

CURRICULUM VITAE

R. Jerome Dixon, M.S., M.D.A., CDR, USN (Ret.)

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EDUCATION AND TRAINING

- **Ph.D. Candidate, Integrative Life Sciences** | Virginia Commonwealth University, Richmond, VA (2018–Present, Expected 2026).
 - **Major Advisor:** Elvin T. Price, Pharm.D., Ph.D., F.A.H.A.
Dissertation Research: Explainable AI, Pharmacogenomics, Opioid & Polypharmacy Risk Modeling, Large-Scale Claims Analytics.
- **Master of Decision Analytics (M.D.A.)** | Virginia Commonwealth University, Richmond, VA (2016–2018).
- **Master of Science (M.S.) in IT Management** | Naval Postgraduate School, Monterey, CA (2005–2007).
 - **Focus:** Enterprise IT Architecture, Operations Research, Systems Engineering, Logistics Analytics.
- **Bachelor of Science (B.S.) in General Engineering** | United States Naval Academy, Annapolis, MD (1993–1997).

MILITARY WARFARE QUALIFICATIONS & SPECIALIZED DESIGNATIONS

- **Surface Warfare Supply Corps Officer (SWO)** Breast Insignia.
- **Naval Aviation Supply Officer (NASO)** Breast Insignia (Designated June 2008 aboard USS John C. Stennis, CVN-74).
- **Joint Professional Military Education (JPME Phase I)** | College of Distance Education Command and Staff Diploma, Naval War College (December 2006).
- **Defense Acquisition University (DAU) Certifications** | Program Management Office (PMT 352), Earned Value Management, Systems Acquisition & Life Cycle Management.

LICENSURE AND CERTIFICATIONS

- **AWS Certified Solutions Architect – Professional**
- **AWS Certified Data Analytics – Specialty**
- **AWS Certified Machine Learning – Specialty**

PROFESSIONAL APPOINTMENTS AND EXPERIENCE

Academic & Healthcare Analytics

- **Graduate Research Fellow / PhD Researcher** | Integrative Life Sciences, Virginia Commonwealth University, Richmond, VA (2018–Present).
 - Architected adverse drug event and polypharmacy risk models utilizing the Virginia All-Payer Claims Database (APCD).
 - Applied ensemble machine learning models (XGBoost, CatBoost) integrated with Consensus Filtering, SHAP, and Formal Feature Attribution (FFA) to map drug interaction networks.
 - Engineered a serverless interactive risk dashboard on AWS (Lambda, S3, CloudFront, ECR, API Gateway) translating ensemble model outputs and scenario rules into clinical decision support.

- **Data Engineer | Data Scientist** | SurgicalEd VR (SlingVR Healthcare Startup), Richmond, VA (2023–Present).
 - Architected a centralized, serverless AWS data lake and automated ETL pipelines (Lambda, SQS, Step Functions) processing telemetry data from Unity VR headsets.
 - Developed advanced surgical motion research workflows for multi-modal VR simulation data (kinematics, haptics, task outcomes) evaluating surgeon proficiency during bladder sling installations.
 - Built embedded 3D trajectory visual components and QuickSight BI infrastructure for multi-tenant surgical training portals.
- **Data Scientist (Part-Time)** | UVA School of Data Science / UVA Health Pediatrics, Charlottesville, VA (2022–2026).
 - Engineered an end-to-end MLOps pipeline for predicting pediatric heart transplant graft loss utilizing advanced survival models (CatBoost-Cox, XGBoost-Cox, Accelerated Oblique RSF).
 - Operationalized SHAP and Formal Feature Attribution frameworks to derive causal responsibility scores, presenting findings at ISHLT.
- **Data Consultant** | Virginia Department of Behavioral Health and Developmental Services (DBHDS), Richmond, VA (2017–2022).
 - Provided data architecture and program policy consultation across behavioral health systems, supporting SAMHSA Youth Substance Abuse and Treatment initiatives.

Industry & Defense Consulting

- **Senior Operations Research Analyst** | CANA LLC - Analytics & Logistics Operations Experts, Richmond, VA (2017–Present).
 - Engineered the Supply Chain Open Source Intelligence (SC-OSI) serverless graph data lakehouse for the Department of the Air Force / AFRL strategic supply chain analytics program.
 - Designed event-driven business intelligence and supply chain risk frameworks on AWS (S3, Lambda, Step Functions, QuickSight) facilitating scenario modeling and 'What-If' Course of Action (COA) simulations for DLA and USMC.
 - Won the U.S. Census Bureau Phase I Supply Chain Challenge by formulating a time-series forecasting framework to improve economic indicator precision.

