March 6, 2015]
- 2015 *Ad hoc Member*, Biodata Management and Analysis (BDMA), National Institutes of Health [June 1-2, 2015]
- 2015 *Ad hoc Member*, Special Emphasis Panel, National Library of Medicine, National Institutes of Health [ZLM1 ZH-C (01); December 2, 2015]
- 2016 *Ad hoc Member*, Special Emphasis Panel (R01/R21/K99/K01 Conflicts), National Library of Medicine, National Institutes of Health [ZLM1 ZH-C (01); March 25, 2016]
- 2016 *Ad hoc Member*, Special Emphasis Panel (T15 Review), National Library of Medicine, National Institutes of Health [ZLM1 AP-T (01); August 3, 2016]
- 2016 *Ad hoc Member*, Special Emphasis Panel (R01/R21/K01/K99 Conflicts), National Library of Medicine, National Institutes of Health [ZLM1 ZH-C (01); December 2, 2016]
- 2017 *Ad hoc Member*, Special Emphasis Panel, National Library of Medicine, National Institutes of Health [March 22, 2017]
- 2017 – 2021 *Member, Co-Chair (2019-2020), Chair (2020-2021)*, Biomedical Informatics, Library and Data Sciences (BILDS) Review Committee, National Library of Medicine, National Institutes of Health
- 2019 *Ad hoc Member and Co-Chair*, Early Psychosis Intervention Network (EPINET) Review Meeting, National Institute of Mental Health, National Institutes of Health [ZMH1 ERB-B (03) S; February 21, 2019]
- 2022 *Ad hoc Member*, Special Emphasis Panel, NIH Director's Early Independence Awards

[March 10-11, 2022]

Conference Participation

- 2007 **Session Chair**, AMIA 2007 Fall Symposium
 2009 **Session Chair**, AMIA 2009 Translational Bioinformatics Summit
 2009 – 2010 **Member**, Scientific Program Committee, AMIA 2010 Fall Symposium
 2010 **Judge**, Best Poster Award
 2010 **Session Chair**, Paper Session on “Responses to Clinical Alerting”
 2010 – 2011 **Member**, Scientific Program Committee, AMIA 2011 Summit on Clinical Research Informatics
 2011 **Member**, Program Committee (Health Informatics Track), IEEE Healthcare Informatics, Imaging, and Systems Biology Conference
 2012 **Member**, Program Committee, International Conference on Intelligent Biology and Medicine (ICIBM 2012)
 2013 **Member**, Distinguished Paper Awards Sub-Committee, AMIA 2013 Summit on Clinical Research Informatics
 2016 – 2017 **Member**, Scientific Program Committee, AMIA 2017 Annual Symposium
 2016 – 2018 **Vice Chair**, Scientific Program Committee, AMIA 2018 Annual Symposium
 2018 – 2019 **Member**, Scientific Program Committee, MedInfo 2019

Other External Committees

- 2013 – pres. **Member**, International Scientific Committee, Human-Computer Interaction and Knowledge Discovery & Data Mining (HCI-KDD) Expert Network
[\[http://www.hci4all.at/expert-network-hci-kdd/\]](http://www.hci4all.at/expert-network-hci-kdd/)

c. To the Community

- 2005 – 2007 **Member**, Joint Clinical Alerts Committee, NewYork-Presbyterian Hospital, New York, NY
 2007 – 2008 **Member**, Application Technology Board, Partners HealthCare System, Wellesley, MA
 2009 – 2011 **Member**, Informatics Committee/Group, University of Vermont Medical Center, Burlington, VT
 2010 **Member**, Business Intelligence Data Management Group, University of Vermont Medical Center, Burlington, VT
 2015 **Member**, Physician Informatics Council (PIC), Lifespan, Providence, RI
 2016 – 2019 **Member**, Research IT Council (RITC), Lifespan, Providence, RI

