



E116 The Lessons Learned in Teaching Forensic Toxicology From “Wet Lab” to “Lab Bench”

Michelle R. Peace, PhD, Virginia Commonwealth University, Richmond, VA 23284; David Nigro, BS, Virginia Commonwealth University, Richmond, VA 23219; Aaron Lavigne, BS, Virginia Commonwealth University, Richmond, VA 23219; John Venuti, BS, Virginia Commonwealth University, Richmond, VA 23219; Justin L. Poklis, BS, Virginia Commonwealth University, Richmond, VA 23219-0613*

Learning Overview: The goal of this presentation is to identify the elements and challenges in developing the full arc of an experiment from the field to the bench that involves human participants and the regulatory requirements.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by identifying solutions to challenges in developing robust, engaged, field-to-bench education modules for students learning the practice of forensic toxicology.

The Forensic Science Education Programs Accreditation Commission (FEPAC) -accredited Department of Forensic Science (DFS) at Virginia Commonwealth University (VCU) has a three-year average of 320 undergraduate majors and 20 masters-level graduate students. Since the inception of the DFS as a stand-alone academic unit in 2000, a three-credit graduate lecture course in forensic toxicology has been a requirement for master students on the Drugs and Toxicology Track. An accompanying laboratory course was established Spring 2019 as a result of policy shifts that enabled faculty to build and teach this course. The laboratory course focused on standard analytical techniques encountered in the forensic toxicology sub-disciplines of urine drug testing, postmortem toxicology, and Driving Under the Influence (DUI) testing. The course was co-taught and utilized the combined experience of both faculty members to develop the laboratory module as the course was being implemented. In a collaboration with the course faculty and with the generous help of VCU's Police Department (VCU PD), a laboratory module was developed that would take the student from the field to the laboratory. The purpose of this laboratory module was to have students perform the analysis of blood for volatile compounds, including ethanol, improve their understanding of the effects of ethanol and of zero order elimination, and to observe the Standardized Field Sobriety Test (SFST) by trained Law Enforcement Officers (LEO) in a safe environment to facilitate questions and engagement.

The development of this laboratory module involved VCU PD running a wet laboratory re-training session for their officers to review and practice SFSTs. The wet laboratory was conducted as required by the accreditation standards for the law enforcement academy. Volunteer drinkers were enlisted. The volunteers were given Preliminary Breath Alcohol Test (PBAT) at routine intervals before and after the SFST was administered. An on-site registered nurse collected blood from the volunteers prior to drinking and immediately before the SFST was conducted in compliance with requirements of the DFS's Institutional Review Board (IRB) protocol (HM20002931 CR3) for de-identified collections. Students were provided a lecture prior to the wet laboratory regarding DUI laws and the SFST by an instructor in the VCU PD Police Academy. The student observed the SFST performed by LEO as re-training and review. The collected PBT, blood specimens, and the SFST results recorded by the LEO were de-identified and given to the students for bench analysis. The student used the PBT results to generate an ethanol elimination curve, and they analyzed the blood samples by headspace Gas Chromatograph with Flame Ionization Detectors (GC/FID). The students then correlated the results of the PBT, Blood Alcohol Concentration (BAC), and the SFST results.

Education, Toxicology, Wet Lab