

Curriculum Vitae

CONTENTS

Biographical.....	4
Education and Training	4
Undergraduate and Graduate	4
LinkedIN	4
Technical Skills	4
Appointments and Positions.....	5
Non-Academic Positions:	8
Refereed articles:.....	8
Publication in Preparation	11
Reviews invited published papers, conference and symposia proceedings, monographs, books, and book chapters.	11
Editorial Reviewer.....	11
Selected Class Presentations.....	12
Teaching Courses.....	12
Other Publications	13
PhD Dissertation	13
Selected Grand Rounds Presentation	14
Selected Conference Sessions	14
Poster Sessions.....	14
Abstracts	15
Societies.....	15
PREVIOUS Work Experience.....	15
Current Consultation Project.....	17
Applied Clinical Informatics Researcher – Intelligent Wearable Health System.....	18
Current IRB-Approved Projects.....	18
Current Research Support.....	18
Marshall University Research Core Grants	19
Projects Other Grants.....	19
Department of Internal Medicine Research Support	19
Novartis	20
Molecular and Cellular Determinants of Disease Heterogeneity in COPD (SCCOR) - Core C.....	20
SPORE in Lung Cancer – Core D.....	21

Physical Activity Following Surgery-Induced Weight Loss (POWER)	21
Dendritic Cell Trial	22
Community Research.....	22
West Virginia HSTA Students Design Health Clinical Trials (HSTA Web Portal).....	22
Adolescent Guided Community Research on Obesity in West Virginia	22
Community Appalachian Investigation and Research Network (CAIRN)	23
Physician / Researcher Support	23
Use of electronic management of Clinical Translational Research systems (eM-CTR) for Sepsis Groups	23
Previous Project Experience.....	23
General Clinical Research Center	23
Obstetric-Fetal-Pharmacology Research Unit (OPRU).....	24
Previous Contract Project Management (2002-2011).....	24
Data On-Line Retrieval and Analysis System (DORAS).....	24
Projects used to evaluate and modify Physician Information Behavior	25
Charge Capture- Cardiovascular Institute	25
Drug Use and Management System (DRUMS)	25

CURRICULUM VITAE

Biographical

Name: Alfred A. Cecchetti, PhD

Education and Training

Undergraduate and Graduate

Institution

Institution	Degree	Major
University of Pittsburgh Pittsburgh, Pennsylvania	Ph.D.	Information Management
University of Pittsburgh Pittsburgh, Pennsylvania	MSc IS.	Information Science
University of Pittsburgh Pittsburgh, Pennsylvania	MSc	Biostatistics
Indiana University of Pennsylvania Indiana, Pennsylvania	Bsc	Biology

LINKEDIN

<https://www.linkedin.com/in/alfred-cecchetti-phd-02786121/>

TECHNICAL SKILLS

Data Warehouse (e.g., SSIS, SSAS, SSRS, OLAP, data extraction, and classification)

EHR and Data Systems: Epic (Clarity data model, Reporting Workbench, and Chronicles),
Cerner Millennium, VA VINCI

Visual Analytics (e.g., Tableau, Power BI, SAS Visual Analytics)

Machine learning (Python, ML.net, Visual Studio, embedded SQL ML, Text extraction, text mining)

Artificial Intelligence (ChatGPT, Copilot, embedded using ChatGPT by OpenAI in Python and C#)

Programming (e.g., R, C#, C++, Java, CLR, Blazor, Visual Studio, Xamarin, Regex, ASPX, scripts)

Database administration (e.g., MS SQL, SQL Server Manager, Azure, Oracle - SQL Developer, MySQL – MySQL Workbench, TOAD, programming (T-SQL, PL/SQL, MDX, DMX), and database tuning

Statistics (e.g., SAS, SPSS, Python)

Network management (e.g., Windows, IIS)

Cyber infrastructure development (e.g., SharePoint, Smart Room setup (Smartboard, Video conferencing, hardware and software setup)

APPOINTMENTS AND POSITIONS

May 2023 – Present

**Adjunct Assistant Professor – Department of Public Health, College of Health Professions, and Brad D. Smith School of Business
Marshall University, West Virginia**

Teach master 's-level courses in the Master of Science in Health Informatics program and the Department of Public Health, covering biostatistics, data management, database systems, machine learning, and research informatics: mentor graduate students and faculty in applying statistical and visualization techniques to public-health and business datasets. Contribute to grant development and proposal preparation, supporting the design of data-driven research aims, analytic methodologies, and informatics-based study frameworks for NIH and foundation funding initiatives.

January 2023 – Present

**Adjunct Faculty – Public Health
Jackson State University, Mississippi**

Remotely teach graduate-level and professional courses in statistics, probability, artificial intelligence, database management, data extraction, and data visualization. Guide students in the application of statistical methods and machine-learning techniques to public-health datasets, emphasizing data cleaning, integration, and interpretation. Integrate real-world research informatics examples drawn from clinical and population-health projects to prepare learners for evidence-based decision-making and applied analytics in public-health practice.

July 1990 – Present

Consultant – Behavioral Measurement Database Services (BMDS)

At Behavioral Measurement Database Services, I lead information technology strategy and software development for the Health and Psychosocial Instruments (HaPI) database, a bibliographic system containing over 240,000 records on behavioral and psychosocial measurement tools. I designed and implemented multiple online and computer-based data-input programs that gather, validate, and maintain HaPI's extensive metadata on questionnaires, interviews, surveys, and psychological scales.

My work ensures that researchers, students, and clinicians can locate valid, reliable instruments across disciplines such as medicine, nursing, psychology, public health, and sociology. I manage the database infrastructure, search algorithms, and user-interface tools that make HaPI the premier source for behavioral and health measurement instruments.

I built relational database systems to capture instrument metadata, response formats, psychometric properties, and sample items. These tools enhanced data quality, search precision, and system scalability. In collaboration with academic partners and research organizations, I continuously optimized HaPI's data pipeline to support modern interoperability standards and online delivery platforms.

As an independent consultant, I provide expertise in database design, data curation, and research informatics, helping institutions improve access to validated measurement tools. My long-term leadership at BMDS reflects a commitment to advancing behavioral science through robust data architecture and user-driven information systems.