8. ACADEMIC HONORS

- 2000 – 2004 Medical Informatics Pre-Doctoral Training Fellowship, National Library of Medicine, National Institutes of Health
 2006 Marquis Who’s Who in America
 2006 21st Century Achievement Award, Computerworld Honors Program (Columbia University School of Nursing, Nursing PDA Project [MODS-APN], Co-Investigator)
 2011 Distinguished Paper Award, AMIA 2011 Annual Symposium
 2016 Elected Fellow, American College of Medical Informatics (ACMI)

9. TEACHING**Programs**

- 2010 – 2012 **Coordinator**, Informatics Grand Rounds, Center for Clinical and Translational Science, University of Vermont, Burlington, VT

- 2016 – pres. **Co-Director**, Scholarly Concentration in Biomedical Informatics, The Warren Alpert Medical School of Brown University, Providence, RI
- 2018 – 2020 (Summer) **Coordinator and Lecturer**, Summer Research Skills Workshops, Brown University Providence, RI
- 2018 – pres. **Coordinator and Lecturer**, Journal Club in Biomedical Informatics, Brown University Providence, RI
- 2020 – 2021 **Co-Leader**, Informatics and Implementation Science Learning Series (I²S²), Brown University, Providence, RI
- 2022 – pres. **Co-Organizer**, Machine Learning for Health Seminar Series, Advance-CTR, Providence, RI
- 2022 – pres. **Coordinator**, Health Informatics Seminar Series, Brown Center for Biomedical Informatics, Providence, RI

Courses

- 1994 **Tutor** (Math and Chemistry), Cambridge Rindge and Latin School, Cambridge, MA
- 2001 **Teaching Assistant**, G4040 Health Information Systems Architecture, Department of Biomedical Informatics, Columbia University, New York, NY
- 2002 **Teaching Assistant**, G4060 Evaluation in Medical Informatics, Department of Biomedical Informatics, Columbia University, New York, NY
- 2004 **Invited Lecture** (“*Mobile Computing in Health Care*”), Internet Integration into Health Care, Downstate Medical Center, State University of New York, New York, NY
- 2005 **Invited Lecture** (“*MedLEE*”), G4024 Biomedical Text Mining, Department of Biomedical Informatics, Columbia University, New York, NY
- 2006 **Module Instructor** (“*Knowledge Acquisition and Representation*”), G4002 Theory and Methods in Biomedical Informatics, Department of Biomedical Informatics, Columbia University, New York, NY
- 2008 (Summer) **Invited Lecture** (“*Natural Language Processing*”), HPM 512 Medical Informatics, Harvard School of Public Health, Boston, MA
- 2008 (Fall) **Invited Lecture** (“*Data, Text, and Web Mining*”), HST 951 Medical Decision Support, Harvard-MIT Health Sciences and Technology, Boston, MA
- 2009 (Fall) **Invited Lecture** (“*Natural Language Processing*”), CTS 395 Introduction to Biomedical Informatics, Center for Clinical and Translational Science, University of Vermont, Burlington, VT
- 2010 (Spring) **Sole Instructor**, CTS 395 Applications in Biomedical and Health Informatics, Center for Clinical and Translational Science, University of Vermont, Burlington, VT
- 2010 (Summer) **Supervisor**, CS 394 Independent Study: Surveying Itemset and Association Rule Mining, Department of Computer Science, University of Vermont, Burlington, VT
- 2010 (Fall) **Supervisor**, CS 394 Independent Study: Implementation of Itemset and Association Rule Mining, Department of Computer Science, University of Vermont, Burlington, VT
- 2010 – 2012 **Coordinator**, Informatics Grand Rounds, Center for Clinical and Translational Science, University of Vermont, Burlington, VT
- 2011 (Spring) **Sole Instructor**, CTS 395 Applied Biomedical Informatics, Center for Clinical and Translational Science, University of Vermont, Burlington, VT
- 2011 (Spring) **Supervisor**, CS 394 Independent Study: Clinical Association Rule Mining, Department of Computer Science, University of Vermont, Burlington, VT
- 2011 (Summer) **Co-Instructor**, Biomedical Informatics Short Course for Medical Students, University of Vermont, Burlington, VT
- 2012 (Fall) **Co-Instructor**, CTS 271 Introduction to Biomedical Informatics, Center for Clinical and Translational Science, University of Vermont, Burlington, VT
- 2013 (Spring) **Invited Lecture** (“*Electronic Health Records and Research*”), CTS 309 Introduction to Research Management II, Center for Clinical and Translational Science, University of

