

MARIANNE S. COSGROVE,

PHD, DNAP, CRNA, APRN, FAANA

EDUCATION

2013-2019 **Virginia Commonwealth University** Richmond, VA

Doctor of Philosophy in Health Related Sciences: Nurse Anesthesia

August 2019

2009-2011

Doctor of Nurse Anesthesia Practice

May 2011

1988 - 1993 **Central Connecticut State University** New Britain, CT

Master of Science: Biological Sciences: Anesthesia

May 1993

Yale New Haven Hospital School of Nurse Anesthesia

(Formerly Hospital of St. Raphael School of Nurse Anesthesia) New Haven, CT

Nurse Anesthesia Diploma

October 1990

1980 - 1984 **Salve Regina University** Newport, RI

Bachelor of Science in Nursing; Minor: Biology

June 1984

1979 - 1980 **Fairfield University** Fairfield, CT

Major: Biology

PROFESSIONAL EXPERIENCE

1990 - present Yale New Haven Hospital
New Haven, CT

Staff Certified Registered Nurse Anesthetist (CRNA)

- Formerly Hospital of St. Raphael/Anesthesia Associates of New Haven, P.C.; transition to YNHH on April 1, 2014.
- Provision of expert and comprehensive anesthetic care of the client during the perioperative period
- Proficient in administration of general anesthesia, monitored anesthesia care, total intravenous anesthesia, deep sedation, administration of neuraxial anesthesia, placement of invasive monitors
- Didactic and clinical instructor for student registered nurse anesthetists
- Member of the Anesthesia Subcommittee to the Pharmacy
- Airway consultant for the hospital “254” (code blue) team
- Anesthesia liaison and support member for the Women’s Center for Breast Health

April 2013 - present

Yale New Haven Health
 Yale New Haven Hospital School of Nurse Anesthesia
 New Haven, CT

Program Director

- Oversight of all operations of the nurse anesthesia program: interview of applicants, management and evaluation of student clinical experiences (on and off-site), continual review and refinement of curriculum, delivery of didactic lectures, clinical precepting, Doctoral Scholarly Project mentoring, student and faculty mentoring / counseling, communication with YNHH leadership and accrediting body, and all administrative functions
- Continued engagement in active clinical practice (weekly)

April 2014 – June 2019

Yale University
 Yale Medical Group
 New Haven, CT

Instructor (clinical and didactic)

January 2019 – present

American Association of Nurse Anesthesiology (AANA) Journal

Journal Reviewer (1/2019-8/2021)

Journal Editorial Panel (8/2021-present)

January 2014 – present

International Student Journal of Nurse Anesthesia

Contributing Editor

July 2021 – present Anesthesia Quality at Yale

Peer Review Committee member

July 2005 - present Core Concepts Anesthesia Review, LLC
Longboat Key, FL

Business founder, co-owner and lecturer

- Review course designed to ready the Student Registered Nurse Anesthetist for the National Certification Exam and to provide the CRNA with a review of basic and advanced anesthetic principles
- Live reviews administered at various anesthesia programs nationally; ongoing practice examinations, “Question of the Day” and *CoreNotes*® provided via website at www.ccanesthesiareview.com.

September 1993 – December 2005;

January 2018-present Central Connecticut State University
New Britain, CT

Assistant Professor: Department of Biology (1993-2024); Department of Nurse Anesthesia Practice (2024 – present)

Courses:

- BIO 528: Advanced Pharmacology (1993-2005)
- DNAP 730: Human Factors and Patient Safety for Nurse Anesthetists (2018-present)
- DNAP 736: Evidence-based Practice and Biostatistics (2018-present)
- DNAP 739: Advanced Topics in Pharmacology (2018-present)
- DNAP 744-747; 754-57: Doctoral Scholarly Project Advisor (2018-present)
- ANES 590: Clinical Correlation Conference (2006-present; now included in NAR 733, 734)
- ANES 500-502; (supplemental enrichment) (2017-present)
- NAR 730-735 (2017-present)

September 2011 – January 2014 Virginia Commonwealth University College of Health
Professions
Richmond, Virginia

Teaching Assistant: Department of Nurse Anesthesia

- Biostatistical Methods for Health-Related Sciences (ALHP 760-002)
- Developed curriculum, graded exams and projects, instruction via distance education