May 2014 – September 2025

**Director, Division of Clinical Informatics and
Research Assistant Professor
Marshall University Joan C. Edwards School of Medicine,
Huntington, West Virginia**

As Director of the Division of Clinical Informatics, I led the design, implementation, and management of Marshall University's integrated Clinical and Research Informatics Infrastructure. This system unified electronic health records (EHR), clinical registries, and biospecimen data into a cohesive data warehouse supporting research, quality improvement, and clinical trials. I served as both Data Architect and senior research

liaison between the academic, hospital, and IT environments, overseeing data strategy, analytics operations, and the secure exchange of clinical data across institutional boundaries.

I architected and managed a comprehensive SQL Server–based research data warehouse incorporating data from Epic Clarity, Cerner HealtheIntent, and ancillary laboratory and billing systems. Using ETL automation through SSIS and data normalization via OMOP and FHIR/HL7 standards, I built the foundation for cross-departmental interoperability and advanced analytics. The data warehouse supported both structured (EHR, claims) and unstructured (clinical notes, pathology reports) data and became the analytic backbone for multiple NIH- and VA-funded projects. See Fueling Clinical and Translational Research in Appalachia: Informatics Platform Approach

A significant component of my role involved data cleaning, integration, and extraction to ensure precision and reproducibility across research workflows. I developed validation routines to detect anomalies and improve data quality using SQL, Python, and SAS scripts. These systems enabled efficient data retrieval for clinical trials, epidemiologic studies, and IRB-approved protocols while maintaining full compliance with HIPAA, IRB, and 21 CFR Part 11 standards.

I designed and implemented advanced statistical and machine learning analyses to support clinical trial, translational, and population health research. My work applied t-tests, ANOVA, ANCOVA, chi-square, regression modeling, and survival analysis (Kaplan–Meier, Cox proportional hazards) to identify clinical and cost disparities among patient groups. For longitudinal and high-dimensional datasets, I developed mixed-effects models, DBSCAN clustering, and Random Forest predictive models to stratify patients by risk, forecast outcomes, and evaluate intervention effectiveness. Model performance was validated using sensitivity, specificity, accuracy, and ROC curves to ensure statistical rigor and clinical interpretability.

I developed Power BI dashboards and analytic interfaces integrating real-time metrics on comorbidity scores, cost progression, and mortality outcomes. A key project used the Charlson Comorbidity Index and longitudinal Medicare data to visualize cost trajectories among high- and low-risk populations. This dashboard provided administrators with evidence-based insights into Medicaid capitation risk, guiding policy and contract negotiations.

I mentored and trained medical residents, faculty researchers, and data analysts on database design, biostatistics, machine learning, and data visualization. Many of these sessions were integrated into master's-level and research curriculum offerings in biostatistics, database management, and artificial intelligence.

As Co-Investigator and Data Architect on the COBRE initiative, I helped design a tissue-centric data warehouse connecting biospecimen tracking with clinical and molecular data. This project demonstrated the integration of laboratory, clinical, and financial datasets into a unified informatics framework for translational research. My leadership in this effort contributed to achieving a score of 1 (Outstanding) during NIH peer review and positioned the institution to secure long-term funding for biomedical discovery and commercialization.

Through these efforts, I positioned Marshall University's informatics ecosystem as a scalable model for AI-driven clinical research, predictive analytics, and precision medicine. My work bridged clinical data, research design, and administrative decision-making, ensuring that every dataset served both immediate patient care and the long-term advancement of medical science.

Nov 2011- Jun 2012	University of Pittsburgh, Project Manager, Gastro-nutrition network; Coordinator, Concept Tracking project, Clinical and Translational Science Institute (CTSI)
Apr 2001- Sep 2011	University of Pittsburgh, Research Associate, Co-Director of GCRC Data Center; Co-Director, Clinical Pharmacology Data Center
1978- Apr 2001	University of Pittsburgh, Research Associate in Cardiovascular Institute, Research Data Center Director

Non-Academic Positions: Include military or other Government service

Name and Location

US-ARMY

REFEREED ARTICLES:

1. Curtis, E.I. & **Cecchetti, A.A** (1983). Q.S. loop areas in selective right ventricular overload: relation to hemodynamic status. *Journal of Electrocardiography*, 16, 5358. <http://www.sciencedirect.com/science/article/pii/S0022073683801599>.
 2. Curtis, E.I., Reddy, P.S., Uretsky, B.F., & **Cecchetti, A.A.** (1985). Relation between cardiac tamponade severity and pulsus paradoxus. *Journal of the American College of Cardiology*, 5, 529, (Presented at the 34th Annual Scientific Session, American College of Cardiology).
 3. Curtis, E.I., Reddy, P.S., Uretsky, B.F., & **Cecchetti, A. A.** (1988). Pulsus paradoxus: Definition and relation to the severity of cardiac tamponade. *American Heart Journal*, 115, 391-398. <http://www.sciencedirect.com/science/article/pii/0002870388904875>.
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4. Curtis, E.I., Reddy, P.S., Uretsky, F., **Cecchetti, A.A.** (1989). Pulsus paradoxus as a determinant of the severity of cardiac tamponade. *Cardiology Board Review*, 6, 44-65.
5. Bass, E, Curtis, E.I., Arena, V., Hanusa, B.H., **Cecchetti, A.A.**, Karpf, M., & Kapoor, W. (1990). The Duration of Holter Monitoring For Syncope: Is 24 Hours Enough? *Archives of Internal Medicine*, 150, 1073-1078. <http://archinte.ama-assn.org/cgi/content/abstract/150/5/1073>.
6. Schulman, D.S., Biondi, J.W., Zohgbi, S., **Cecchetti, A.**, Zaret B.L., & Soufer R. (1992, Mar). Left ventricular diastolic function during positive end-expiratory pressure. Impact of right ventricular ischemia and ventricular interaction. *The American Review of Respiratory Disease*, 145(3), 515-521. <http://ajrcm.atsjournals.org/content/145/3/515.short>.
7. MacGowan, G.A., Janosko, K., **Cecchetti, A.**, & Murali, S. (1997). Exercise-related ventilatory abnormalities and survival in congestive heart failure. *American Journal of Cardiology*, May 1, 79(9), 1264-1266. <http://www.ncbi.nlm.nih.gov/pubmed/9164901>.
8. MacGowan, G.A., **Cecchetti, A.**, & Murali, S. (1997). Ventilatory drive during exercise in congestive heart failure. *Journal of Cardiac Failure* 1997 Dec 3(4), 257-262. <http://www.sciencedirect.com/science/article/pii/S1071916497900245>
9. Bebia Z, Buch SC, Wilson JW, Frye RF, Romkes M, **Cecchetti A**, Chaves-Gnecco D, & Branch RA. (2004, Dec). Bioequivalence revisited: Influence of age and sex on CYP enzymes. *Clinical Pharmacology & Therapeutics*, 76 (6), 618-2. <http://www.nature.com/clpt/journal/v76/n6/abs/clpt2004538a.html>
10. Branch, R.A., Paulsen N, Persad R.A., Smith, P.J.B., Collins, C., Schwartz, A., **Cecchetti, A.**, Arena V.C., Jones, K., & Romkes, M.(2005) Genetic Susceptibility to risk for bladder cancer in individuals working in high risk occupations. *Current Pharmacogenomics*, 3, 87-95. <http://www.ingentaconnect.com/content/ben/cpg/2005/00000003/00000003/art00001>
11. Bardwell, G., Morton, C., Chester, A., Pancoska, P., Buch, S., **Cecchetti, A.**, Vecchio, M., Paulsen, S., Groark, S., & Branch, R.A. (2009). Feasibility of adolescents to conduct community-based participatory research on obesity and diabetes in rural Appalachia. *Clinical and Translational Science*, 2 (5), 340-349. <http://onlinelibrary.wiley.com/doi/10.1111/j.1752-8062.2009.00155.x/abstract?userIsAuthenticated=false&deniedAccessCustomisedMessage=>
12. Pancoska, P., Buch, S, **Cecchetti, A**, Parmanto, B., Vecchio, M, Groark, S, Paulsen, S, Bardwell, G, Morton, C., Chester, A., & Branch, R. (2009). Family Networks of Obesity and Type 2 Diabetes in Rural Appalachia. *Clinical and Translational Science*, 2(6), 413-21. <http://onlinelibrary.wiley.com/doi/10.1111/j.1752-8062.2009.00162.x/abstract?userIsAuthenticated=false&deniedAccessCustomisedMessage=>
13. **Cecchetti, A.**, Parmanto, B., Vecchio, M, Ahmad, S., Buch, S., Zgheib, N., Groark, S., Vemuganti, A., Romkes, M., Sciurba, S., Donahoe, M.P., & Branch, R. (2009). Team building: electronic management-clinical translational research (eM-CTR) systems. *Clinical and Translational Science*, 2(6), 449-455.