- Vermont, Burlington, VT
- 2013 (Spring) **Sole Instructor**, CTS 272/CS 295 Applied Biomedical Informatics, Center for Clinical and Translational Science (cross-listed with the Department of Computer Science), University of Vermont, Burlington, VT
- 2014 (Spring) **Invited Lecture** (“*Biomedical Informatics*”), CS 095 First Year Seminar for Computer Science Majors, Dept of Computer Science, University of Vermont, Burlington, VT
- 2015 (Spring) **Invited Lecture** (“*Biomedical Informatics*”), CS 050 Seminar for New Computer Science Majors, Department of Computer Science, University of Vermont, Burlington, VT
- 2015 (Summer) **Co-Instructor**, Clinical Informatics Elective for Residents, University of Vermont and University of Vermont Medical Center, Burlington, VT
- 2016 – 2021 (Summer) **Co-Instructor**, BIOL 6535 Preclinical Elective: Biomedical Informatics and Data Science Skills for Medical Students, The Warren Alpert Medical School of Brown University, Providence, RI
- 2016 – 2017 (Summer) **Co-Instructor**, CEBI 0971 Biomedical Informatics and Data Science for Biomedicine and Health Care, Summer@Brown Courses, Brown University, Providence, RI
- 2017 (Spring) **Co-Instructor**, PHP 2561 Programming for Health Data Science, Department of Biostatistics, Brown University School of Public Health, Providence, RI
- 2017 (Spring) **Faculty Advisor**, BIOL 6683 Preclinical Elective: Introduction to the Electronic Health Record (EHR), The Warren Alpert Medical School of Brown University, Providence, RI
- 2017 (Fall) **Invited Lecture** (“Electronic Health Records: From Patient Care to Research”), BIOL 6683 Preclinical Elective: Introduction to the Electronic Health Record (EHR), The Warren Alpert Medical School of Brown University, Providence, RI
- 2017 (Fall) **Invited Lecture** (“Natural Language Processing in Health Care and Biomedicine”), BIOL 1565 Survey of Biomedical Informatics, Brown University, Providence, RI
- 2018 – pres. (Spring) **Co-Instructor**, BIOL 1555/PHP 2561 Methods in Informatics and Data Science for Health, Brown University, Providence, RI
- 2018 (Fall) **Invited Lecture** (“Natural Language Processing in Health Care and Biomedicine”), BIOL 1565 Survey of Biomedical Informatics, Brown University, Providence, RI
- 2018 (Fall) **Co-Instructor**, 5x5 Clinical Informatics Short Course, Brown University, Providence, RI
- 2019 (Fall) **Invited Lecture** (“Natural Language Processing in Health Care and Biomedicine”), BIOL 1565 Survey of Biomedical Informatics, Brown University, Providence, RI
- 2019 (Fall) **Coordinator and Faculty Leader**, BIOL 6683 Preclerkship Elective: Introduction to the Electronic Health Record (EHR), The Warren Alpert Medical School of Brown University, Providence, RI
- 2021 (Spring) **Co-Instructor**, Pediatric Database Development Workshop Series, Rhode Island Hospital, Providence, RI
- 2022 – pres. **Faculty Mentor**, BIOL 6535 Preclerkship Clerkship: Informatics and Data Science for Clinicians, The Warren Alpert Medical School of Brown University, Providence, RI
- 2022 (Spring) **Invited Lecture** (“From Health Data to Knowledge”), BIOL 6535 Informatics and Data Science for Clinicians, Brown University, Providence, RI [March 3, 2022]
- 2022 (Summer) **Coordinator**, N3C Virtual Short Course
- 2022 (Fall) **Invited Lecture** (“Introduction to the Electronic Health Record (EHR)”), BIOL 6535 Informatics and Data Science for Clinicians, Brown University, Providence, RI [September 20, 2022]

