Varun Ramamohan

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Education

Doctor of Philosophy, Industrial Engineering, August 2008 − August 2013
School of Industrial Engineering, Purdue University, West Lafayette, IN
Advisor: Prof. Yuehwern Yih
Thesis: *Modeling and Analysis of Uncertainty in Clinical Laboratory Measurement Processes*

Bachelor of Technology, Production Engineering, August 2003 − June 2007
National Institute of Technology, Tiruchirappalli, India

Research & Technical Interests

Probabilistic modeling, simulation & simulation optimization, with applications in healthcare delivery systems, health economics, and military operations.

Experience

Associate Professor, Mechanical Engineering, Indian Institute of Technology Delhi	Jan 2024 – present
Assistant Professor, Mechanical Engineering, Indian Institute of Technology Delhi	May 2017 – Dec 2023
Associate Director - Health Economics, Research Triangle Institute - Health Solutions	Dec 2016 – Jan 2017
Senior Research Health Economist, Research Triangle Institute - Health Solutions	Aug 2013 – Nov 2016
Graduate Teaching Assistant, School of Industrial Engineering, Purdue University	Aug 2009 – May 2012
Associate Consultant, Oracle Solutions Services India	Jul 2007 – Jun 2008

Selected Honours & Awards

- Kusuma Young Faculty Incentive Fellowship, IIT Delhi, May 2017 – 2020

- Tata Consultancy Services Research Scholarship, 2018 (for PhD supervision of Mohd Shoaib; awarded, declined)

- Institute Career Author Award – Early Career, 2015, Research Triangle Institute International

- Institute Highly Published Author, 2014, Research Triangle Institute International

- Bilsland Dissertation Fellowship, Purdue University, August 2012 – July 2013

- Ross Doctoral Fellowship, Purdue University, August 2008 – May 2012

- Second place, 2012 Process Industries Division Student Paper Competition, Institute of Industrial Engineers, Los Angeles, CA, USA

- Finalist, Best Paper Award, Modeling & Simulation track, ISERC Annual Meeting 2012, Orlando, FL, USA

- College of Engineering Travel Grant, Purdue University, 2012

- Higher Education Scholarship, Dr. Anant H Pandya Memorial Fund Trust, 2008

Professional Activities

- Guest editor, joint special issue on hybrid modelling and hybrid simulation by *Health Systems* and *Journal of Simulation*, 2022–23.

- Associate editor, *Journal of Simulation*, 2023 – present.

- Program committee member, *the 10th International Conference on Behavioural and Social Computing (BESC)*, 2023.

- Co-chair, Healthcare Applications Track, *2024 Winter Simulation Conference*.

Publications and Patents[1]

Patents

1. Parth Chopra[u], Vimarsh Trehan[u], Karan Madan, Varun Ramamohan. System and Method to Diagnose Respiratory Diseases in Real-time. Patent number: 409920; application number: 202011024378. Date of filing: 10 June 2020; date of grant: 26 October 2022.

Published/accepted: book chapters

1. Najiya Fatma[p], Pranav Shankar Girish[u], Varun Ramamohan. Simulation and Machine Learning based Real-Time Delay Prediction for Complex Queuing Systems. *Accepted*, In **Hybrid Modelling and Simulation: Conceptualizations, Methods, and Applications**. Springer Nature Series in Simulation Foundations, Methods, and Applications. 2023. Editors: Masoud Fakhimi and Navonil Mustafee.

2. Varun Ramamohan, Jim Abbott, Yuehwern Yih. Modeling and Simulation of Measurement Uncertainty in Clinical Laboratories. In **Healthcare Analytics: From Data to Knowledge to Healthcare Improvement**. Wiley Series in Management Science and Operational Research. Editors: Hui Yang, Eva K. Lee. Hoboken, NJ: John Wiley & Sons Inc., 2016. ISBN-13: 978-1118919392; chapter DOI: 10.1002/9781118919408.ch05.

Published/accepted: journals

1. Aparna Venkataraman[p], Najiya Fatma[p], Sisira Edirippulige, Varun Ramamohan. Facilitators and Barriers for Telemedicine Systems in India from Multiple Stakeholder Perspectives and Settings. *Accepted*, **Telemedicine and e-Health**. medRxiv preprint here.

