

## CATHERINE ARNOTT SMITH

### *Current status*

Aug. 2006- Assistant Professor, School of Library and Information Studies, University of Wisconsin-Madison

### *Education*

- 2002 PhD, Library and Information Science (Medical Informatics), School of Information Sciences, University of Pittsburgh. [Dissertation title: The Clinical Document Architecture: XML Semantic Markup for Enhanced Clinical Information Retrieval]
- 2000 M.S.I.S. [Master of Science, Information Science (Medical Informatics)], Department of Information Science and Telecommunications, School of Information Sciences, University of Pittsburgh
- 1992 M.A., American History/Administration of Archives, Rackham Graduate School, University of Michigan, Ann Arbor, MI 48109; concentration in history of American medicine
- 1992 A.M.L.S. [Master of Information and Library Studies], School of Information and Library Studies, University of Michigan, Ann Arbor, MI 48109; concentration in medical librarianship
- 1981 B.A., cum laude, Tufts University, Medford, MA 02165; Double major in History (American History) and English (American Literature)

### *Research experience*

1997-2002 Research Fellow, Center for Biomedical Informatics, University of Pittsburgh

Between 1997 and 2000 I was attached to the Chart Engine Project directed by Henry Lowe, MD, Director of Oncology Informatics at the University of Pittsburgh Cancer Institute (<http://www.cml.upmc.edu>). The Chart Engine (formerly Image Engine) was a multimedia electronic medical record system that integrated a wide range of digitized clinical images with textual data stored in the University of Pittsburgh Medical Center's MARS electronic medical record system. With Dr. Lowe's move to Stanford University in June 2001, I was attached to Oncology Informatics within the University of Pittsburgh Medical Center, for work on projects related to Web-based consumer access to cancer information.

### ***Selected professional experience***

2002-Aug. 2006      Assistant Professor, School of Information Studies, Syracuse University  
2003-Aug. 2006      Adjunct Assistant Professor, Department of Pediatrics, SUNY-Upstate Medical  
University

Consultant, Medschool.com ([www.medschool.com](http://www.medschool.com)), March 2000.

June 1993-June 1997  
Medical Management Information Systems Specialist  
Lincoln National Reinsurance Companies  
Fort Wayne, IN 46801-7808

June 1992--June 1993  
Reference Librarian  
Galter Health Sciences Library, Northwestern University  
303 East Chicago Avenue, Chicago, IL 60601

### ***Selected previous professional experience***

March 1982-December 1983  
Assistant Editor, Harcourt Brace Jovanovich, Inc. (Law & Business Division)  
New York, NY

January 1984-May 2002  
Freelance indexer and manuscript editor for various publishers including Routledge, Kegan & Paul; Warner Books; and Springer Publishing Company, in subject areas including the literature of abuse, nursing, and psychology

### ***Selected publications\****

#### **Journal articles**

◆ Keselman, A., Smith, C.A., Divita, G., Kim, H., Browne, A.C., Leroy, G., Zeng-Treitler, Q. Consumer Health Concepts that do not Map to the UMLS: Where Do They Fit? (In press). *Journal of the American Medical Informatics Association*.

Smith, C.A. (2007). The Ten Thousand Questions Project: Towards a better understanding of consumer health vocabulary. *Journal of Consumer Health on the Internet*, 11(1), 33-47.

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◆◆Denotes peer-reviewed.

- ◆ Nicholson, S., & Smith, C.A. (2007). Using lessons from health care to protect the privacy of library users: Guidelines for the de-identification of library data based on HIPAA. *Journal of the American Society for Information Science and Technology*.
  
- ◆ Smith, C.A. (2006). I am not a specialist: Why we all need to be worrying about medical information. *Journal of Education for Library and Information Science*, 47(2): 96-105.
  
- ◆ Smith, C.A. (2005). An evolution of experts: MEDLINE in the library school. *Journal of the Medical Library Association* [special issue].
  