December 1994 – April 2014 Yale New Haven Hospital
New Haven, CT

Staff CRNA - Obstetrical Service

- Anesthetic care of the parturient; proficient in the administration of spinal, epidural, combined spinal-epidural and general anesthesia (per diem position; 8-16 hours/month)

July 2006 – April 2013

Hospital of St. Raphael School of Nurse Anesthesia
New Haven, CT

Assistant Program Director

- Support of HRSNA's Program Director in all operations of the anesthesia program

July and August 1997

Anesthesia Associates of New Haven, P.C.
New Haven, CT

Acting Coordinator-Acute Pain Service (APS)

- Care and follow-up of patients on the APS
- Modalities for pain control included use of patient-controlled analgesia (PCA), continuous lumbar epidurals, intermittent lumbar and thoracic epidural narcotics, and intrathecal narcotics

May 1987 - May 1988

Yale New Haven Hospital
New Haven, CT

Staff Registered Nurse (RN)-Operating Room

- Proficient as circulating RN and surgical technician

May 1985 - May 1989

Yale New Haven Hospital
New Haven, CT

Staff RN-Newborn Special Care Unit

- Cared for acutely and chronically ill newborns and their families
- Precepted new staff members
- Engaged in charge responsibilities (nights)
- Member of Neonatal Transport Team
- Per diem status from 5/87-5/89 while employed in the YNHH OR and during didactic portion of nurse anesthesia program to maintain critical care skills

October 1984 - May 1989

Yale New Haven Hospital
New Haven, CT

Childbirth Educator-Perinatal Education Program

- Instructed expectant clients about the process of labor and delivery, Lamaze and relaxation techniques, and basic infant care skills

August 1984 - May 1985

Yale New Haven Hospital
New Haven, CT

Staff RN-Obstetric Service

- Provided care to postpartum clients and neonates
- Engaged in charge responsibilities (day and night shifts)

PROFESSIONAL HONORS AND AWARDS

August 2021

Inducted into the inaugural class of Fellows of the American Association of Nurse Anesthetists (FAANA)

September 2019

YNHH Surgical Services Hackathon Grand Prize Winner: *Reducing Nosocomial / Surgical Site Infection: Personal Device Protection and Decontamination*

January 2019

Medical College of Virginia Foundation Research Grant

August 2014; January 2016

VCU College of Health Professions A.D. Williams Doctoral Award

March 2011

Inducted into the Golden Key International Honour Society – VCU Chapter

October 1997

Hospital of St. Raphael School of Nurse Anesthesia Program Director's Appreciation Award

October 1990

Agatha Hodgins C.R.N.A. Memorial Award for the outstanding Graduate Nurse Anesthetist
Roche Nurse Anesthesia Award for academic excellence in the anesthesia program

January 1989

Central Connecticut State University Graduate Student Academic Scholarship

February 1986

Inducted into Sigma Theta Tau-The International Honor Society of Nursing - Delta Mu Chapter:
Yale School of Nursing

CERTIFICATIONS

National Board of Certification & Recertification for Nurse Anesthetists: January 1991 - present

American Heart Association: Basic Life Support (BLS): March 1982 - present

American Heart Association: Advanced Cardiac Life Support (ACLS): October 1995 - present

American Heart Association: Pediatric Advanced Life Support (PALS): April 2008 – present

Reiki I: March 2008

Reiki II: August 2008

Collaborative Institutional Training Initiative (CITI): June 2010 – present
Institute for Healthcare Improvement (IHI) Basic Quality and Safety: December 2013
Point-of-Care Ultrasound (POCUS) Fundamentals: June 2021

PROFESSIONAL ASSOCIATIONS

The American Association of Nurse Anesthesiology (AANA)
The Connecticut Association of Nurse Anesthesiology (CTANA)
The New England Assembly of School Faculty (NEASF)

- Secretary: March 2015 – June 2016
- Chair: June 2016 – March 2018

PUBLICATIONS

Garceau C, **Cosgrove MS**, Gonzalez K. Inadvertent perioperative hypothermia: etiology, effects, and prevention. *AANA J.* 2023; 91(3):303-309.

Boulis M, Boulis M, **Cosgrove M**, He K. Characteristics and treatments of coronavirus disease 2019 patients presenting with persistent hiccups: a scoping review. *Clin Neuropharmacol.* 2023; 47(4):157-163.