<http://onlinelibrary.wiley.com/doi/10.1111/j.1752-8062.2009.00157.x/abstract?userIsAuthenticated=false&deniedAccessCustomisedMessage=>

14. Zgheib, P.W., Zgheib, N.K., **Cecchetti, A.A.**, Parmanto, B., Ahmad, S., & Branch, R. (2011). In-Hospital Drug Use Optimization Using the Marginal Utility Theory. *Journal of Pharmaceutical Health Services Research* (in press) retrieved 6 May 2011 from <http://onlinelibrary.wiley.com/doi/10.1111/j.1759-8893.2011.00039.x/abstract?userIsAuthenticated=false&deniedAccessCustomisedMessage=>
15. **Cecchetti, Alfred A.** (2018) "Why Introduce Machine Learning To Rural Health Care?" *Marshall Journal of Medicine*: Vol. 4: Iss. 2, Article 2. DOI: <http://dx.doi.org/10.18590/mjm.2018.vol4.iss2.2>
16. Tu1801 Metabolic Syndrome: Are Current Colon Cancer Screening Guidelines Enough In A Rural Population? Niharika Bhardwaj, Shanmuga Sundaram, Larry E. Carter, **Alfred A. Cecchetti**, Uma Sundaram. *Gastroenterology*, Volume 158, Issue 6, S-1167, [https://doi.org/10.1016/S0016-5085\(20\)33589-7](https://doi.org/10.1016/S0016-5085(20)33589-7)
17. Bhardwaj, N., **Cecchetti, A. A.**, Murughiyan, U., & Neitch, S. (2020). Analysis of Benzodiazepine Prescription Practices in Elderly Appalachians with Dementia via the Appalachian Informatics Platform: Longitudinal Study. *JMIR medical informatics*, 8(8), e18389. PMID: 32749226 PMCID: PMC7435704 DOI: 10.2196/18389
18. **Cecchetti AA**, Bhardwaj N, Murughiyan U, Kothakapu G, Sundaram U (2020). Fueling Clinical and Translational Research in Appalachia: Informatics Platform Approach. *JMIR Med Inform* 2020;8(10):e17962. DOI: 10.2196/17962. PMID: 33052114. <https://medinform.jmir.org/2020/10/e17962>
19. Khanna RK, **Cecchetti AA**, Bhardwaj N, Muto BJ, Murughiyan U. Understanding Emergency Room Visits for Nontraumatic Oral Health Conditions in a Hospital Serving Rural Appalachia: Dental Informatics Study, *JMIR Form Res* 2022;6(12):e31433, URL: <https://formative.jmir.org/2022/12/e31433>, DOI: 10.2196/31433
20. Sundaram, V. L., Lamichhane, R., **Cecchetti, A.**, Arthur, S., & Murughiyan, U. (2023, September 19). *Maternal and neonatal outcomes in women with metabolic syndrome and substance use disorder*. MDPI. <https://www.mdpi.com/2075-1729/13/9/1933>
21. Onyia, A. U., Berhie, G., **Cecchetti, A.**, & Hines, A. (2023). The Use of Digital Telehealth for the Self-Management of Type 2 Diabetes Patients in Hinds County, Mississippi: A Pilot Study. *Journal of Patient Experience*, 10, 23743735231188835. <https://journals.sagepub.com/doi/full/10.1177/23743735231188835>
22. Hines, A. L., Jones, L., Pizzetta, C., Berhie, G., **Cecchetti, A. A.**, Ikem, F., ... & Malone, S. (2023). The Use of Wearable Devices as a Self-Help Approach to Wellness Promotion, Overcoming Health Disparities and Reducing Medical Distrust Among African Americans. *J Pub Health Issue Pract*, 7(2), 220. <https://doi.org/10.33790/jphip1100220>
23. Shanmuga Sundaram, Usha Murughiyan, Rajan Lamichane, **Alfred A. Cecchetti**, Uma Sundaram, Tu1149 METABOLIC SYNDROME COMPONENTS AND THE RISK OF COLORECTAL CANCER IN THE APPALACHIAN POPULATION, *Gastroenterology*, Volume 166, Issue 5, Supplement, 2024, Page S-1258, ISSN 0016-5085, [https://doi.org/10.1016/S0016-5085\(24\)03337-7](https://doi.org/10.1016/S0016-5085(24)03337-7). <https://www.sciencedirect.com/science/article/pii/S0016508524033377>
24. Snavely K, Canales BR, McNeely K, Snavely D, Gress TW, Cordle MB, **Cecchetti A**, EI-Hamdani M. A descriptive study assessing temporal changes in infective endocarditis

in Huntington, West Virginia, from years 2010 to 2019. West Virginia Med J. 2024;120(3):14.