- ◆ Smith, C.A., Detlefsen, E.G., & Tannery, N.H. (2002). Medical informatics: The Pittsburgh experience. *Medical Reference Services Quarterly*, 21(3), pp. 97-102.
  
- ◆ Hersh, W.R., Mailhot, M.F., Smith, C.A., & Lowe, H.J., (2001). Selective automated indexing of findings and diagnoses in radiology reports. *Journal of Biomedical Informatics*, 34(4), 262-273.
  
- ◆ Smith, C.A. (2000). Invasion of the “gland grafters”. *The Scientific Review of Alternative Medicine*, 4(2), 53-56.
  
- ◆ Lowe, H.J., Antipov, I., Hersh, W., Smith, C.A., & Mailhot, M. (1999). Automated semantic indexing of imaging reports to support retrieval of medical images in the multimedia electronic medical record. *Methods of Information in Medicine*, 38, 303-307.

Arnott Smith, C. (1996). Medical information: What there is and where to get it. *Lincoln National Reinsurance Medical Resource*, Special supplement, May, pp. 1-8.

Arnott Smith, C. (1994). Medical library key prescription for managing ever-expanding medical information. *Lincoln National Reinsurance Reinsurance Reporter*, 140, pp. 19-23.

Arnott, C.M. (1984). An airing of reputations. *Michigan History*, 68(5): 40-7.

### **Conference proceedings**

Smith, C.A. (2007). Nursery, gutter, or anatomy class? Obscene expression in consumer health. *Proceedings of the American Medical Informatics Association 2007 Annual Symposium*.

Keselman, A., Slaughter, L., Smith, C., Kim, H., Divita, G., Browne, A., & Zeng-Treitler, Q. (2007). Towards consumer-friendly PHRs: Patients’ experience with reviewing their health records. *Proceedings of the American Medical Informatics Association 2007 Annual Symposium*.

Zeng-Treitler, Q., Kim, H., Goryachev, S., Keselman, A., Slaughter, L., & Arnott Smith, C. (2007). Text characteristics of clinical reports and their implications for the readability of personal health records. Medinfo 2007, Brisbane, Australia.

Smith, C.A. & Haque, S.N. (2006). Paper versus electronic documentation in complex chronic illness: A comparison. *Proceedings of the American Medical Informatics Association 2006 Annual Symposium*.

Arnott Smith, C. (2006). Information retrieval in medicine: The electronic medical record as a new domain. *ASIST Proceedings*.

◆ Østerlund, C., Dosa, N.P., & Smith, C.A. (2005). Mother knows best: Medical record management for patients with spina bifida during the transition from pediatric to adult care. *Proceedings of the American Medical Informatics Association 2005 Annual Symposium*.

◆ Smith, C.A. (2003). Effect on XML markup on retrieval of clinical documents. *Proceedings of AMIA Annual Fall Symposium*, 697-701.

◆ Smith, C.A., Stavri, P.Z., & Chapman, W.W. (2002). In their own words? A terminological analysis of e-mail to a cancer information service. *Proceedings of AMIA Annual Fall Symposium*, 697-701.

◆ Lowe, H.J., Antipov, I., Hersh, W., & Arnott Smith, C. (1998). Towards knowledge-based retrieval of medical images: The role of semantic indexing, image content representation and knowledge-based retrieval. *Proceedings of AMIA Annual Fall Symposium*, pp. 882-6.

◆ Lowe, H.J., Antipov, I., Hersh, W., & Arnott Smith, C. (1998). Representing images in the multimedia electronic medical record using semantic indexing and image content-based representation to support knowledge-based retrieval of medical images. *EPRiMP-98 (IMIA)*, Rotterdam, Holland.

### **Monographs and book chapters**

◆ Smith, C.A. (2007). Consumer health. In S. Wood (Ed.), *Medical Librarianship: A handbook*. Haworth.

