

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Hulse, Nathan Carlisle	POSITION TITLE Medical Informaticist, Homer Warner Center for Informatics Research, Intermountain Health Care Adjunct Assistant Professor, University of Utah		
eRA COMMONS USER NAME (credential, e.g., agency login) NATHANHULSE			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Utah, Salt Lake City, UT	PhD	2005	Medical Informatics
University of Utah, Salt Lake City, UT	BS	2001	Biology
University of Utah, Salt Lake City, UT	BS	2001	Chemistry

A. Personal Statement:

The goal of the current project is to further develop our installation of diagnostic decision support tool, SimulConsult, in order to recommend when to prompt genetic testing and what tests to specifically use, ranked in such a way that maximizes clinical utility while minimizing associated cost. We intend to combine evidence-based 'importance' metrics to their existing tools and gather cost and outcomes data to facilitate the process. Collectively, we anticipate that the system will provide intelligent, cost-effective assistance during difficult neurologic diagnoses, assisting providers with their decision-making and offering testing recommendations.

As the lead informatics domain expert on the project from Intermountain Healthcare, I have relevant experience in clinical knowledge management, enterprise data warehousing, and relevant healthcare data standards. I have been a member of the international health IT standards body Health Level Seven (HL7) since 2006. As part of my work with that group, I have accrued working experience with the standards created by the Clinical Decision Support Workgroup. I have worked previously with clinicians on a number of development projects, including the development of both patient and provider-facing applications with strong ties to clinically relevant patient education materials. I am also primarily responsible for the management and development of the 'infobutton' at Intermountain Healthcare, a tool that serves as a context-aware information delivery resource embedded within clinical information systems. Furthermore, I work closely with Intermountain's Clinical Genetics Institute (local sponsors of the project) and manage several local software projects dealing with family health history collection and risk assessment. My expertise in relevant informatics standards, clinical decision support, enterprise data warehousing and oversight of software development projects will contribute to the overall success of the project.

B. Positions and Honors

Professional Experience:

Positions

2011-Present	Director, Clinical Knowledge Management, Intermountain Healthcare
2010-Present	Adjunct Assistant Professor Department of Nursing Informatics, University of Utah
2010	Lecturer, Department of Medical Informatics, Northwestern University
2008-Present	Adjunct Assistant Professor Department of Biomedical Informatics, University of Utah
2007-Present	Medical Informaticist, Homer Warner Center for Informatics Research, Intermountain Healthcare Salt Lake City, UT
2006-2007	Product Manager, Clinical Informatics Suite, RemedyMD
2005-2006	Medical Knowledge Engineer, Intermountain Healthcare, Salt Lake City, UT
2001-2005	National Library of Medicine Fellow; Department of Medical Informatics, University of Utah
1999-2001	Genetic Research Assistant: Eccles Institute of Human Genetics, Salt Lake City, UT
1999	Huntsman Cancer Institute Internship, Salt Lake City, UT

Other Experience and Professional Memberships (selected)

2010 Scientific Committee Member, 2010 Symposium of American Medical Informatics Association
2006-Present Member, Health Level Seven
2001-Present Member, American Medical Informatics Association

Honors:

2001 Senior Chemistry Student Award, Department of Chemistry, University of Utah
1999 Junior Chemistry Student Award, Department of Chemistry, University of Utah
1996 Sophomore Chemistry Student Award, Department of Chemistry, University of Utah
1995-2001 Presidential Scholar, University of Utah
1995-2001 National Merit Semifinalist Scholar, University of Utah