25. Sundaram, S., Lamichhane, R., **Cecchetti, A.**, Murughiyan, U., & Sundaram, U. (2024). Risk of Colorectal Cancer among Patients with One or Multiple Metabolic Syndrome Components. *Cancers*, 16(19), 3350. <https://www.mdpi.com/2072-6694/16/19/3350>
26. Kahsay, H., Berhie, G., **Cecchetti, A.** (2025). Assessing the Impact of Healthcare Wearables on Improving Health Disparities in Minority Communities in Mississippi. *Science, Technology & Public Policy*, 9(2), 71-79. <https://doi.org/10.11648/j.stpp.20250902.11>
27. Ayalew, M., Berhie, G., Cecchetti, A. (2025). Knowledge, Perception, Attitude, and Adoption of Consumer Wearables Among African Americans in Mississippi: A Public Health Analysis. *Science, Technology & Public Policy*, 9(2), 80-90. <https://doi.org/10.11648/j.stpp.20250902.12>

PUBLICATION IN PREPARATION

REVIEWS INVITED PUBLISHED PAPERS, CONFERENCE AND SYMPOSIA PROCEEDINGS, MONOGRAPHS, BOOKS, AND BOOK CHAPTERS.

Presented abstracts

1. Z. Bebia, RF Frye, M. Romkes, JW Wilson, **A. Cecchetti**, D. Chaves-Gnecco, Y. Cannon, SM Huang, RA Branch. Selective Regulation of Individual CYP Enzymes by Age and Gender. Annual GCRC/Clinical Research 2003 National Meeting, March 13-16, 2003, Baltimore, MD.
2. Niharika Bhardwaj , Shanmuga Sundaram , Larry E. Carter , Alfred A. Cecchetti , Uma Sundaram. Metabolic Syndrome: Are Current Colon Cancer Screening Guidelines Enough In A Rural Population? Digestive Disease Week® at McCormick Place in Chicago, IL, May 2-5, 2020

EDITORIAL REVIEWER

7 Feb 2023	JMIR Pediatrics and Parenting http://pediatrics.jmir.org	Physical Activity Surveillance in Children and Adolescents Using Smartphone Technology: Systematic Review
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SELECTED CLASS PRESENTATIONS

- | | |
|--|-------------------|
| 1. Databases and Data Storage SYSTEMS | 14 October 2024 |
| 2. Presentation Exploring Data Through Plotting | 19-Oct-2020 |
| 3. How Clinical Informatics Can Help with Research at the School of Pharmacy | 06 Nov 2019 |
| 4. Clinical Informatics Toolset: Data Warehouse, Visualization, Machine Learning, and Programming Use in Health Care | 28 October 2019 |
| 5. Data Warehouse and Machine Learning: A Natural Synergy Class 2018 | 12 November |
| 6. Marshall Informatics Platform | 2 October 2018 |
| 7. Grand Rounds Data Warehouse & Mach Learning CAMC | 24 May 2018 |
| 8. Data Warehouse - Machine Learning- and Hospital Costs | 27 March 2018 |
| 9. A Friendly Introduction to Machine Learning(Grand Rounds) | 20 March 2018 |
| 10. Introduction to R | 14 February 2018 |
| 11. Data Warehouse development and data visualization | 25 January 2018 |
| 12. Data Warehouse Development and Use | 19 January 2018 |
| 13. Redcap use with Health Informatics | 6 March 2017 |
| 14. Big Data | 24 October 2016 |
| 15. Data Warehouse Use And Research Paper Evaluation | 10 October 2016 |
| 16. Data Warehouse Development and Use | 2 November 2015 |
| 17. Data Warehouse Use And Research Paper Evaluation | 22 September 2015 |
| 18. Data Warehouse Systems | 15 September 2015 |
| 19. Business Intelligence and Data Warehouse Usage | 8 September 2015 |
| 20. Multi-Institutional Medical Data Warehouse | 20 April 2015 |
| 21. Quality Control and Data Warehouse Usage | 14 April 2015 |
| 22. Dimension & Fact Tables | 9 September 2015 |
| 23. Electronic health record as a multi-dimensional data source | 29 September 2014 |

TEACHING COURSES

- | | |
|--|------------------------|
| 1. PHI 565 DATABASE MANAGEMENT IN PUB HLT | Jan-Apr 2025 |
| 2. HIN 610 Intro to Health Informatics | Jan-April 2025 |
| 3. CTS 640 Journal Club Clinical Trials | August-December 2024 |
| 4. CTS 614 Introduction to Clinical Informatics | August – December 2024 |
| 5. CTS Introduction to Clinical Databases | May-June 2024 |
| 6. PH 621 Statistical Methods 1 (MPH Program) | August-December 2024 |
| 7. PHI 555 Healthcare Data Analytics and Visualization | August-December 2024 |
| 8. PHI 503 Introduction to Biostatistics | August-December 2024 |

9. PHI 565 DATABASE MANAGEMENT IN PUB HLT	August-December 2024
10. CTS 614-Intro to Clinical Informatics	August-December 2024
11. CTS 615 Introduction to Clinical Databases	May-July 2024
12. PHI 565 Database Management	Jan-April 2024
13. HIN 610 Intro to Health Informatics	Jan-April 2024
14. PH 621 -Statistical Methods I (MPH Program)	Aug-Dec 2023
15. PH-686 Health Informatics Technology	Jan-April 2023
16. HIN 610 Intro to Health Informatics	Jan-April 2023
17. CTS 640 Journal Club Clinical Trials	Jan-April 2023
18. CTS 614- Intro to Clinical Informatics	August-December 2022
19. PH 621 – Statistical Methods I (MPH Program)	August-December 2022
20. HIN 630 Research Methods and Data	January-April 2022
21. PH 686 Health Information Technology	January-April 2022
22. PH 622 - Statistical Methods II(MPH Program)	January-April 2022
23. CTS620 Clinical Research	August-December 2021
24. CTS612 Machine Learning	January-April 2021
25. PH 621 – Statistical Methods I (MPH Program)	August-December 2021
26. CTS615 – Introduction to Databases	August-December 2021
27. HP 630 Research Methodology	August-December 2020
28. CTS 615Advanced SQL Programming	June 2020-July 2020
29. CTS Clinical Informatics Course	Jan 2020– April 2020
30. CTS Clinical Informatics Course	Jan 2018 – April 2018
31. CTS Clinical Informatics Course	Jan 2017 – April 2017