Jockel K, Lee A, **Cosgrove MS**, Reilly D, Wijesekera S. The administration of tranexamic acid for complex spine surgery. *AANA J.* 2023;91(1):63-70.

Cosgrove MS. Beckwith-Wiedemann syndrome. In: Furstein JS. *Pediatric anesthesia: a comprehensive approach to safe and effective care.* Springer; 2023:240-243.

Cosgrove MS. Treacher-Collins syndrome. In: Furstein JS. *Pediatric anesthesia: a comprehensive approach to safe and effective care.* Springer; 2023:286-289.

Cosgrove MS. Case plan template (Appendix D). In: Furstein JS. *Pediatric anesthesia: a comprehensive approach to safe and effective care.* Springer; 2023:701.

Cosgrove MS. Perceived impact of ambient operating room noise by certified registered nurse anesthetists. *VCU Scholars Compass.* June 2019. <https://scholarscompass.vcu.edu/etd/5963/>

Cosgrove MS. Operative care of obstetric patients. *Crit Care Nurs Clin N Am.* 2015;27(1):89-103. <http://dx.doi.org/10.1016/j.cnc.2014.10.003>

Cosgrove MS. Infection control in the operating room. *Crit Care Nurs Clin N Am.* 2015;27(1):79-87. <http://dx.doi.org/10.1016/j.cnc.2014.10.004>

Cosgrove MS. Anesthesia for the adult patient with an unrepaired congenital cyanotic heart defect: A case report. *AANA J.* 2012;80(3):197-203.

Reilly C, **Cosgrove MS** (Faculty Mentor). Tracheal injury after lobectomy and DLT. *Int Student J Nurs Anesth.* 2016;15(3):49-52.

Guilmette D, **Cosgrove MS** (Faculty Mentor). Case study of a patient with mitochondrial cytopathy. *Int Student J Nurs Anesth.* 2020;19(1):58-61.

Raju R, **Cosgrove MS** (Faculty Mentor). Anesthetic management for a parturient with Brugada syndrome. *Int Student J Nurs Anesth.* 2020;19(1):72-75.

Ciaburri J, **Cosgrove MS** (Faculty Mentor). Hypercoagulability in COVID-19 patients. *Int Student J Nurs Anesth.* 2020;19(2):23-29.

Tuthill R, **Cosgrove MS** (Faculty Mentor). An interesting case of delayed emergence after bronchoscopy. *Int Student J Nurs Anesth.* 2020;19(2):53-57.

Minitier C, **Cosgrove MS** (Faculty Mentor). Anesthetic management of a parturient with dilated cardiomyopathy. *Int Student J Nurs Anesth.* 2020;19(2):70-74.

Szarkowicz A, **Cosgrove MS** (Faculty Mentor). Tumescient fluid in plastic surgery: anesthetic considerations. *Int Student J Nurs Anesth.* 2020;19(2):84-86.

Houde L, **Cosgrove MS** (Faculty Mentor). Management of hypertension during carotid body tumor resection. *Int Student J Nurs Anesth.* 2021;20(1):34-37.

VanBruggen S, **Cosgrove MS** (Faculty Mentor). Case study of a patient with a cerebrospinal fluid leak. *Int Student J Nurs Anesth.* 2021;20(1):38-41.

Sipperly J, **Cosgrove MS** (Faculty Mentor). Bone cement implantation syndrome. *Int Student J Nurs Anesth.* 2021;20(1):59-62.

Federico A, **Cosgrove MS** (Faculty Mentor). Annulus rupture during a transcatheter aortic valve repair. *Int Student J Nurs Anesth.* 2021;20(2):15-18.

Brown H, **Cosgrove MS** (Faculty Mentor). Anesthetic care of the patient with CHARGE syndrome. *Int Student J Nurs Anesth.* 2021;20(3):5-8.

McLeish M, **Cosgrove MS** (Faculty Mentor). Case report of a patient with subclavian steal syndrome. *Int Student J Nurs Anesth.* 2021;20(3):8-11.

Barbessi S, **Cosgrove MS** (Faculty Mentor). Failed spinal in a parturient: a case report. *Int Student J Nurs Anesth.* 2022;21(1):23-26.

Bladek C, **Cosgrove MS** (Faculty Mentor). Intraoperative anaphylactic versus anaphylactoid reaction. *Int Student J Nurs Anesth.* 2022;21(1):40-43.