2. Najiya Fatma[p], Varun Ramamohan. (2023). Healthcare seeking behavior among patients visiting public primary and secondary healthcare facilities in an urban Indian district: A cross-sectional quantitative analysis. **PLOS Global Public Health**, 2023, 3(9), e0001101. Available here.

3. Shanmukhi Sripada[u], Ayush Jain[u], Prasanna Ramamoorthy, Varun Ramamohan. A Decision Support Framework for Optimal Vaccine Distribution Across a Multi-tier Cold Chain Network. *ePub ahead of print*, **Computers & Industrial Engineering**, 2023, 109397. DOI: https://doi.org/10.1016/j.cie.2023.109397. arXiv preprint 2109.04204.

4. Mohd Shoaib[p], Navonil Mustafee, Karan Madan, Varun Ramamohan. Leveraging Multi-tier Healthcare Facility Network Simulations for Capacity Planning in a Pandemic. *ePub ahead of print*, **Socio-Economic Planning Sciences**, 2023, 101660. DOI: https://doi.org/10.1016/j.seps.2023.101660. SSRN preprint available here.

5. Varun Ramamohan, Shobhit Singhal[u], Aditya Raj Gupta[u], Nomesh Bhojkumar Bolia. Discrete Simulation Optimization for Tuning Machine Learning Method Hyperparameters. *ePub ahead of print*, **Journal of Simulation**, 2023. DOI: https://doi.org/10.1080/17477778.2023.2219401. arXiv preprint 2201.05978.

6. Najiya Fatma[p], Varun Ramamohan. Patient Diversion Using Real-time Delay Predictions Across Healthcare Facility Networks. **OR Spectrum**, 2023; 45:437-476. Preprint here.

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[1]Co-authors with a p superscript indicate PhD students; with an m superscript indicate Masters students; and with a u superscript indicate undergraduate students - all working under my supervision at IIT Delhi.

7. Mohd Aman Khalid, Sahil Bansal, Varun Ramamohan. Robust Design Optimization: Minimization of Mean and Variance using Stochastic Simulation Based Approach. **Research in Engineering Design**, 2023; 34(2):179-200. Available here.

8. Ruchir Raman, Varun Ramamohan, Anurag Rathore, Deepali Jain, Anant Mohan, Vishal Vashistha. Prevalence of Highly-Actionable Mutations among Indian Patients with Advanced Non-Small Cell Lung Cancer: A Systematic Review and Meta-Analysis. **Asia-Pacific Journal of Clinical Oncology**, 2023; 19(1):158-171. Available here.

9. Mohd Shoaib[p], Varun Ramamohan. Simulation Modelling and Performance Analysis of Primary Health Centres. **Simulation: Transactions of the Society for Modeling and Simulation International**, 2022; 98(3):183-208. Preprint here.

10. Mohd Shoaib[p], Utkarsh Prabhakar[u], Sumit Mahlawat[u], Varun Ramamohan. A Discrete-event Simulation Model of the Kidney Transplantation System in Rajasthan, India. **Health Systems**, 2022; 11(1): 30-47. Preprint here.

11. Himanshu Singh[u], Varun Ramamohan. A Model-based Investigation into Urban-Rural Disparities in Tuberculosis Treatment Outcomes under the Revised National Tuberculosis Control Programme in India. **PLoS ONE**, 2020; 15(2):e0228712. Available here.

12. Varun Ramamohan, Deirdre M. Mladsi, Naoko A. Ronquest, Siddhesh Kamat, Susan H. Boklage. An Economic Analysis of Tolvaptan Compared With Fluid Restriction Among Hospitalized Patients With Hyponatremia. **Hospital Practice**, 2017; 45(3):111-117.

13. Susan F. Boklage, Allen W. Mangel, Varun Ramamohan, Deirdre M. Mladsi, Tao Wang. Cost-effectiveness Analysis of Universal Noninvasive Testing for Post-Treatment Confirmation of *Helicobacter pylori* Eradication and the Impact of Patient Adherence. **Patient Preference and Adherence**, 2016; 10:1025-1035.