Other Publications

PHD DISSERTATION

School of Information Science, Final Defense 20 April 2009, Graduation 26 April 2009

An automatic method for classifying medical researchers into domain-specific subgroups

<http://d-scholarship.pitt.edu/7745/>

This PhD dissertation extends the role of the information management professional within an academic medical environment. This dissertation proposes that PubMed and CRISP abstracts, written by academic medical researchers, can be used to categorize researchers into their specific level of activity and field of study. The purpose of the classification is to understand the technology needs of the professional. Some professionals are “innovators” and readily take to technology; at the other end of the spectrum are the “laggards” who have difficulty with the most basic technology tools. Understanding their classification gives insight into their acceptance of technology, which suggests that the information management professional can, without meeting the academic medical researcher, have prior knowledge of how to present technology. Walking into the initial meeting with this information should provide an atmosphere conducive to technological acceptance. So, to have the medical researcher professional go to point D, the

information management professional now knows how much time to spend explaining points A, B, and C.

While this dissertation focused on medical researchers, it suggests that other similar methods could be used to classify professionals who are not research-related.

SELECTED GRAND ROUNDS PRESENTATION

19 Mar 2019 Clinical Informatics Can Help with Research at Marshall

26 Sept 2018 Research at Marshall Medical Center -Friendly Introduction

25 May 2018 CAMC A Friendly Introduction to Machine Learning: Why use it, What is it, How is it used.

20 Feb 2024 Use of ChatGPT Artificial Intelligence in Medicine

SELECTED CONFERENCE SESSIONS

1. Identity Management in a Clinical Data Warehouse at Appalachian Institute for Digital Evidence (AIDE) Conference at the Marshall University Forensic Science, 5 April 2007
2. Hospital Emergency Department Visits For Non-Traumatic Oral Health Conditions, Raj Khanna, MD, DMD, Todd Gress, MD, MPH, Alfred Cecchetti, PhD, MSc, MSc IS, Christopher Schafer, MSc, Niharika Bhardwaj, MBBS, MSc, Patricia Sacconi, MHA, CMOM, Bobbi Muto MPH, RDH, CTTS. 2018 National Oral Health Conference, April 16-18, 2018, Louisville, Kentucky
3. How Unstructured Data From The Data Warehouse Can Be Used With Machine Learning And Visualization To Develop Novel Medical Technologies. Lewis College of Business Research Day -Marshall University, Drinko Library, Room 402,15 November 2019.
4. Marshall University, JCESOM 33rd Annual Research Day. Usha Murughiyan, Alfred Cecchetti, Rajan Lamichhane. Translational Science Core. September 2021. Huntington, WV.

POSTER SESSIONS

1. Metabolic Syndrome: Are Current Colon Cancer Screening Guidelines Enough? Niharika Bhardwaj, Shanmuga Sundaram, Larry E. Carter, Alfred A. Cecchetti, Uma Sundaram, Digestive Disease Week 2020. Online Presentation

2. 1Department of Clinical and Translational Science, Marshall University Joan C. Edwards School of Medicine, Huntington, WV, United States.
3. Poster: Hospital Emergency Department Visits For Non-Traumatic Oral Health Conditions, Raj Khanna, MD, DMD, Todd Gress, MD, MPH, Alfred Cecchetti, PhD, MSc, MSc IS, Christopher Schafer, MSc, Niharika Bhardwaj, MBBS, MSc, Patricia Sacconi, MHA, CMOM, Bobbi Muto MPH, RDH, CTTS. 2018 National Oral Health Conference, April 16-18, 2018, Louisville, Kentucky
4. Poster: Utilization of Appalachian Clinical and Translational Science Institute Data Warehouse to more accurately predict disease processes important for central Appalachia. Shanmuga Sundaram, Niharika Bhardwaj, Todd Gress, and Alfred Cecchetti, 11 March 2016, and University of Kentucky, 12th Annual CCTS Spring Conference, Thursday, March 30, 2017, Lexington Convention
5. Marshall Health Sciences Research Day on 11 March 2016
Poster: Utilization of a Clinical Data Warehouse as a Primary Data Source for Clinical Studies. Shanmuga Sundaram, Chris Schafer, Todd Gress and Alfred Cecchetti

ABSTRACTS

1. Control ID: 3158284: ASSOCIATION BETWEEN FIBROSCAN DERIVED FIBROSIS AND STEATOSIS AND METABOLIC SYNDROME
Submission Category: Liver & Biliary: Hepatic Fibrosis, Diagnosis and Treatment
Conclusions: Patients with three or more criteria of metabolic syndrome were more likely to have Fibroscan steatosis and fibrosis abnormalities. The presence of chronic hepatitis C did not affect this this observation. This relatively small and single-center study suggests that in patients with metabolic syndrome, steatosis and fibrosis are more likely to be present on Fibroscan. Given the significance of possible liver disease in patients with metabolic syndrome, with all of its other morbidities, further analysis of larger data sets is warranted to provide better insight into the utility of Fibroscan findings in metabolic syndrome.
[Digestive Disease Week® \(DDW\) 2019](#): San Diego Convention Center | San Diego, CA
May 18-21, 2019

SOCIETIES

Sigma Xi, The Scientific Research Honor Society

PREVIOUS WORK EXPERIENCE

University of Pittsburgh (2001-2012)

Project Manager Gastro-Nutritional Research Network, University of Pittsburgh (2011-2012)

- Developed proposals and grants (e.g., U01, R01), purchased IT equipment and supplies, created scope of services, financial management and budgets, document reviews, team time reporting, led in audit reviews, organized meetings (local and global-Africa, Holland, Denmark, Chicago, Alaska- using phone and electronic systems, e.g. SKYPE, Bridgit, etc.), set project timelines, and write up of regulatory requirements for various NIH and administrative funded projects.
- Assist in writing and reviewing Gastro-Nutritional articles, giving presentations on proposals, and project write-ups.
- Using the System Development Life Cycle (SDLC), I developed the web-based gastro-nutritional network (Windows server, MS SQL, C#, LINQ) and the collaborative document system (SharePoint).
- As project manager for a developmental U01 grant, I was involved in international conflict resolution, budget write-ups and concerns, and regulatory management.
- Used strong technological and statistical skills to fill the project development timeline gaps to finish the web-based input and storage project and develop complex reports.
- The project was finished under budget and used by the global team, and cyberinfrastructure served as a model for the following project funding proposal.