Thesis Advisor

- 2009 – 2014 Rhonda Kost, PhD Candidate (ABD), Department of Computer Science, University of Vermont, Burlington, VT (*Association Rule Mining for Disease Co-Occurrences*)
- 2010 – 2011 Huimin Ye, PhD Candidate (graduated with MS), Department of Computer Science, University of Vermont, Burlington, VT (*Anonymization of Health Datasets*)
- 2017 – 2018 Rishi Kowalski, ScM Candidate (Health Data Science Track), Department of

- 2018 – 2019 Biostatistics, School of Public Health, Brown University, Providence, RI
Claudia Jones, ScM Candidate (Biotechnology), Brown University, Providence, RI
[2017 – 2018, Undergraduate Student (Applied Mathematics and Biology)]
- 2018 – 2020 Ryan Buckland, ScM Candidate (Health Data Science Track), Department of
Biostatistics, School of Public Health, Brown University, Providence, RI
[*Department of Biostatistics Master's Thesis Award*]
- 2018 – 2020 Scott Fogle, AB/MPH Candidate (East Asian Studies and Public Health), Brown
University, Providence, RI
- 2019 – 2020 Mariana DeBare, ScM Candidate (Biotechnology), Brown University, Providence, RI
- 2019 – 2021 Chris Wakim, ScM Candidate (Biotechnology), Brown University, Providence, RI
- 2020 – pres. Katherine Brown, PhD Candidate, Center for Biomedical Informatics and Center for
Computational Molecular Biology, Brown University, Providence, RI
- 2022 – pres. Harshini Venkatachalam, Undergraduate Student (Computer Science), Brown
University, Providence, RI
- 2022 – pres. James Ro, Master's Student (Data Science), Brown University, Providence, RI
- 2022 – pres. Jilliana Zarzycki, Master's Student (Biotechnology), Brown University, Providence, RI

Thesis or Comprehensive Exam Committee Member

- 2010 – 2015 Kairn Kelley, PhD Candidate, Center for Clinical and Translational Science, University
of Vermont, Burlington, VT
- 2012 Abigail Crocker, PhD Candidate, Center for Clinical and Translational Science,
University of Vermont, Burlington, VT
- 2012 Marianne Burke, PhD Candidate, Center for Clinical and Translational Science,
University of Vermont, Burlington, VT
- 2018 – pres. Aaron Eisman, MD/PhD Candidate, Center for Biomedical Informatics and Center for
Computational Molecular Biology, Brown University, Providence, RI
- 2019 – pres. Dilum Aluthge, MD/PhD Candidate, Center for Biomedical Informatics and Center for
Computational Molecular Biology, Brown University, Providence, RI

Career Development Mentor

- 2018 – pres. Jennifer Barredo, PhD, Assistant Professor (Research) of Psychiatry and Human
Behavior, Brown University, Providence, RI
- 2018 – pres. Sarah Arias, PhD, Assistant Professor (Research) of Psychiatry and Human Behavior,
Brown University, Providence, RI
- 2021 – pres. Grace Cushman, PhD, Research Fellow in Psychiatry and Human Behavior, Brown
University, Providence, RI