Military Leadership & Naval Officer Experience

- **Commander (CDR), Supply Corps** | United States Navy (1996–2016, Retired after 20 Years Active Duty).
 - Provided executive supply chain management, operational logistics, and financial oversight across 20 years of active naval service.
- **Director, F/A-18 Life Cycle Logistics & Chief, Weapons Systems Branch** | Defense Logistics Agency (DLA Aviation), Richmond, VA (2013–2016).
 - Led joint team expediting 7,146 mission-essential requirements for down aircraft; increased F/A-18 material availability from 83% to 90% and improved depot repair throughput by 44%.
 - Conceived and executed a sustainment plan recertifying obsolete German Air Force parts for the APG-65 radar, avoiding a \$20M redesign and testing effort and extending full system support to 2025.
- **IT Project Officer** | NAVSUP Business Systems Center, Mechanicsburg, PA (2009–2013).
 - Managed technical oversight, cost, and schedule for DoD enterprise logistics, procurement, and financial IT systems, including Supply Chain Event Management (SCEM) and Navy ERP cutover.
- **Readiness Officer (Supply Chain Director)** | USS John C. Stennis (CVN-74), Bremerton, WA (2007–2009).
 - Supervised 400+ personnel managing global material support, a \$120M annual operating budget, and \$500M in material assets (96,000 line items) for a nuclear aircraft carrier crew of 6,000.

- Key contributor to earning a 5th consecutive Blue 'E' for Supply Excellence and sustaining Carrier Air Wing Nine's 87% mission capability rating.
- **Air Logistics Routing Officer** | Naval Central Command / CTF-53, Bahrain (2004–2005).
 - Meticulously coordinated over 1,200 air logistics missions, 6,000 passenger movements, and 8M lbs of cargo, mail, and ammunition for 5th Fleet Strike Groups across the Middle East.
- **Contracting / Ordering Officer** | Coalition Provisional Authority, Basrah, Iraq (2003–2004).
 - Managed a workload of 320 reconstruction projects across southern Iraq valued over \$30M under hostile operational conditions, reducing procurement lead time from 14 to 4 days.
- **Assistant Supply Officer & Division Officer Roles** | Various Ashore & Afloat Commands (1998–2004).
 - Served as Assistant Supply Officer at FISC SIMA San Diego (2002–2004), Supply Officer on USS CURTS (FFG-38, 2000–2002), and Disbursing/Sales Officer on USS CLARK (FFG-11, 1999–2000).
- **Prior Enlisted Service & Naval Academy Preparatory School (NAPS)** | Newport, RI (1992–1993).

AWARDS, HONORS AND DECORATIONS

Civilian & Academic Honors

- **2023:** Winner, U.S. Census Bureau Phase I Supply Chain Challenge (Formulated time-series modeling framework replacing survey sampling).
- **2022:** Finalist / Contestant, NIH Long COVID Computational Challenge (Palantir / N3C Cloud Foundry platform).
- **2019:** Winner, Virginia Beach Bio Innovation Challenge, Center for Advancing Innovation.
- **2012:** Foreign Area Officer Association Award for International Affairs, Joint Forces Staff College (Winning paper: Afghanistan – A New Economic Model for Change).

Military Personal Decorations

- **Defense Meritorious Service Medal (DMSM)** — Awarded for exceptional service as Chief, Weapons Systems & Operations Sustainment Branch, DLA Aviation (2013–2016).
- **Joint Service Commendation Medal** — Awarded for joint logistics achievements.
- **Navy & Marine Corps Commendation Medal (4 Awards)** — Awarded for meritorious service aboard USS CURTS (FFG-38), FISC SIMA San Diego, COMLOGFORNAVCENT Bahrain, and USS John C. Stennis (CVN-74).
- **Joint Service Achievement Medal** — Awarded for contracting leadership with Regional Contracting Office - South, Coalition Provisional Authority, Basrah, Iraq (2003–2004).
- **Navy & Marine Corps Achievement Medal** — Awarded for superior performance as Assistant Supply Officer, USS CLARK (FFG-11).
- **Unit & Campaign Awards** — National Defense Service Medal (2), Global War on Terrorism Service Medal, Sea Service Deployment Ribbon, Overseas Service Ribbon, Rifle Sharpshooter, and Pistol Expert Medals.

PUBLICATIONS AND RESEARCH

Pharmacogenomics & Claims Analytics (with Dr. Elvin T. Price)

- 1. Dixon RJ, Price ET. Explainable AI and Pharmacogenomics for Opioid and Polypharmacy Risk: A Systematic Review. Journal of Personalized Medicine. Invited; pending formal acceptance (not accepted). PROSPERO CRD420261354089.
- 2. Dixon RJ, Price ET. Low cost big data framework for scalable claims analytics. (Journal Pending, DOI Pending).