Project Manager Topic Mapping Project, University of Pittsburgh, (2011-2012)

- Concurrent with the Project Manager Position above. Developed a web-based application (C#, VB, MS SQL, LING, OLAP) that created specific medical researcher profiles by extracting information from online abstracts, which would then be used to develop a scoring system to rank researchers within a medical research environment. I presented the proposal write-up, demonstrations, and working system setup to upper management, department chairs, and Dr. Reis, Associate Vice Chancellor for Clinical Research.

Co-Director Clinical Pharmacology Data Center, University of Pittsburgh (2001-2011)

- Develop project proposals, grants (e.g., U01, R01), the scope of services, financial management and budgets, various project management documents and charts, time reporting, and written reviews of regulatory requirements for various NIH, administrative, and foundation-funded projects.
- In this role, I developed budgets for the informatics section (e.g., grants, operational projects, etc.) and hired as well as trained the Data Center Staff(8-10 direct FTE, multiple students)

- I developed successful project proposals ranging from \$60,000 to \$750,000 per project, and through the project proposals, I was able to fund an eight- to ten-person Information Technology team completely.
- Gave numerous presentations to NIH project leaders, University of Pittsburgh departmental chairs, project leaders, administrations, and staff on pre-project workups, summarization, and post-workup results.
- Trained numerous project leaders, nurses, and staff on using technology and coding.
- Assist in the writing and review of Clinical Pharmacology as well as other research project articles and write-ups.
- Project manager and project lead for numerous multi-million dollar single and multicenter projects using traditional project and novel team-building techniques ([Cecchetti et al., 2009](#)).
- Using the System Development Life Cycle (SDLC), I developed or supervised the development of numerous researcher-specific and administrative applications (e.g., Laboratory data extraction from PDF documents, web-based administrative tools, applications using multi-dimensional databases with MDX coding).
- Researched, developed, and tested an automatic profile extraction method (C#, MS SQL, LINQ) for research scientists ([Cecchetti, 2009](#)), which predicted their IT infrastructure needs.
- Project lead for the ***Drug Use and Management System*** (DRUMS) examined inpatient drug use within UPMC (MS Analysis, SQL, C#, VB). Co-authored an In-hospital drug-use optimization proposal ([Zgheib et al., 2011](#)).
- Project Manager and developer for the **Data On-Line Retrieval and Analysis System** (DORAS), a multimillion-dollar physician incentive database used by 20 executive administrators. This project used OLAP technology and brought in over \$60,000 per year as funding for my team.

Co-Director General Clinical Research Core-GCRC- (2001-2007), University of Pittsburgh

- Concurrent with Co-Directorship above. As a member of the GCRC committee, I reviewed and wrote summary statements for numerous researcher-initiated proposals (143 M.D/Ph.D.) that examined the IT portion of the proposals, their feasibility, regulatory requirements as they pertained to the institution (UPMC and University of Pittsburgh), and the proposed IT budgets.

CURRENT CONSULTATION PROJECT

APPLIED CLINICAL INFORMATICS RESEARCHER – INTELLIGENT WEARABLE HEALTH SYSTEM

Independent Development & Research | In Progress

- Leading the design and implementation of an **AI-integrated wearable application** aimed at transforming patient-generated data into clinically actionable insights.
- Developed a cross-platform mobile architecture to:
 - **Convert patient speech to structured text** using real-time speech recognition and NLP.
 - **Capture biometric data** including heart rate, GPS location, and ambient device proximity via **Bluetooth Low Energy (BLE)** protocols.
 - **Encrypt and securely transmit** all data using standards-compliant end-to-end security protocols.
- Implemented an **AI-driven symptom extraction pipeline**, enabling real-time identification of medical symptoms from patient dialogue using machine learning models trained on clinical language corpora.
- Integrated a **differential diagnosis engine** that fuses biometric data with NLP-derived symptoms to produce intelligent diagnostic suggestions, enhancing triage, remote monitoring, and telehealth diagnostics.
- Project supports future integration with EHR systems and is being evaluated for use in underserved, remote, or high-throughput clinical settings.

CURRENT IRB-APPROVED PROJECTS

Classification of Metabolic Syndrome Patients Using a Data Warehouse Developed Algorithm

Individual and Combined Impacts of Metabolic Syndrome Components on NAFLD in Appalachian Women

Determining the feasibility of using a multi-institutional data warehouse as an exclusive source for clinical and research questions

1741901-2] Classification of Metabolic Syndrome in Veterans Administration Patients Using a Data Warehouse-Developed Algorithm Principal

CURRENT RESEARCH SUPPORT

MARSHALL UNIVERSITY RESEARCH CORE GRANTS

1. 214104, Marshall University Research Core CTSA (Dr. Uma Sundaram), from the University of Kentucky, Clinical and Transformational Science Award. Director of Clinical Informatics, Research Assistant Professor, Marshall Health Data Architect.
2. (Dr. Gary Rankin) on CTSI from the University of Kentucky. National Institute of General Medical Sciences of the National Institutes of Health under Award Number 5U54GM104942- 04.
3. NIH Summer Research Experience Programs (R25) (SRIMS). The purpose of the NIH Summer Research Experience Program (referred to as the “Summer Research Program”) is to provide a high-quality research experience for high school and college students and science teachers during the summer academic break

PROJECTS OTHER GRANTS

Claude Worthington Benedum Foundation grants

1. Shirley M. Neitch, MD, FACP, Maier Professor of Clinical Research, Chief, Section of Geriatrics, Marshall University/Joan C. Edwards School of Medicine. Development of a data mart for use by the Maier Institute
2. Raj K. Khanna, DMD, MD, Professor and Chair, Department of Dentistry and Oral & Maxillofacial Surgery, Marshall University School of Medicine. Development of a data mart for use in a dental study for low-income patients.