C. Peer Reviewed Publications (in reverse chronological order)

1. Evolution in clinical knowledge management strategy at Intermountain Healthcare. **Hulse NC**, Galland J, Borsato EP. AMIA Annu Symp Proc. 2012;2012:390-9. Epub 2012 Nov 3
2. Development and Early Usage Patterns of a Consumer-Facing Family Health History Tool. AMIA Annu Symp Proc. 2011. 2011:578-87. Epub 2011 Oct 22. **Hulse NC**, Ranade-Kharkar P, Post H, Wood GM, Williams MS, Haug PJ.
3. Requirements for Documenting Family Health History for the National Children's Study. AMIA Annu Symp Proc. 2010 Nov 13;2010:1101. Jiang Y, Staggers N, **Hulse NC**, Firth SD, Staes CJ.
4. The Utilization of Infobuttons at Intermountain Healthcare – An Update in 2010. AMIA Annu Symp Proc. 2010 Nov 13;2010:1135. Kuang J, **Hulse NC**, Haug PJ.
5. Multi-National, Multi-Institutional Analysis of Clinical Decision Support Data Needs to Inform Development of the HL7 Virtual Medical Record Standard. AMIA Annu Symp Proc. 2010 Nov 13;2010:377-8. Kawamoto K, Del Fiol G, Strasberg HR, **Hulse NC** et al.
6. A large-scale knowledge management method based on the analysis of the use of online knowledge resources. Del Fiol G, Cimino JJ, Maviglia SM, Strasberg HR, Jackson BR, **Hulse NC**. AMIA Annu Symp Proc. 2010 Nov 13;2010:142-6.
7. Metadata extraction routines for improving infobutton performance. AMIA Annu Symp Proc. 2010 Nov 13;2010:326-30. **Hulse NC**, Haug PJ
8. Deriving consumer-facing disease concepts for family health histories using multi-source sampling. Journal of Biomedical Informatics, 2010 Oct;43(5):716-24. **Hulse NC**, Wood GM, Haug PJ, Williams MS. PMID: 20382264
9. Analysis of the Use of Knowledge Resources to Support Knowledge Management Processes. Proceedings of the 2009 Annual Fall Symposium. San Francisco, CA, USA: AMIA. Del Fiol G, Cimino JJ, Maviglia SM, Strasberg HR, Jackson BR, **Hulse NC**.
10. Designing a Family Health History Datamart for Clinical Research. Proceedings of the 2009 Annual Fall Symposium. [abstract] San Francisco, CA, USA: AMIA. Wood GM, Kolbe M, **Hulse NC**.
11. Glycemic Control Through Computerized Subcutaneous Insulin Calculators. Proceedings of the 2009 International Congress on Nursing Informatics. Studies in health technology and informatics 146:473-7, 2009. Roemer LK, Borsato EP, **Hulse NC**. PMID: 19592888
12. Ideal features for a patient-entered family history and risk assessment tool. Proceedings of the 2008 Annual Fall Symposium; 1152. [abstract] Washington, DC, USA: AMIA. Taylor DP, **Hulse NC**, Wood GM, Haug PJ, Williams MS. PMID: 18999237
13. Analysis of Family Health History Data Collection Patterns in Consumer-Oriented Web-based Tools. Proceedings of the 2008 Annual Fall Symposium; 982. [abstract] Washington, DC, USA: AMIA. **Hulse NC**, Taylor DP, Wood GM, Haug PJ. PMID: 18999269
14. Receiver Operating Characteristic Curves for Systemic Inflammatory Response Syndrome Criteria in Patients With Documented Severe Sepsis and Septic Shock. Annals of Emergency Medicine. 2008;52(4):S72-S72. Allen T, Snow G, Bledsoe J, Briggs B, **Hulse NC**, Ferraro J, Post H, Clemmer TP, Haug PJ.

15. Towards an On-demand Peer Feedback System for a Clinical Knowledge Base: A Case Study with Order Sets. *Journal of Biomedical Informatics*. 2008 Feb;41(1):152-64. **Hulse NC**, Del Fiol G, Bradshaw RL, Roemer LK, Rocha RA. PMID: 17591460
16. Towards ubiquitous peer review strategies to sustain and enhance a clinical knowledge management framework. *AMIA Annu Symp Proc*. 2006:654-8. Rocha RA, Bradshaw RL, Bigelow SM, Hanna TP, Del Fiol G, **Hulse NC**, Roemer LK, Wilkinson SG. PMID: 17238422
17. Maintaining the Integrity of Links Between Assets within a Clinical Knowledge Repository. 19th IEEE International Symposium on Computer-Based Medical Systems. 2006;CBMS 2006:253 – 258. Hanna TP, Rocha RA, **Hulse NC**, Del Fiol G, Bradshaw RL.
18. Modeling End-Users' Acceptance of a Knowledge Authoring Tool. *Methods of Information in Medicine*. 2006;45(5):528-35. **Hulse NC**, Rocha RA, Del Fiol G. PMID: 17019507
19. Knowledge Management Strategies: Enhancing Knowledge Transfer to Clinicians and Patients. Paper accepted for presentation at the 9th International Congress on Nursing Informatics, 2006, Seoul, South Korea. Roemer LK, Rocha RA, Del Fiol G, Bradshaw RL, Hanna TP, **Hulse NC**.
20. An XML Model that Enables the Development of Complex Order Sets by Clinical Experts. *IEEE Trans Inf Technol Biomed*. 2005 Jun;9(2):216-28. Del Fiol G, Rocha RA, Bradshaw RL, **Hulse NC**, Roemer LK. PMID: 16138538
21. Customized Document Validation to Support a Flexible XML-based Knowledge Management Framework. *Proceedings of the 2005 Annual Fall Symposium*; 291-95. Washington, DC, USA: AMIA. Hanna TP, Del Fiol G, Bradshaw R, Roemer LK, **Hulse NC**, Rocha RA. PMID: 16779048
22. Development and Validation of XML-based Calculations within Order Sets. *Proceedings of the 2005 Annual Fall Symposium*; 360-64. Washington, DC, USA: AMIA. **Hulse NC**, Del Fiol G, Rocha RA. PMID: 16779062
23. KAT: A Flexible XML-based Knowledge Authoring Environment *J Am Med Inform Assoc*. 2005 Jul-Aug;12(4):418-30. **Hulse NC**, Rocha RA, Del Fiol G, Bradshaw RL, Hanna TP, Roemer LK. PMID: 15802477
24. On-demand Access to a Multi-Purpose Collection of Best Practice Standards. *Proceedings of the 26th Annual International Conference of the IEEE EMBS*; 3342-45. San Francisco, CA, USA: IEEE. Del Fiol G, Rocha RA, Washburn J, Rhodes J, **Hulse NC**, Bradshaw RL, Roemer LK.
25. The Knowledge Authoring Tool: An XML-based Knowledge Acquisition Environment. *Proceedings of the 26th Annual International Conference of the IEEE EMBS*; 3350-53. San Francisco, CA, USA: IEEE. **Hulse NC**, Rocha RA, Del Fiol G, Bradshaw RL, Hanna TP, Roemer LK.
26. Application of an XML-based document framework to knowledge content authoring and clinical information system development *AMIA Annual Symposium Proceedings 2003*; 870 [abstract]. **Hulse NC**, Rocha RA, Bradshaw R, Del Fiol G, Roemer LK. PMID: 14728375