- 3. Dixon RJ, Price ET. Temporal Drivers of Opioid-Related ED Visits: An Ensemble Machine Learning Study with Consensus-Based Feature Attribution. *Clinical and Translational Science*, 2026; 19:e70690. doi:10.1111/cts.70690.
- 4. Dixon RJ, Price ET. A SHAP-Informed Formal Feature Attribution Framework for Drug–Drug Interaction Risk in Large-Scale Claims Data. *Clinical and Translational Science*, 2026 (Accepted). doi:10.1111/cts.70718.
- 5. Dixon RJ, Price ET. A Serverless Pharmacogenomic Risk Dashboard: Translating Ensemble Models and Model-Based Scenario Rules to Clinical Decision Support. *Clinical and Translational Science*, 2026; 19:e70697. doi:10.1111/cts.70697.
- 6. Hashimi SR, Babatunde O, Alrajeh K, Dixon RJ, Okpeku A, Price ET. Pharmacogenomics in Clinical Practice for Older People. *Sr Care Pharm*, 2024 Apr 1;39(4):132-136. doi:10.4140/TCP.n.2024.132.

Surgical Simulation & Virtual Reality (VCU / ODU)

- 7. Siff L, Watson GS, Dixon J, Feldman M, Bost F, Giabbanelli PJ. Leveraging Virtual Reality and Haptics to Teach Surgical Skills: A Usability Study on Retropubic Midurethral Slings. *Digital*, 2026; 6(1):0018. doi:10.3390/digital6010018.
- 8. Siff L, Dixon J, Watson G, Bost LF, Giabbanelli PJ, Feldman M. What Makes an Expert Surgeon? Novel Metrics for Evaluating Skills in Simulation. *Urogynecology*, 2026. doi:10.1097/spv.0000000000001791.
- 9. Siff L, Dixon J, Bost FL, Feldman M. SlingVR: A Virtual Reality Surgical Training System for Haptic-based 'Blind' Surgical Procedures. *Journal of Minimally Invasive Gynecology*, 2026. doi:10.1016/j.jmig.2026.01.064.

Pediatric Heart Transplantation (UVA School of Data Science)

- 10. Grorud SD, Porter MD, Rajab TK, Dixon RJ, McCulloch M, Haregu F. Donation After Circulatory Death in Pediatric Heart Transplantation. *Pediatric Transplantation*, 2026. doi:10.1111/petr.70329.
- 11. Haregu F, Dixon RJ, McCulloch M, Porter M. Machine Learning for Predicting Waitlist Mortality in Pediatric Heart Transplantation. *Pediatric Transplantation*, 2025. doi:10.1111/petr.70095.
- 12. Haregu F, Dixon RJ, Porter M, McCulloch M. Pediatric Donor Heart Utilization Variability among Organ Procurement Organizations. *Pediatric Transplantation*, 2024. doi:10.1111/petr.14747.

Systems & Supply Chain Analytics

- 13. Dixon RJ. Using System Dynamics with Machine Learning for Modeling Patient Flow and Hospital Staffing Requirements. Chapter 1 in *Modeling and Simulation of Healthcare Systems*, KDP Publishers, Oct 2019. doi:10.13140/RG.2.2.23651.86564/1.
- 14. Dixon RJ. Supply Chain Event Management (SCEM). Naval Supply Systems Command Business Systems Center, Feb 2012; pp. 25–27.

PRESENTATIONS AND SCIENTIFIC ABSTRACTS

- 1. Dixon RJ. Formal Feature Attribution as a Causal Calculator For Drug–Drug Interaction Risk in Geriatric Polypharmacy: Evidence from a State-Level All-Payer Claims Database. 2026 INFORMS Healthcare Conference, Raleigh, NC, July 28–30, 2026. Oral presentation; session chair.
- 2. Haregu F, Dixon R, Porter M, Scharff J, McCulloch M. Machine Learning for Predicting Waitlist Survival in Pediatric Patients Awaiting Heart Transplantation. ISHLT 44th Annual Meeting & Scientific Sessions, Prague, Czech Republic, April 10–13, 2024.
- 3. Haregu F, Porter M, Dixon J, McCulloch M. Effect of Practice Variation Amongst Organ Procurement Organizations on Pediatric Donor Heart Utilization. ISHLT 43rd Annual Meeting, Denver, CO, April 19–22, 2023.

TECHNICAL SKILLS AND ANALYTICAL DOMAINS

- **Programming & Analytics:** Python, R (bupaR, CatBoost, survival), SQL, TypeScript, C++/CMake, Linux Bash, Quarto, DuckDB, Parquet.
- **Cloud Architecture & MLOps:** AWS (Lambda, S3, DynamoDB, Fargate, EC2, Step Functions, EMR, Athena, Glue, QuickSight, CloudFront, API Gateway, Bedrock, Cognito), Docker, CI/CD pipelines.
- **Analytical Domains & AI:** Pharmacogenomics, Claims Analytics (APCD), Explainable AI (SHAP, Formal Feature Attribution), Operations Research, System Dynamics, Discrete Event Simulation, Surgical VR Telemetry Analytics, Supply Chain Risk Management.