Coiro T, **Cosgrove MS** (Faculty Mentor). Case study of a patient with mast cell activation syndrome. *Int Student J Nurs Anesth.* 2022;21(1):33-36.

DaSilva S, **Cosgrove MS** (Faculty Mentor). Anesthetic considerations for a pediatric patient with mastocytosis. *Int Student J Nurs Anesth.* 2022;21(1):30-33.

Kellner D, **Cosgrove MS** (Faculty Mentor). Argatroban: a non-heparin alternative during carotid endarterectomy. *Int Student J Nurs Anesth.* 2022;21(1):37-40.

Kveton E, **Cosgrove MS** (Faculty Mentor). Systolic anterior motion of the mitral valve after coronary artery bypass. *Int Student J Nurs Anesth.* 2022;21(1):47-50.

Thompson M, **Cosgrove MS** (Faculty Mentor). Anesthesia for noncardiac surgery after recent percutaneous coronary intervention. *Int Student J Nurs Anesth.* 2022;21(1):43-47.

Gregorczyk M, **Cosgrove MS** (Faculty Mentor). Anesthetic management of a patient with Kennedy's disease. *Int Student J Nurs Anesth.* 2022;21(2):11-15.

Robarge G, **Cosgrove MS** (Faculty Mentor). Anesthetic management of an adult patient with Fontan physiology. *Int Student J Nurs Anesth.* 2022;21(3):18-22.

Fatse C, **Cosgrove MS** (Faculty Mentor). Anesthetic management of a vallecular cyst. *Int Student J Nurs Anesth.* 2023;22(1)11-14.

Cooke S, **Cosgrove MS** (Faculty Mentor). Anesthetic management of patient with Klippel-Trenaunay Syndrome. *Int Student J Nurs Anesth.* 2023;22(1)14-18.

Miller B, **Cosgrove MS** (Faculty Mentor). A patient with multifocal venous malformations of the upper extremity. *Int Student J Nurs Anesth.* 2023;22(1)25-28.

Houlihan R, **Cosgrove MS** (Faculty Mentor). Anesthetic management of a pediatric patient with Russell-Silver Syndrome: a case report. *Int Student J Nurs Anesth.* 2023;22(2):6-8.

Lazaroff C, **Cosgrove MS** (Faculty Mentor). Bradycardia and cardiac arrest following sugammadex administration. *Int Student J Nurs Anesth.* 2023;22(2):15-18.

McKeeman J, **Cosgrove MS** (Faculty Mentor). Anesthetic management of a pediatric patient with Prader-Willi syndrome. *Int Student J Nurs Anesth.* 2023;22(3):6-9.

Pipitone D, **Cosgrove MS** (Faculty Mentor). Case report of a patient with May-Thurner syndrome. *Int Student J Nurs Anesth.* 2024;23(1):6-9.

Devlin E, **Cosgrove MS** (Faculty Mentor). Case study of a laboring parturient with mast cell activation syndrome. *Int Student J Nurs Anesth.* 2024;23(1):35-39.

PRESENTATIONS

Post-operative Pulmonary Edema.

Connecticut Society of PeriAnesthesia Nurses (CSPAN), New Haven, CT; March 2009.

Connecticut Association of Nurse Anesthetists (CTANA), Meriden, CT; March 2014.

Planes to Patients: Embracing a Culture of Safety.

Connecticut Society of PeriAnesthesia Nurses (CSPAN), Hartford, CT; March 2011.

Yale New Haven Hospital Advanced Practice Provider (APP) Symposium, New Haven, CT; October 2016.

The Experience of the Student Registered Nurse Anesthetist: Do We Need Stress Reduction Curriculum in our Anesthesia Programs? Poster presentation: AANA National Convention, Boston, MA; August 2011.

Use of the Laryngeal Mask Airway. Hospital of St. Raphael Department of Cardiology; July 2012.

Airway on Demand. Preceptor at Difficult Airway Workshop (supraglottic devices, channel scope, cricothyrotomy lab; fiberoptic bronchoscopy, Syndaver intubations). Yale New Haven Hospital; March 2013, April, November 2014, February 2019, February 2021.

Use of the Syringe Pump/Delivery of Propofol via Continuous Infusion. Yale New Haven Hospital Department of Oral and Maxillofacial Surgery, August 2013; May 2016.