D. Research Support:

Current/Pending Research Support

HHS-2010-ONC-TR-005 (Zhang) Strategic Health IT Advanced Research Projects 9/30/2010—9/30/2014
(1.2 Calendar Months per year)

National Center for Cognitive Informatics and Decision Making in Healthcare

The mission of the NCCD is to bring together a collaborative, interdisciplinary team of researchers from across the nation; with the highest level of expertise in patient-centered cognitive support research from biomedical and health informatics, cognitive science, clinical sciences, industrial and systems engineering, and health services research.

Completed Research Support

RFA-HK-09-001 (Samore) 9/30/2009 – 9/29/2012 Rocky Mountain Center of Excellence in Public Health Informatics (1.2 Cal. Months)

CDC

The Rocky Mountain Center of Excellence in Public Health Informatics comprises a multi-disciplinary community of collaborating practitioners, health officials, researchers, and scientists affiliated with academic institutions, state and local health departments, health care systems, and health information exchange partners.

RO1 HS019908-01 (Schilling) 9/30/2010 – 6/30/2012 (2.16 Cal. Months)
AHRQ \$2,460,053

Scalable Architecture for Federated Therapeutic Inquiries Network (SAFTINet)

This multi-state project will allow researchers, health policy experts, payers, and clinicians to better understand the impact of a wide variety of health care interventions on health outcomes for minority, underserved and socioeconomically disadvantaged populations. We will assemble a learning community dedicated to the aforementioned populations and build a secure technology to allow authorized and authenticated stakeholders to answer important questions regarding issues ranging from treatment options to care delivery options.

3UL1RR025764-02S3 (McClain) University of Utah Center for Clinical and Translational Science (0.6 Cal. Months)

This effort focuses on the development of a federated state-wide informatics infrastructure named FURTHeR (Federated Utah Research Translational e-Repository). When fully implemented, it will bring together data and metadata from the three largest healthcare networks in the state (University of Utah Healthcare Network; Intermountain Healthcare; and the Veterans Administration Healthcare System), in addition to the State Department of Health. In addition it will facilitate federated queries of data from all these sources.

HRSA-10-220 (Mitchell) 9/30/2010 – 9/30/2012 Utah Statewide Biobank (0.6 calendar months per year)
HRSA

This two-year project will lay the foundation for future efforts by developing the informatics infrastructure for a state-wide biobank and by developing the organizational infrastructure for the Utah Cohort Project (UCP), a population-based prospective study of Utahns. The UCP infrastructure will include specific plans for the project protocol, biobanking facilities, public engagement, and for the governance structure for this innovative initiative

No. 2 T15 LM07124 Gardner (PI) 05/15/2001 – 05/01/2005
NLM

Medical Informatics Research Training Grant: The National Library of Medicine provides support for predoctoral and postdoctoral training programs in biomedical informatics. Such training will help meet a growing need for investigators trained in biomedical computing and related fields as they directly relate to application domains including health care delivery, basic biomedical research, clinical and translational research, public health, and other areas.

Role: Research Associate