14. Susan F. Boklage, Allen W. Mangel, Varun Ramamohan, Deirdre M. Mladsi, Tao Wang. Impact of Patient Adherence on the Cost-Effectiveness of Non-Invasive Tests for Initial Diagnosis of *Helicobacter pylori* Infection in the United States. **Patient Preference and Adherence**, 2016; 10:45-55.

15. Varun Ramamohan, Jim Abbott, George Klee, Yuehwern Yih. Modeling the Effect of Instrument Drift on Measurement Uncertainty: A Serum Bilirubin Assay Case Study. **IIE Transactions on Healthcare Systems Engineering**, 2015; 5(3):147-164.

16. Varun Ramamohan, Jim Abbott, Yuehwern Yih. A Mathematical Model of Measurement Uncertainty of Single Substrate Enzyme Assays. **Journal of Chemometrics**, 2015; 29(1):49-58.

17. Varun Ramamohan, Jim Abbott, George Klee, Yuehwern Yih. Modeling, Analysis and Optimization of Calibration Uncertainty in Clinical Laboratories. **Measurement**, 2014; 50:175-185.

18. Varun Ramamohan, Yuehwern Yih, Jim Abbott, George Klee. Category-specific Uncertainty Modeling in Clinical Laboratory Measurement Processes. **Clinical Chemistry and Laboratory Medicine**, 2013; 51(12):2273-2280.

19. Varun Ramamohan, Jim Abbott, George Klee, Yuehwern Yih. Application of Mathematical Models of System Uncertainty to Evaluate the Utility of Assay Calibration Protocols. **Clinical Chemistry and Laboratory Medicine**, 2012; 50(11):1945-1951.

20. Varun Ramamohan, Vishal Chandrasekar, Jim Abbott, George Klee, Yuehwern Yih. A Monte Carlo Approach to the Estimation and Analysis of Uncertainty in Clinical Laboratory Measurement Processes. **IIE Transactions on Healthcare Systems Engineering**, 2012; 2(1):1-13.

Published/accepted: peer-reviewed conference proceedings

1. Mohd Shoaib[p], Navonil Mustafee, Varun Ramamohan. An Approach Towards Predicting the Computational Runtime Reduction from Discrete-event Simulation Model Simplification Operations. *Accepted*, **Proceedings of the 2023 Winter Simulation Conference**, December 10–13, San Antonio, TX, USA. Preprint here.

2. Najiya Fatma[p], Varun Ramamohan. A Generic Modeling Approach Towards Simulating an Urban Primary and Secondary Healthcare Facility Network. **Proceedings of the 2023 Annual Modeling and Simulation (ANNSIM) Conference**, May 23—26, Ontario (Canada), pp. 1–12, IEEE Press.

3. Najiya Fatma[p], Varun Ramamohan. Outpatient Diversion using Real-Time Length of Stay Predictions. **Proceedings of ICORES 2022: 11th International Conference on Operations Research & Enterprise Systems**, pp. 56–66, SCITEPress. arXiv preprint 2112.03761.

4. Soham Das[p], Navonil Mustafee, Varun Ramamohan. A Discrete Simulation Optimization Approach Towards Calibration of an Agent-based Simulation Model of Hepatitis C Virus Transmission. **Proceedings of the 2021 Winter Simulation Conference**, December 13–17, Phoenix AZ (USA), pp. 1-12, IEEE Press. arXiv preprint 2107.02856. *Invited paper.*

5. Diptangshu Sen, Prasanna Ramamoorthy, Varun Ramamohan. Optimal Minimal-Contact Routing of Randomly Arriving Agents Through Connected Networks. **Proceedings of the 2021 Winter Simulation Conference**, December 13–17, Phoenix AZ (USA), pp. 1-12, IEEE Press. arXiv preprint 2011.00472.

6. Saumya Gupta[u], Chandan Mittal[u], Soham Das[p], Shaurya Shriyam, Atul Batra, Varun Ramamohan. A Simulation Model of Breast Cancer Incidence, Progression, Diagnosis and Survival in India. **Proceedings of the 2021 Winter Simulation Conference**, December 13–17, Phoenix AZ (USA), pp. 1-12, IEEE Press. SSRN preprint 3833782.