Research Advisor

- 2012 – 2015 Darlene Peterson, Medical Student, College of Medicine, University of Vermont,
Burlington, VT (*Problem Lists in the EHR*)
- 2013 Joshua Cohen, Medical Student, College of Medicine, University of Vermont,
Burlington, VT (*Problem Lists in the EHR*)
- 2013 Meghan Garcia-Webb, Medical Student (4th Year), College of Medicine, University of
Vermont, Burlington, VT (*Alcohol Use Documentation in the EHR*)
- 2013 – 2014 Yucan Zhang, MS Student, Department of Computer Science, University of Vermont,
Burlington, VT (*Mining Association Rules in the Biomedical Literature*)
- 2014 Nicholas Wilkie, Medical Student (4th Year), College of Medicine, University of
Vermont, Burlington, VT (*Visualizing Disease Networks in Literature*)
- 2015 – 2016 Matthew Vanderloo, MD, Internal Medicine Resident, University of Vermont,
Burlington, VT (*Developing a Clinical Informatics Elective for Residents*)*

- 2015 – 2016 Jessica Haddad, Undergraduate/Medical Student (MD2020), The Warren Alpert Medical School of Brown University, Providence, RI
- 2016 – 2018 Sachin Pendse, Undergraduate Student, Brown University, Providence, RI*
- 2017 – 2018 Daniel Coppersmith, Research Assistant, Brown University, Providence, RI
- 2016 – 2017 Yuanqing Liu, Master's Student, Department of Biostatistics, Brown University School of Public Health, Providence, RI
- 2017 – 2018 Jenna Zagoren, Undergraduate Student (Public Health), Brown University, Providence, RI
- 2018 – 2019 Tiffany Ding, Undergraduate Student (ScB 2021 Applied Math, Economics, Computer Science), Brown University, Providence, RI
- 2019 Logan Cho, Undergraduate Student (ScB 2020 Neuroscience), Brown University, Providence, RI
- 2019 Laila Gamaleldin, Undergraduate Student (ScB 2022 Computer Science), Brown University, Providence, RI
- 2019 Katherine Brown, PhD Candidate, Center for Biomedical Informatics and Center for Computational Molecular Biology, Brown University, Providence, RI (Research Rotation)
- 2019 – 2020 Sotiris Karagounis, Undergraduate Student (ScB 2020 Computer Science), Brown University, Providence, RI
- 2020 – pres. Zandra Ho, Medical Student (MD2023), The Warren Alpert Medical School of Brown University, Providence, RI
- 2021 – 2022 Jessica Hoffen, Medical Student (MD2023), The Warren Alpert Medical School of Brown University, Providence, RI

* *co-advisor*

Undergraduate Concentration Advisor

- 2020 – pres. Lindsey Ross, Undergraduate Student (ScB 2023 Biology – Biomedical Informatics Track), Brown University, Providence, RI
- 2020 – pres. Carolyn Lai, Undergraduate Student (ScB 2023 Biology), Brown University, Providence, RI
- 2022 – pres. Anusha Srinivasan, Undergraduate Student (ScB 2024 Biology – Biomedical Informatics Track), Brown University, Providence, RI
- 2023 – pres. Chris Ma, Undergraduate Student (ScB 2025 Biology – Biomedical Informatics Track), Brown University, Providence, RI

Scholarly Concentration in Biomedical Informatics Program Advisor

- 2015 – 2019 Nathan Coppersmith, Medical Student (MD2019), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2015 – 2019 Jyotsna Ghosh, Medical Student (MD2019), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2015 – 2019 Yao Liu, Medical Student (MD2019), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2015 – 2019 Xavier Orcutt, Medical Student (MD2019), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2015 – 2019 Lindor Qunaj, Medical Student (MD2019), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2015 – 2019 James Tanch, Medical Student (MD2019), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2015 – 2019 Margaret Thorsen, Medical Student (MD2019), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2015 – 2020 Jonathan Vu, Medical Student (MD2020), The Warren Alpert Medical School of Brown