◆ Smith, C.A. (2007). A triage taxonomy for medical questions. In R. David Lankes, Scott Nicholson, Marie L. Radford, Lynn Westbrook (Eds.) *The Virtual Reference Service: From Competencies to Assessment*. NY: Neal-Schuman Publishers.

Smith, C.A. (2005). *Electronic Health Records: Sharing Knowledge While Preserving Privacy*. IBM Center for the Business of Government E-Health Initiative Research Report [monograph].

Smith, C.A., & Stavri, P.Z. (2005). Consumer health vocabularies. In D. Lewis, G. Eysenbach, R. Kukafka, P.Z. Stavri, & H. Jimison, (Eds.) *Consumer Health Informatics*. New York: Springer-Verlag. [Invited contributor]

Arnott, C.M. (1985). *Tennessee Williams on file*. London: Methuen. [monograph]

### ***Presentations***

Invited

Smith, C. Arnott. (2006, November). "The politics of sugar." [Invited speaker]. National Library of Medicine, Bethesda, MD.

Smith, C. Arnott. (2006, November). "The information specialist role in the health care boom." [Invited speaker.] Annual Meeting of the American Medical Informatics Association, Wisconsin Dells, WI.

Smith, C. Arnott. (2006, November). "Careers in medical informatics." [Invited speaker]. Annual Meeting of the American Medical Informatics Association, Washington, D.C.

Smith, C. Arnott, & N. McCall. (2006, March). "Is there a future for Web access to archives regulated by HIPAA?" [Invited speakers.] Seminar series, Division of Health Sciences Informatics, Johns Hopkins University, Baltimore, MD.

Smith, C. Arnott. (2006, February). "The HIPAA-aware EAD finding aid." [Invited speaker]. ECURE 2006: Preservation and Access for Digital and Scholarly Resources, sponsored by Arizona State University. Phoenix, AZ.

Smith, C. Arnott. (2005, June-July). "A document-centered approach to clinical information retrieval." [Invited paper]. For Document Academy Summer School, 2005, sponsored by the Program of Documentation Science at The University of Tromsø (Norway) and The School of Information Management and Systems (SIMS) at the University of California, Berkeley; Tromsø, Norway.

Smith, C. Arnott. (2005, May). "Taxonomy development for meaningful data analysis" [Invited paper.] Medical Library Association Annual Meeting, San Antonio, TX.

Smith, C. Arnott. (2005, April). "The politics of sugar: What consumers can tell us about healthcare terminologies". [Invited speaker]. 14<sup>th</sup> annual LHAS Current Controversies in Medical Ethics Conference, University of Pittsburgh School of Medicine, Pittsburgh, PA.

Smith, C. Arnott. (2004, May) "The Ten Thousand Questions Project: Avoiding bias in data collection". [Invited paper]. Medical Library Association Annual Meeting, Washington, DC.

Smith, C. Arnott. (1993, January). "Online sources of medical information." Winter meeting of the Chicago Chapter of the American Medical Writers of America, Chicago, IL.

Juried

Keselman, A.; Slaughter, L.; Smith, C. Arnott; Zeng-Treitler, Q. (2007, November). Sorting Out the Patient's 'Information Jungle': What Kinds of Information and Tools Should Be Included in a PHR? [Panel] American Medical Informatics Association Annual Meeting, Chicago, IL.

Smith, C., Patrick, T., Rhyner, P., Swain, D., & Davolio, L. (2007, November). Problems with the Distribution of Health and Medical Information. [Panel.] American Society of Information Science and Technology Annual Meeting, Milwaukee, WI.

Cragin, M., D'Avolio, L., MacMullen, W.J., Smith, C. Arnott. (2007, November). Effects of context on biomedical data reuse. [Panel]. American Society of Information Science and Technology Annual Meeting, Milwaukee, WI.