7. Mohd Shoaib[p], Varun Ramamohan. Simulation Modelling and Analysis of Community Health Centres. **2021 Institute of Industrial & Systems Engineers Annual Meeting Proceedings**, May 22–25, pp. 447-452, Institute of Industrial & Systems Engineers.

8. Najiya Fatma[p], Varun Ramamohan. Patient Diversion Across Primary Health Centers Using Real-Time Delay Predictors. Simulation Modelling and Analysis of Community Health Centres. **2021 Institute of Industrial & Systems Engineers Annual Meeting Proceedings**, May 22–25, pp. 441-446, Institute of Industrial & Systems Engineers. arXiv preprint 2101.11074.

9. Najiya Fatma[p], Mohd Shoaib[p], Navonil Mustafee, Varun Ramamohan. Primary Healthcare Delivery Network Simulation Using Stochastic Metamodels. **Proceedings of the 2020 Winter Simulation Conference**, December 13–16, Orlando FL (USA), pp. 818-829, IEEE Press. *Invited paper.*

10. Vaibhav Baldwa[u], Siddharth Sehgal[u], Vivek Tandon, Varun Ramamohan. A Combined Simulation and Machine Learning Approach for Real-Time Delay Prediction for Waitlisted Neurosurgery Candidates. **Proceedings of the 2020 Winter Simulation Conference**, December 13–16, Orlando FL (USA), pp. 956-967, IEEE Press. SSRN preprint 3678132.

11. Soham Das[m,p], Diptangshu Sen[u], Ajit Sood, Varun Ramamohan. An Agent-based Model of Hepatitis C Virus Transmission Dynamics in India. **Proceedings of the 2019 Winter Simulation Conference**, December 8–11, Washington DC (USA), pp. 984-995, IEEE Press.

12. Utkarsh Vardhan[u], Varun Ramamohan. A Simulation Optimization Approach to Optimal Calibrator Concentration Selection for the Haptoglobin Immunoassay. In **Proceedings of the 2018 Winter Simulation Conference**, December 9–12, Gothenburg, Sweden, pp. 2471-2482, IEEE Press.

13. Varun Ramamohan, Jim Abbott, Yuehwern Yih. Effect Of Uncertainty In Calibration On The Correlation Structure Of The Rheumatoid Factor Immunoassay Calibration Function. **Proceedings of the 2015 Winter Simulation Conference**, December 6–9, Huntington Beach, CA (USA), pp. 1537-1548, IEEE Press.

14. Varun Ramamohan, Jim Abbott, Yuehwern Yih. A Simulation-Based Approach to Modeling the Uncertainty of Two-Substrate Clinical Enzyme Assays. **Proceedings of the 2014 Winter Simulation Conference**, December 7–10, Savannah, GA (USA), pp. 1329-1340, IEEE Press.

15. Varun Ramamohan, Jim Abbott, Yuehwern Yih. Modeling and Analysis of the Measurement Uncertainty of Clinical Enzyme Assays. **Proceedings of the 2014 Industrial & Systems Engineering Research Conference**, May 31 - June 3, Montreal, Quebec (Canada).

16. Varun Ramamohan, Jim Abbott, George Klee, Yuehwern Yih. Modeling Uncertainty due to Instrument Drift in Clinical Laboratories. **Proceedings of the 2013 Industrial & Systems Engineering Research Conference**, May 18-22, San Juan, Puerto Rico (USA).

17. Varun Ramamohan, Jim Abbott, George Klee, Yuehwern Yih. Analysis of Uncertainty due to Calibration in Clinical Laboratory Measurement Processes. **Proceedings of the 2012 Industrial & Systems Engineering Research Conference**, May 19-23, Orlando, FL (USA). *Finalist, Best Track Paper award; 2nd place, IIE Process Industries Division student paper competition.*

18. Varun Ramamohan, Vishal Chandrasekar, Jim Abbott, George Klee, Yuehwern Yih. A Simulation-Based Methodology for Uncertainty Modeling and Analysis of Clinical Laboratory Measurement Processes. **Proceedings of the 2011 Industrial Engineering Research Conference**, May 21-25, Reno, NV (USA).