- University, Providence, RI*
- 2015 – 2019 Jason Wang, Medical Student (MD2019), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2016 – 2019 Dilum Aluthge, Medical Student (MD2020), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2015 – 2020 Karishma Bhatia, Medical Student (MD2020), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2015 – 2020 Ishan Sinha, Undergraduate/Medical Student (MD2020), The Warren Alpert Medical School of Brown University, Providence, RI *
- 2017 – 2020 Rajsavi Anand, Medical Student (MD2020), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2017 – 2020 Dustin Biron, Medical Student (MD2020), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2017 – 2020 Wesley Durand, Medical Student (MD2020), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2017 – 2021 Yanwen (Annabelle) Guo, Medical Student (MD2020), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2017 – 2020 Sukrit Jain, Medical Student (MD2020), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2017 – 2021 Nathan Pertsch, Medical Student (MD2020), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2018 – 2021 Ronald Akiki, Medical Student (MD2021), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2018 – 2021 Allison Froehlich, Medical Student (MD2021), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2018 – 2022 Christopher Lama, Medical Student (MD2021), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2018 – 2021 Sean Lee, Medical Student (MD2021), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2018 – 2021 Jack Ruddell, Medical Student (MD2021), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2018 – 2021 Keven Zhang, Medical Student (MD2021), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2019 – 2022 Ashley Aldridge, Medical Student (MD2022), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2019 – 2022 Kiara Corcoran-Ruiz, Medical Student (MD2022), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2019 – 2022 Isaac Kim, Medical Student (MD2022), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2019 – 2022 David Lee, Medical Student (MD2022), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2019 – 2022 James Williams, Medical Student (MD2022), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2019 – 2022 Parker Woolley, Medical Student (MD2022), The Warren Alpert Medical School of Brown University, Providence, RI*
- 2020 – pres. Katherine Barry, Medical Student (MD2023), The Warren Alpert Medical School of Brown University, Providence, RI
- 2020 – pres. Tess Cersonsky Medical Student (MD2023), The Warren Alpert Medical School of Brown University, Providence, RI
- 2020 – pres. Gregory Cohan, Medical Student (MD2023), The Warren Alpert Medical School of Brown University, Providence, RI

- 2020 – pres. Keir Johnson, Medical Student (MD2023), The Warren Alpert Medical School of Brown University, Providence, RI
- 2020 – pres. Luke Soliman, Medical Student (MD2023), The Warren Alpert Medical School of Brown University, Providence, RI
- 2021 – pres. Isabella Berglund-Brown (MD2024), The Warren Alpert Medical School of Brown University, Providence, RI
- 2021 – pres. Jane Chen (MD2024), The Warren Alpert Medical School of Brown University, Providence, RI
- 2021 – pres. Joseph Chen (MD2024), The Warren Alpert Medical School of Brown University, Providence, RI
- 2021 – pres. Franklin Iheanacho (MD2024), The Warren Alpert Medical School of Brown University, Providence, RI
- 2021 – pres. Jesse Menville (MD2024), The Warren Alpert Medical School of Brown University, Providence, RI
- 2021 – pres. Stephen Schmit (MD2024), The Warren Alpert Medical School of Brown University, Providence, RI
- 2021 – pres. Kathleen Wu (MD2024), The Warren Alpert Medical School of Brown University, Providence, RI
- 2022 – pres. Mark Behar (MD2025), The Warren Alpert Medical School of Brown University, Providence, RI
- 2022 – pres. Ishaani Khatri (MD2025), The Warren Alpert Medical School of Brown University, Providence, RI
- 2022 – pres. Mihir Khunte (MD2025), The Warren Alpert Medical School of Brown University, Providence, RI
- 2022 – pres. Anagha Lokhande (MD2025), The Warren Alpert Medical School of Brown University, Providence, RI
- 2022 – pres. Ashwin Reddy (MD2025), The Warren Alpert Medical School of Brown University, Providence, RI
- 2022 – pres. Isaac Sears (MD2025), The Warren Alpert Medical School of Brown University, Providence, RI
- 2022 – pres. Katherine Zhong (MD2025), The Warren Alpert Medical School of Brown University, Providence, RI

* *co-advisor*