Zeng-Treitler, Q.; Keselman, A.; Zielstorff, R.; Smith, .C. Arnott. (2007, May). Consumer Health Vocabulary Development and Use: Issues on the Research Agenda. [Panel]. American Medical Informatics Association Spring Meeting, Phoenix, AZ.

Smith, C. Arnott. (2005, November.) "A triage taxonomy for medical questions." 7<sup>th</sup> Annual Virtual Reference Desk Conference, San Francisco, CA.

Smith, C. Arnott. (2005, October). "The five-volume patient." Document Academy 2005, sponsored by the Program of Documentation Science at The University of Tromsø (Norway) and The School of Information Management and Systems (SIMS) at the University of California, Berkeley.

Smith, C. Arnott. (2005, September). "The invisible department: How we recreate disciplinary boundaries in the information school." First Annual I-School Conference, Pennsylvania State University, State College, PA.

Smith, C. Arnott. (2005, January). "I am not a specialist: Why we all need to be worrying about medical information." [Contributed paper]. Association of Library and Information Science Education, Boston, MA.

Smith, C. Arnott. (2003, November) "Effect on XML markup on retrieval of clinical documents." AMIA Fall Symposium, Washington, DC.

Smith, C. Arnott. (2003, April). "XML in medical informatics". Lecture in Practice of Medicine series, SUNY-Upstate Medical University, Syracuse, NY.

Smith, C. Arnott. (2002, October). "The Clinical Document Architecture: XML semantic markup for enhanced information retrieval". HL7 Clinical Document Architecture Conference, Berlin, Germany.

Smith, C. Arnott, Detlefsen, E., & Tannery, N. (2001, May). "The Pittsburgh experience: An exploration in educating medical librarians for informatics careers". Medical Library Association, Annual Meeting, Orlando, FL.

Smith, C. Arnott, & Friedman, P. (2001, May). "FRIP: The Faculty Research Project: Collaborative work for improved collaboration". Medical Library Association, Annual Meeting, Orlando, FL.

Smith, C. Arnott. (2001, May). "Access to the fringe: Alternative medicine in Index Medicus, 1879-2000". Medical Library Association, Annual Meeting, Orlando, FL.

Smith, C. Arnott. (2000, July). "Evaluation of the Patient Record Architecture". National Library of Medicine Trainees Annual Meeting, National Institutes of Health, Bethesda, MD.

Smith, C. Arnott. (2000, May). "Alternative medicine: The long history of a trend". [Winner, Honorable Mention, Best New Researcher]. Medical Library Association/Canadian Health Librarians' Association, Annual Meeting, Vancouver, BC.

Smith, C. Arnott. (1998, May). "Searching for alternatives: Unconventional medicine, conventional vocabularies". American Medical Informatics Association Spring Meeting, Philadelphia, PA.

Smith, C. Arnott. (1998, May). "The multimedia medical record as a virtual library: A multidimensional model for indexing the content of medical images using the Unified Medical Language System". [H.J. Lowe, M.D., W. Hersh, M.D., & C.A. Smith]. American Medical Informatics Association Spring Meeting, Philadelphia, PA.)

Smith, C. Arnott. (1997, June). "An insurance road map to the information highway". Lincoln Re Annual LNRM [Lincoln National Risk Management] Partnership Seminar, Fort Wayne, IN.

Smith, C. Arnott. (1997, April). "Making the Internet work for you". Lincoln National Reinsurance Cos. Annual Seminar for Group Life-Health Clients, Cincinnati, OH.

Smith, C. Arnott. (1995, October). "Nontraditionalists in the medical library". Midwest Regional Meeting, Medical Library Association, Fort Wayne, IN.

Smith, C. Arnott. (1995, October). "The Verity Project: Building your own in-house medical database". Midwest Regional Meeting, Medical Library Association, Fort Wayne, IN.

### **Juried Posters**

Smith, C. Arnott & N. McCall. (In press). Enhancing the EAD: Encoded Archival Description of sensitive medical data. *ASIST 2006*.