DEPARTMENT OF INTERNAL MEDICINE RESEARCH SUPPORT

(05-35449-5200-117126) (R01-EA135379) (Dr. O'Keefe) ELSA (East Like South African) (current project)

This is a multi-national study involving researchers in three countries. We developed and are currently maintaining an information management system (the electronic Management of Clinical Translational Research: eM-CTR), which focuses on acquiring and presenting all study-centered information sources collected and analyzed during the project life cycle. A three-tier web portal was developed to collect data and provide a central source for study information.

A secure collaborative portal (SharePoint) is also used to collect study documentation, people's information, and study outputs. A just-in-time communication system that uses free VoIP services for non-HIPAA-related issues (e.g., Skype) and proprietary systems for HIPAA-related problems (e.g., WebEx, Bridgit), with secure remote desktop sharing, provides a mechanism to

meet quickly and present information online in a 24/7 environment. A de-identified tissue, blood, fluid, and solid specimen web-based repository is linked securely to de-identified web-based subject data to provide real-time information to all authorized individuals within the study. The password, IP, and role-protected collaborative tools provide a virtual information management center for scalability and ease of use between the global study sites (Chicago, Pittsburgh, Africa, and Holland). Presentation and reporting will include traditional SAS (SAS 9.3) analysis (cluster, base, etc.), graphics, and OLAP grids.

Duties to include: IT project management, teaching project team, HIPAA and Title 21 compliance, management of global meetings, regulatory management, network management (windows server 2008 R2) development and maintenance of the collaborative infrastructure (SharePoint Foundation 2010), developing statistical workups (SAS 9.3), data manipulation (T-SQL, MDX, OLAP-RadarSoft) as well as visualization tools, for the current grants. Additionally, duties include creating standard operating protocols for the work site and using data-gathering software.

NOVARTIS

CERL080A US57 (Studer /Johnson)	06/01/06–03/31/10	0.1 calendar
	months	\$64,842

A Phase IV Randomized Open Label Clinical Trial of Single- and Double-Heart and Lung Transplant Subjects Comparing Gastrointestinal

I provided comprehensive information technology support for a phase IV clinical trial conducted by the Pulmonary Lung Transplant Program. This support included data management, study site collaboration and user support, security and confidentiality management, and general information technology infrastructure. I created a data repository from the Hospital Transplant database, with researcher access through a Microsoft report generator. The interface was made at the investigator's request for a simplified interface. I also taught the project team members SQL, Office program use, programming, and statistical applications.

The statistical support consisted of classical statistical assistance modules (e.g., frequency distributions, analysis such as t-tests and ANOVA, graphical plots, power analysis, and sample size determinations) using several statistical packages (e.g., SPSS, SAS, Sigma Plot)

MOLECULAR AND CELLULAR DETERMINANTS OF DISEASE HETEROGENEITY IN COPD (SCCOR) - CORE C

1 P50 HL084948-03 (Sciurba)	01/12/07-12/31/11	2.4 calendar
	months	
NIH		\$86,001

Molecular and Cellular Determinants of Disease Heterogeneity in COPD (SCCOR) - Core C (ITBC)

To refine COPD disease characterization, a series of advanced techniques in physiology, imaging, genetics, genomics, and molecular probes will be applied to increase understanding of disease etiology and mechanisms for patient-specific therapeutic advances.

My initial duties were to manage the information technology team and perform quality control tests as the study collected and presented data. My responsibilities include developing a report card system to evaluate patient accrual, statistical analysis (SAS 9.2), visualization methods that analyze the data, and bimonthly presentations. I also taught the project team members SQL, Office program use, quality control techniques, programming, and statistical applications. Additionally, business integration (MS Analysis) is used to extract, transform, and load (ETL) data from multiple sites (flat, Excel, Access, and Hospital databases), as well as provide technical support for the sub-sites. I developed a Portable Document Format (PDF) parser program that extracted data from specialized research machine PDF output and created the database for analysis.

SPORE IN LUNG CANCER – CORE D

5P500CA090440-09 (Siegfried)	05/01/07-04/30/10	0.6 calendar months
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NIH	\$11,714
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The primary goal of this project is to provide Information technology and information management support to the Specialized Program of Research Excellence (SPORE) in Lung Cancer. The overall goals of the Lung Cancer SPORE are to improve the detection and treatment of lung cancer and to understand the mechanisms of increased susceptibility of women to lung cancer.

As co-director of the CCP data center, I oversaw the development and maintenance of a web-enabled 3-tier input portal, a database repository, and the development of a collaborative site (SharePoint). During the fall of 2010, I assisted the senior administrator with the grant application processes, which led to the successful renewal of the LUNG SPORE grant. This site was used extensively by 25 people during the grant workup. It involved just-in-time assistance for department heads and integrating various word-processing documents into one grant PDF file submission. I also taught the project team members how to use SharePoint, the Office program, and statistical applications.

PHYSICAL ACTIVITY FOLLOWING SURGERY-INDUCED WEIGHT LOSS (POWER)

(Goodpaster)	03/01/08 – 1/31/13	0.6 calendar months
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NIH

\$20,983

The primary goal of this project is to determine the effects of physical activity on changes in metabolic risk factors of obese patients following the initial three-month weight loss from bariatric surgery.

As co-director (and now sole provider), I oversee the development of a multicenter database, input web forms, and maintenance of a collaborative site (SharePoint) for this multicenter trial. My duties include just-in-time support for the collaborative site and web forms, and statistical data analysis for quality control purposes.

DENDRITIC CELL TRIAL

Dr. Sharon Riddler

03/01/07 – 1/31/13

As co-director of the CCP data center, I provided project management and collaborative support services using our electronic management of clinical translational research (eM-CTR) suite of tools. My responsibilities include form maintenance (secure web-based input, HIPAA compliant, error control, 3-tier design), regulatory compliance, and database quality control.

COMMUNITY RESEARCH

WEST VIRGINIA HSTA STUDENTS DESIGN HEALTH CLINICAL TRIALS (HSTA WEB PORTAL)

3 R25 RR 023274-04S1 (Branch)

09/01/09 - 08/31/11

1.2 calendar

months

NIH/NCRR

\$76,964

The primary objective of this proposal is to implement a communication network that permits the input of multiple stakeholders in a health policy dialogue on reducing adolescent obesity in West Virginia.