Under review/revisions

1. Najiya Fatma[p], Kaveri Kala, Varun Ramamohan. Analysis of Stakeholder Perception Towards Existing and Potential Referral Mechanisms in an Urban Context. *Under review.* Preprint here.

2. Mohd Shoaib[p], Navonil Mustafee, Karan Madan, Varun Ramamohan. Evaluation of a Two-stage Healthcare Facility Location Approach Using Simulation Optimization and Mathematical Optimization. *Under review.* SSRN preprint here.

3. Varun Ramamohan, Utkarsh Agrawal[u], Mohit Goyal[u]. A Note on the Stochastic Ruler Method for Discrete Simulation Optimization. *Under review..* arXiv preprint 2010.06909.

4. Diptangshu Sen[u], Kushaagra Goyal[u], Arnob Ghosh, Varun Ramamohan. Discriminatory Pricing Mechanism for Smart Grid. *Under review.* arXiv preprint 2003.13560.

5. Parth Chopra[u], Vimarsh Trehan[u], Karan Madan, Varun Ramamohan. An Expert-assisted Chest Radiograph Classification Tool to Differentiate between Active Tuberculosis and Healed Tuberculosis Sequelae. *Under review.* SSRN preprint here.

6. Nishank Goyal[u], Praket Parth[u], Sumit Mahlawat[u], Utkarsh Prabhakar[u], Varun Ramamohan. A framework for utilizing stock trend prediction outputs in stock selection and portfolio optimization. *Under review.* SSRN preprint here.

Technical Reports

1. Varun Ramamohan, Deirdre M. Mladsi. Cost-effectiveness of Urea Breath Test for the Detection of *Helicobacter pylori* Infection.

2. Varun Ramamohan, Naoko A. Ronquest, Deirdre M. Mladsi. Cost-consequences Model for Tolvaptan in the Treatment of Hyponatremia.

3. Varun Ramamohan, Deirdre M. Mladsi. Economic Model for Intranasal Naloxone as an Intervention for Prescription Opioid Overdose.

4. Deirdre M. Mladsi, Varun Ramamohan, Sorrel Wolowacz, Shaun Abeysinghe. Core Cost-effectiveness Model for Ramucirumab in Metastatic Non–Small Cell Lung Cancer. *The documents relating to the assessment conducted by the UK's National Institute for Health and Care Excellence (NICE) of the manufacturer's submission for ramucirumab in the treatment of metastatic NSCLC have been published online here.*

Funded Research & Consultancy Projects

- Dynamic route planning

    Funding Organization: Aeronautical Development Agency, Government of India

    Funded amount, role & duration: INR 27,35,034; PI, from June 2023 - May 2024

    Status: Ongoing

- Sensor management

    Funding Organization: Aeronautical Development Agency, Government of India

    Funded amount, role & duration: INR 83,35,373; co-PI, from June 2023 - May 2024

    Status: Ongoing

- Pharmacy operations optimization

  Funding Organization: Pharmacy One Network Private Limited

  Funded amount, role & duration: INR 16,46,100; PI, from Jan 2022 - Dec 2024

  Status: Ongoing

- Airport operations optimization

  Funding Organization: Delhi International Airport Limited

  Funded amount, role & duration: INR 46,72,800; PI, from May 2022 - June 2023

  Status: Completed

- Solving the Virtual Try-on Problem for Retail Fashion

  Funding Organization: Okkular Pvt Ltd., Australia

  Funded amount, role & duration: INR 4,76,120; PI, from Aug 2021 - Jul 2022

  Status: Completed

- Development of a semi-automated machine learning based tool for chest radiograph image interpretation to differentiate active pulmonary tuberculosis (TB) from healed pulmonary TB sequelae.