Klippel-Feil Syndrome: A Case Report. Faculty mentor (Ruth Hammerschmidt, RN); Poster presentation: American Association of Nurse Anesthetists Annual Congress, Orlando, FL; August 2014.

Post-obstructive Pulmonary Edema

Neonatal Surgical Emergencies

Nurse Anesthesiology Faculty Associates (NAFA)

Williamsburg, VA; November 2013.

Hilton Head, SC; May 2014.

Making Do With What's Left: The Impact of Drug Shortages on Anesthesia Practice

Anesthesia for the Patient with Hepatic Disease

NAFA

Williamsburg, VA; November 2014.

Orlando, FL; December 2014.

Anesthetic Agents and Adjuvants

Yale New Haven Hospital – St. Raphael Campus Perioperative Staff RN inservice; February 2015.

Making Do With What's Left: The Impact of Drug Shortages on Anesthesia Practice

Connecticut Association of Nurse Anesthetists (CTANA), Norwich, CT; March 2015.

Molloy B, Watson C, Stone K, French C, Vaughn D, **Cosgrove M**, Marando R. *Perioperative Cosopt for Rising Intraocular Pressure During Steep Trendelenburg Surgery*. Poster presentation: Yale New Haven Hospital Joseph Zaccagnino Patient Safety and Clinical Quality Conference, Bridgeport, CT; May 2015.

Physiologic Changes of Pregnancy
Pediatric Cardiac Anomalies
Anesthesia for the Patient with Metastatic Disease
NAFA, Hilton Head, SC; May 2016.

Local Anesthetics, LAST and Intralipid 20%
Yale New Haven Hospital – St. Raphael Campus Labor and Delivery Staff RN in-service; November 2016.
YNHH St. Raphael Campus Perioperative Staff RN in-service; May 2017.
Quinnipiac University Rapid Fire Conference, North Haven, CT; February 2019.
YNHH AM Meeting for CRNAs, New Haven, CT; April 2022.
Mississippi Association of Nurse Anesthetists (virtual); January 2023.
Nurse Anesthesiology Residents Association (NARA); NY, NY; July 2023.

Anesthesia for the Cancer Patient
Connecticut Association of Nurse Anesthetists (CTANA), Cromwell, CT; March 2017.
Lewis Anesthesia for CE: Updates in Anesthesia, Meriden, CT; June 2017.
AANA Annual Congress, Boston, MA; September 2018.
Massachusetts General and North Shore Partners Anesthesia (virtual); April 2018.
New England Assembly of Student Registered Nurse Anesthetists (NEASRNA), virtual; January 2021.

Strategies for the Management of One-lung Ventilation
Middlesex Anesthesia Department Grand Rounds, Middletown, CT; June 2017.

Certified Registered Nurse Anesthetists: History to Present Day
National Student Leadership Conference (NSLC) at Yale University, New Haven, CT; June, July 2017; July, August 2018; July 2019.
Hamden High School Health Sciences Club (virtual); January 2021.

Diversity CRNA Information Session Faculty panel member; Simulated epidural preceptor
Drexel University, Philadelphia, PA; November 2017; Columbia University (virtual); October 2020; Fairfield University, October 2024.

Supraglottic Devices: LMA vs. iGel.
MH Update: Use of Ryanodex.
Yale New Haven Hospital Department of Oral and Maxillofacial Surgery; January 2018
YNHH St. Raphael Campus Perioperative Staff RN in-service, December 2018.

Effective Clinical Precepting. YNH APP Grand Rounds, June 2019.

Art Zwerling Consensus Conference: (Re) Defining a Healthy Workplace. New England Assembly of School Faculty (NEASF) Faculty Development Workshop. Northeastern University. **Breakout Session Facilitator**, September 2019.

Perceived Impact of Ambient Operating Room Noise by Certified Registered Nurse Anesthetists. Poster presentation: AANA Assembly of Didactic and Clinical Educators (ADCE), Braselton, GA; February 2020.

Perceived Impact of Ambient Operating Room Noise by Certified Registered Nurse Anesthetists. CTANA Annual Meeting (virtual); March 2021.

NAFA (virtual); June 2021.

Beyond the Mask: Innovation & Opportunities for CRNAs Podcast #166; November 2021.