Duties are to develop the communications network.

ADOLESCENT GUIDED COMMUNITY RESEARCH ON OBESITY IN WEST VIRGINIA

PA-09-140 (Branch)

07/01/10 – 06/30/12

0.3 calendar

months

NIH

\$49,290

This proposal presents the development of one aspect of an overall ongoing clinical research strategy designed to encourage adolescents of high school age to become active research investigators in community-based research. This will lead to improved management of disease states in obesity and Type II diabetes within their families in rural, medically underserved Appalachian communities in West Virginia.

Duties are to assist with the rollout of the communication network.

COMMUNITY APPALACHIAN INVESTIGATION AND RESEARCH NETWORK (CAIRN)

RFA-OD-09-010 (Branch)
months

07/01/10 – 06/30/12

1.2 calendar

NIH

\$616,408

The goal of this proposal is to integrate a novel strategy to incorporate the principles of Community-Based Participatory Research (CBPR), which provides a clinical research discipline for creating and stimulating Science Clubs in an extracurricular format for high school students from underprivileged backgrounds.

Duties are to develop the communications network.

PHYSICIAN / RESEARCHER SUPPORT

USE OF ELECTRONIC MANAGEMENT OF CLINICAL TRANSLATIONAL RESEARCH SYSTEMS (EM-CTR) FOR SEPSIS GROUPS

Dr. Vodovotz

I provide collaborative support services for our electronic management of clinical translational research (eM-CTR) suite of tools, especially the information (SharePoint) and communication (Bridgit) hubs for the Sepsis Study. I taught a class on information management for his students.

My duties focus on the development and maintenance of the collaboration tools, specifically the SharePoint site and the Bridgit desktop sharing tools.

PREVIOUS PROJECT EXPERIENCE

GENERAL CLINICAL RESEARCH CENTER

The major goal of this project is to provide an infrastructure resource for clinical studies and permits patients to be studied in a control situation.

My duties were to assist 143 researchers, their coordinators, and staff in the use of various types of technology. This assistance was in the form of teaching individual researchers in the use of technology (Excel, Access, basic programming), statistical teaching (SPSS, SAS), and training staff members in the use of the internet based applications, office applications, and training in the use of various clinical and experimental systems. I also served on the GCRC study committees, evaluating technology designs.

Role: Co-investigator

OBSTETRIC-FETAL-PHARMACOLOGY RESEARCH UNIT (OPRU)

1 U10 HD47905-01 Caritis (PI)
NIH

7/1/04 - 4/30/09

Pregnancy and Drug Metabolizing Enzymes and Transporters (OPRU)

The purpose of this proposal was to establish an Obstetric-Fetal-Pharmacology Research Unit (OPRU) at the University of Pittsburgh and to cooperate with other OPRUs to establish a Network of OPRUs to identify and study common problems related to the use of pharmacologic agents during pregnancy.

Role: Co-Investigator

Project Manager: my duties included supervision of my information management team (4 team members), the development of an online collaborative bi-monthly meeting with the nurse coordinators, the development of an Online Analytical Processing (OLAP) grid and graphics to provide a quality control presentation system for the study.

As project manager, database issues, quality control, data presentation and technology assistance were performed either by me or under my direct supervision.

PREVIOUS CONTRACT PROJECT MANAGEMENT (2002-2011)

DATA ON-LINE RETRIEVAL AND ANALYSIS SYSTEM (DORAS)

One of my previous duties was to develop and maintain a multi-million dollar physician incentive viewer program (rVU), designed with a simple to use drag-n-drop interface, and connected to a Microsoft Analysis Server OLAP cube data source. The data is collected from the University of Pittsburgh EPIC system, and consists of financial information from 2004 to the present day. I provide monthly updates, data integration, quality control, user support, network and operating system support, and code modification as needed. Included within these duties is acting as a help desk, for the DORAS system, for over 20 senior administrative staff and their senior supervisors.

PROJECTS USED TO EVALUATE AND MODIFY PHYSICIAN INFORMATION BEHAVIOR

CHARGE CAPTURE- CARDIOVASCULAR INSTITUTE

Charge Capture Program 1998-2001

It was found that the physicians within the Cardiovascular Institute were not completing their charge-capture reports. I was requested to develop a web-based method of capturing this information and to create a simple solution to increasing charge-capture amounts. I developed a web-based program that used the HL7 feed from Presbyterian Hospital to present information to an easy-to-use charge capture interface specially designed for physician use. This project included a visualization tool that was designed to modify physician behavior. The process was quite simple; physicians were de-identified and linked to scores derived for specific charge-capture goals. These scores were displayed on simple bar graphs presented at the departmental physician meetings. The graphs were shown to the assembled physicians with minimal comments added by the departmental director. Each physician knew their individual de-identified number, but did not know their colleagues number. They were also told that the scores would be considered when they requested resources within the department and that the scores would be presented at each departmental meeting. The program resulted in an increase in collectables to \$245,000/year. An analysis by the administration suggested that the natural competitive nature of the physicians combined with a non-threatening display was the driving force behind the increase in collectables.

The innovative part of this project was developing a visual classification tool that was used to modify physician behavior. (University of Pittsburgh write-up available).

DRUG USE AND MANAGEMENT SYSTEM (DRUMS)

2007 to 2009

DRUMS was a multi-dimensional highly structured drug use and management system (DRUMS) that my team and I developed for Clinical Pharmacology and the Pharmacy and Therapeutics Committee. One of the interesting uses of this project was to track physician drug prescribing speedily. The current pharmacology process involved extracting information directly from MARS, which took months. This project used data from the Cognos hospital billing feed combined with a simplified interactive front end that provided a method of exploring drug use within hospital admissions without having to extract information from the MARS documents. It was suggested that this interface could work within a real-time interval.

I was a co-author on a paper by Zgheib et al. (2001) that used DRUMS to examine the use of inpatient drugs within the hospital system. This paper concluded that “entrepreneurial hospital strategists [should] adopt knowledge systems such as DRUMS to analyze aggregate data and use cost utility as a tool for aggregate in-hospital drug use analyses.” DRUMS was used to ask complex association questions from a variety of perspectives to better understand clinical outcome relationships.