  Funding Organization: IIT Delhi and All India Institute of Medical Sciences, New Delhi

  Funded amount, role & duration: INR 18,00,000; PI (IITD) with AIIMS PI Dr. Karan Madan, from Dec 2019 - May 2022

  Status: Completed

- Predictive maintenance models for industrial chillers and lifts in large buildings

  Funding Organization: Spacemonk Technologies

  Funded amount, role & duration: INR 2,54,880; PI, from Nov 2019 - June 2020

  Status: Completed

- Automation Solutions for the Metal Scrap Handling Industry

  Funding Organization: Madhuban Trade Steels Private Limited, MTC Group of Companies

  Funded amount, role & duration: INR 14,16,000; PI, from July 2019 - June 2020

  Status: Completed

- A Computational Framework for Simulation and Optimization of the Primary and Secondary Public Healthcare Network in India

  Funding agency: Industrial Research & Development Unit, IIT Delhi

  Funded amount, role & duration: INR 20,00,000; PI, from 2019-2022

  Status: Completed

- Industrial Engineering and Operations Research Methods in the Optimization of Healthcare Delivery Systems: awarded; subsequently declined

  Funding organization: Tata Consultancy Services Research Scholarship Programme

  Funded amount, role & duration: INR 15,42,000; PI, July 2018 - July 2020

- Development of a machine learning tool for credit card fraud detection

  Funding agency: Design Innovation Summer Award, Design Innovation Center, MHRD, India

  Funded amount, role & duration: INR 25,000; PI, from May-July 2018

  Status: Completed

Advising

PhD

1. Dr. Mohd Shoaib, 2017 - 2023. Currently at Loughborough University, UK.

2. Najiya Fatma, 2018 - present. Prime Minister's Research Fellow (PMRF). Synopsis presentation completed, thesis submission underway.

3. Soham Das, 2019 - present.

4. Aparna Venkataraman, 2021 - present. Co-advised by Prof. Sisira Edirippulige, University of Queensland (UQ), Australia. UQ-IITD and PMRF scholar.

Masters (Research)

1. Swapnil Shandilya, 2021 - 2023. Synopsis presentation completed.

MTech and BTech

- Master of Technology students: 16 completed, 1 ongoing.
- Bachelor of Technology projects: 25+ completed, 5 ongoing.

Teaching Experience

Course instructor, Mechanical Engineering, May 2017 – present

Undergraduate

- Manufacturing System Design
- Industrial Engineering Lab I
- Introduction to Operations Research
- Industrial Engineering Lab II
- Advanced Topics in Simulation
- Computers in Manufacturing

Postgraduate

- Probability and Statistics
- Fundamental Mathematics for Operations Research
- Advanced Operations Research

Selected Talks and Poster Presentations

- "Introduction to Stochastic Simulation with Applications in Healthcare Delivery Systems" (invited talk), Workshop on Digital Twin Engineering, 16_{th} Innovations in Software Engineering Conference, February 23-25, IIIT Allahabad, Prayagraj, Uttar Pradesh, India.

- "Grand Challenges in Hybrid Simulation Modelling" (panelist). 2022 Winter Simulation Conference, December 11–14, Singapore.

- "Linear Optimization for Military Applications" (invited talk), Institute for Systems Studies and Analyses, Defence Research Development Organization (Government of India), December 2022.

- "Stochastic simulation for Military Applications" (invited talk), Institute for Systems Studies and Analyses, Defence Research Development Organization (Government of India), December 2022.

- "Analytical and Simulation Driven Machine Learning Methods for Generating Real-Time Outpatient Length-of-Stay Predictions" (poster). 2022 Winter Simulation Conference, December 11–14, Singapore.

- "Prevalence of Actionable Mutations among Indian Patients with Advanced Non-Small Cell Lung Cancer: A Systematic Review" (poster); IASLC World Conference on Lung Cancer, January 28–31, 2021, virtual. Abstract published in **Journal of Thoracic Oncology**, 2021; 16(3):S454.

- "A Combined Simulation and Machine Learning Approach for Real-Time Delay Prediction for Waitlisted Neurosurgery Candidates" (talk); Winter Simulation Conference, December 13–16, 2020 virtual.

- "Primary Healthcare Delivery Network Simulation Using Stochastic Metamodels" (talk); Winter Simulation Conference, December 13–16, 2020, virtual.