Smith, C. Arnott, & S.N. Haque. (2006, May). "Paper and Electronic Documentation of the Chronically Ill: A Comparison." AMIA Spring Congress, Phoenix, AZ.

Smith, C.A., & H. Lowe, MD. (2001, November). "A preliminary analysis of XML's potential role in representing the semantics and structure of the oncology patient record." AMIA Fall Symposium, Washington, DC.

Smith, C.A., & H. Lowe, MD (2001, September). "Malignant melanoma on the World Wide Web: A multi-search engine experiment." Medinfo 2001 (International Medical Informatics Association), London, England.

Smith, C.A. (2000, July). "Accessing the unorthodox: Alternative medicine in Index Medicus, 1879-2000." International Congress of Medical Librarianship, 10th Meeting, London, England.

## **Workshops**

Smith, C. Arnott. (2006, November). "The Five-Volume Patient." Annual Research Symposium of the Special Interest Group on Social Informatics of the American Society for Information Science and Technology (ASIS&T). Austin, TX.

Smith, C. Arnott. (2005, October). "Special Population: Families coping with chronic illness". Connecting Research and Practice: Special Populations: 5th Annual Research Symposium of the Special Interest Group on Information Needs, Seeking, and Use (SIG USE) of the American Society for Information Science and Technology (ASIS&T). October 29, 2005, Charlotte, NC.

Smith, C. Arnott. (2004, October). "The document in the electronic health record." [Contributed paper]. For DOCCAM 2004, sponsored by the Program of Documentation Science at The University of Tromsø (Norway) and The School of Information Management and Systems (SIMS) at the University of California, Berkeley.

Smith, C. Arnott. (2003, December). "A model made of paper: Clinicians navigate the electronic health record." Second HCI/MIS Workshop, Seattle, WA.

## ***Professional associations***

2004-           Member, American Society for Information Science and Technology  
                  Chair, Medical Informatics Section, 2005-2006

2002-           Jurist for submitted papers, Medical Informatics and Medical Library Education Sections,  
                  Medical Library Association

1998-2002     Member, IAIMS Vocabulary Policy Group, University of Pittsburgh Medical Center and Schools  
                  of the Health Sciences

1998-2002     Member, IAIMS Research Database Committee, University of Pittsburgh Medical Center and  
                  Schools of the Health Sciences

1998           Member, Center for Biomedical Informatics Curriculum Review Committee

1991-           Member, Medical Library Association  
                  Hospitality Committee, Chicago National Convention, 1993  
                  Member, Medical Informatics Section, 1995—  
                  Chair, Medical Library Education Section, 2003-2004

- 1993-1997 Chair, Medical Informatics Section, 2005-  
Member, Midwest Regional MLA
- Member, Continuing Education Committee, MC/MLA Regional '95 (Fort Wayne)
- Member, Program Committee, MC/MLA Regional '95 (Fort Wayne)
- 1994-1997 Member, Library Advisory Board, Indiana Vocational Technical Institute/Fort Wayne, IN
- 1996-1997 Member, Collections Committee, Lincoln Museum Foundation,  
Fort Wayne, IN, 1996-1997
- 1997- Member, American Medical Informatics Association

***School service***

- 2005- Member, Advisory Board, Episcopal Campus Ministries, Syracuse University
- 2005-2006 Member, Distance Education Committee, School of Information Studies, Syracuse University
- 2004-2005 Member, Personnel Committee, School of Information Studies, Syracuse University
- 2003-2004 Member, Distance Education Committee, School of Information Studies, Syracuse University

***Professional service***

**Selected committee memberships**

- 2005-2006 Member, Health Information Technology Subgroup, Central New York Collaborative Health  
Care Initiative
- 2004-2005 Member, Personnel Committee, School of Information Studies, Syracuse University
- 2002-2004 Member, Distance Education Committee, School of Information Studies, Syracuse University
- 1998-2002 Member, IAIMS Vocabulary Policy Group, University of Pittsburgh Medical Center and Schools  
of the Health Sciences

The Vocabulary Policy Group of IAIMS [Integrated Advanced Information Management Systems] develops strategies that promote a standardized clinical lexicon for the UPMC (University of Pittsburgh Medical Center) Health System and the University of Pittsburgh Schools of the Health Sciences.