Selected for podium presentations AANA Annual Congress, San Diego, CA; August 2020 and Austin TX, August 2021; both meetings canceled due to COVID-19.

Effectiveness of Structured Review on Performance of Adult Learners on Standardized Exams. NAFA (virtual); June 2021.

Ultrasound for Everyday Practice: Point of Care Ultrasound and U/S-guided Vascular Placement Workshop. New England Assembly of School Faculty (NEASF) 23rd Faculty Development Workshop. Workshop coordinator; podium presentations: Why PoCUS?; Lung Ultrasound. Facilitator: hands-on pleural scan station.

Pharmacogenetics and Pharmacogenomics

Mississippi Association of Nurse Anesthetists (virtual); January 2023.

Anesthesia 101 for Advanced Practice Providers

YNHH APP virtual meeting; January 2023.

DOCTORAL SCHOLARLY PROJECTS (CHAIR)

Multi-faceted Educational Program for Green Initiatives: Recycling and Waste Management at Yale New Haven Hospital. YNH York St. Campus, December 2018. Deborah Stone-Burns, CRNA, MS.

Exploration of the Perceived Barriers to Volunteerism on Surgical Short-term Medical Service Trips among Certified Registered Nurse Anesthetists. University of Kansas Medical Center, August 2019. Josie Bell, CRNA, MSN.

The Benefit of an Educational Session for the Application of Non-invasive Hemodynamic Monitoring for Goal-directed Fluid Therapy. YNH SRC Campus, January 2020. Victoria Piacquadio, RN, BSN, CCRN.

Orientation to Emergency Equipment for SRNAs in the Perioperative Setting Via a Simulation-based Enrichment Workshop. YNHHSRC Campus, January 2020. Ranji Raju, RN, BSN, CCRN.

Nurse Anesthetist Led Airway Management Training Program for the Critical Care Transport Team. YNHHS York Street Campus, November 2020. Laura Fabula, RN, BSN, CCRN and Shana VanBruggen, RN, BSN, CCRN.

Implementation of a Preoperative ERAS Urological Surgery Checklist. YNHHSRC Campus, October 2020. Kyle Ryan, CRNA, MSN, APRN.

The Effects of Steep Trendelenburg on Ocular Health with Guidelines for Perioperative Eye Care. January 2021. Joshua Raffa, RN, BSN, CCRN.

The Administration of Tranexamic Acid for Complex Spine Surgery. December 2021. Kristen Jockel, CRNA, MS, APRN and Amanda Lee, CRNA, MS, APRN.

Continuing Education on Domestic Violence and Sexual Assault: Meeting the State of Connecticut Advanced Practice Registered Nurse Practitioner License Renewal Requirements. November 2021. Samantha Barbessi, RN, BSN and Susan DaSilva, RN, BSN.

Crisis Resource Management (CRM) Simulation for Perioperative Staff: Massive Transfusion Protocol: A Pilot Project. October 2022. Christina Fatse, RN, BSN and Gabrielle Robarge, RN, BSN.

Recommendations for Newly Certified Registered Nurse Anesthetists: Optimizing Transition to an Advanced Practice Role. November 2022. Gerald Murphy, CRNA, MS.

A Pilot Survey of Certified Registered Nurse Anesthetist Injection Practices: Are We Normalizing Deviance? March 2023. Alejandro Bautista, CRNA, MS and Brittany Owen, CRNA, MS. Poster presentation of findings at CTANA/NYSANA Meeting March 2023, Mystic CT.

Reduction in Dental Damage due to Anesthesia: Development of a Preoperative Assessment Template. (2nd reader) Jeenu Zacharias, CRNA, MS. Poster presentation at YNHHS, April 2023.

RESEARCH PROJECTS

A Preventive Intervention for Rising Intraocular Pressure in Steep Trendelenburg Position Surgical Patients: Development of the Molloy/Bridgeport Anesthesia Associates Observation Scale-An Observation Study. Primary site investigator, Yale New Haven Hospital - St. Raphael Campus, New Haven, CT (Initial study 10/2011-8/2012; Phase II [Chemosis Observation Study] 8/2012-2017).

Perceived Impact of Ambient Operating Room Noise by Certified Registered Nurse Anesthetists.
PhD dissertation, Virginia Commonwealth University College of Health Professions, June 2019.

Rev. 09/2023