- "An Agent-based Model of Hepatitis C Virus Transmission Dynamics in India" (talk); Winter Simulation Conference, Washington DC (USA), December 8–11, 2019.

- "A Simulation Optimization Approach to Optimal Calibrator Concentration Selection for the Haptoglobin Immunoassay" (talk). Winter Simulation Conference, Gothenburg (Sweden), December 9–12, 2018.

- "Effect Of Uncertainty In Calibration On The Correlation Structure Of The Rheumatoid Factor Immunoassay Calibration Function" (talk); Winter Simulation Conference, Huntington Beach CA (USA), December 6–9, 2015.

- "A Cost-Consequences Analysis of Inpatient Tolvaptan Compared with Fluid Restriction Among CHF Patients with Hyponatremia" (poster); Academy of Managed Care Pharmacy Nexus 2015 Conference, Orlando (FL), October 26–29, 2015. Abstract published in **Journal of Managed Care & Specialty Pharmacy**, 2015; 21(10-a):S54.

- "A Cost-Consequences Analysis of Inpatient Tolvaptan Compared with Fluid Restriction Among SIADH Patients with Hyponatremia" (poster); Academy of Managed Care Pharmacy Nexus 2015 Conference, Orlando (FL), October 26–29, 2015. Abstract published in **Journal of Managed Care & Specialty Pharmacy**, 2015; 21(10-a):S33.

- "A Simulation-Based Approach to Modeling the Uncertainty of Two-Substrate Clinical Enzyme Assays" (talk); Winter Simulation Conference, Savannah (GA), December 7–10, 2014.

- "Effects of Patient Compliance on the Cost-Effectiveness of Non-Invasive Tests for Initial Diagnosis of *Helicobacter pylori* Infection in a High Prevalence Population" (poster); American College of Gastroenterology Annual Scientific Meeting, Philadelphia (PA), October 17–22, 2014. Abstract published in **American Journal of Gastroenterology**, 2014; 9:S661.

- "Cost-Effectiveness of Non-Invasive Active Tests for Universal Post-Treatment Confirmation of Eradication of *H. pylori Infection*" (poster); American College of Gastroenterology Annual Scientific Meeting, Philadelphia (PA), October 17–22, 2014. Abstract published in **American Journal of Gastroenterology**, 2014; 9:S662.

- "An Outcomes Model for High-Risk Non-Muscle-Invasive Bladder Cancer Treatment Options" (poster); International Society of Pharmacoeconomics and Outcomes Research (ISPOR) Annual Meeting, Montreal (QC), Canada, May 31–June 4, 2014. Abstract published in **Value in Health**, 2014; 17(3):A87.

- "Modeling and Analysis of the Uncertainty of Enzyme Measurement Processes in Clinical Laboratories" (talk; session chair); Industrial & Systems Engineering Research Conference, Montreal (QC), Canada, May 31–June 4, 2014.

- "Modeling Uncertainty due to Instrument Drift in Clinical Laboratories" (talk); Industrial & Systems Engineering Research Conference, San Juan, Puerto Rico, May 18–22, 2013.

- "Application of Mathematical Models of System Uncertainty to Evaluate the Utility of Assay Calibration Protocols" (talk); Institute for Operations Research & Management Science (INFORMS) Annual Meeting, Phoenix (AZ), October 13–17, 2012.

- "Category-specific Uncertainty Modeling in Clinical Laboratory Measurement Processes" (talk; session chair); Data Mining & Health Informatics Workshop, Institute for Operations Research & Management Science (INFORMS) Annual Meeting, Phoenix (AZ), October 13–17, 2012.

- "Analysis of Uncertainty due to Calibration in Clinical Laboratory Measurement Systems" (talk); Industrial & Systems Engineering Research Conference (ISERC), Orlando (FL), May 19–23, 2012.

- "A Simulation-Based Methodology for Uncertainty Modeling and Analysis of Clinical Laboratory Measurement Processes" (talk, session chair); Industrial Engineering Research Conference (IERC), Reno (NV), May 21–25, 2011.

References will be provided upon request.