- 1998-2002 Member, IAIMS Research Database Committee, University of Pittsburgh Medical Center and  
Schools of the Health Sciences

The Research Database Committee was charged with developing a Faculty Information System for the University of Pittsburgh Schools of the Health Sciences, modeled on Georgetown University Medical School's Georgetown MedNet.

Jan.-Apr., 1998 Member, Center for Biomedical Informatics Curriculum Review Committee

### ***Manuscript reviews***

*The Information Society* (journal article)

*Journal of Information Technology and Politics* (journal articles)

Neal-Schuman Publishers (book ms.)

*Journal of the American Medical Informatics Association* (journal article)

*BioMedCentral* (e-journal articles)

### ***Editorial boards***

*Journal of Electronic Resources in Medical Libraries* (Haworth Press)

*Journal of Consumer Health on the Internet* (Haworth Press)

### ***Awards and honors***

May 2006 Jeffrey Katzer Award for Teaching and Service, School of Information Studies, Syracuse University

*This award is given to the instructor in the School of Information Studies who receives the most student votes for outstanding teaching. Graduate students and undergraduate students vote in alternate years.*

June 2005 Diana Forsythe Award, American Medical Informatics Association

[Østerlund, C., Dosa, N.P., & Smith, C.A. (2005). Mother knows best: Medical record management for patients with spina bifida during the transition from pediatric to adult care. Proceedings of the American Medical Informatics Association 2005 Annual Symposium, 580-4]

May 2005 Best Research Paper, Annual Meeting of the Medical Library Association, San Antonio, TX

*I received this award for my invited paper, "Taxonomy development for meaningful data analysis".*

Summer 2001 Coro Pittsburgh Health Sciences Fellow

*This was a seven-week competitive fellowship sponsored by the Coro Foundation and the Jewish Healthcare Foundation of Pittsburgh and designed to enhance the educational experience of participants in health graduate programs.*

May 2000 Honorable Mention, Best New Researcher Award, Medical Library Association Annual Conference (Vancouver, BC)

*I was presented with this award for a paper entitled Alternative medicine: The long history of a trend which examined trends in NLM SERLINE indexing of periodicals focusing on alternative medicine concepts.*

April 2000 The Catherine Ofiesh Orner Award, School of Information Sciences, University of Pittsburgh

*This is an annual prize given to the student at the School of Information Sciences who submits "the most original and innovative paper in information science suitable for publication." I received the Orner Award for my paper entitled The semantics of display: Hierarchies and classification which examines the evolution of hierarchies for use in navigation of information spaces.*

1997-2002 National Library of Medicine Medical Informatics Trainee

*This fellowship provided full tuition and a stipend to support my full-time doctoral studies.*

### ***Research funding***

8/2005 Electronic Records Fellowship (National Historic Preservation and Records Commission)  
*This is a \$15,000 research grant supporting a collaboration with Johns Hopkins Medical Institute archivists in a data modeling project to inform our understanding of historic and contemporary medical record content.*

12/2003 Research stipend (IBM Center for the Business of Government [www.businessofgovernment.org](http://www.businessofgovernment.org))  
*This is a \$15,000 stipend funded by IBM's new "e-health initiative" to support my research into knowledge representation in clinical documents. It resulted in publication of a monograph (see Monographs and Book Chapters section)*

5/2003 Donald A.B. Lindberg Research Fellowship (Medical Library Association)  
*This is a \$25,000 fellowship supporting research into consumer health terminology as expressed in Web-based consumer questions.*