

CATCH THEM YOUNG - THE JOURNEY TO INTEGRATE BIOLOGICAL RISK MANAGEMENT KNOWLEDGE IN THE NIGERIAN UNIVERSITY CURRICULUM

Agbaje Michael¹, Dzikwi-Emennaa Asabe², Wachukwu Confidence³, Abdulkareem Fatimah Biade⁴, Torimiro Nkem⁵, Nafarnda Wesley⁶, Dutsinma Usman Aliyu⁷, Wariso Kennedy⁸, Junaidu Kabir⁹, Wudiri George¹⁰

¹Federal University of Agriculture Abeokuta (FUNAAB), ²University of Jos, ³Rivers State University, ⁴University of Lagos, ⁵Obafemi Awolowo University (OAU), ⁶University of Abuja, ⁷Bayero University, ⁸University of Port Harcourt, ⁹Ahmadu Bello University (Nigeria), ¹⁰Sandia National Laboratories, USA.



Students and interns form a key group of laboratory personnel that routinely handle biological materials. These future laboratory professionals need training to recognize the risks associated with biological work. Nigeria has hundreds of biological laboratories within the medical, natural, and veterinary science schools where these students are trained. With support from US DTRA-BTRP and Sandia National Laboratories, a high-level national cohort of University deans, professors and representatives from the human, veterinary, and natural professional councils met starting in March 2021. In view of the Nigerian educational structure and complexities, a one-health and centralized effort was adopted by stakeholders to create a locally-relevant biorisk management curriculum for integration into the undergraduate curriculum of these existing programs. This allows for intersectoral collaboration, standardization, and quality control that ensures that basic risk management, biosafety and biosecurity knowledge and skills are introduced in a relevant and audience-appropriate manner in the country.

APPROACH

1. Building a National One Health BRM Curriculum Coalition:

- *March 2021 central in-person kick off.*
- Multisectoral Stakeholders:
 - National Universities Commission (NUC)
 - Medical, Veterinary, Medical Lab Science Professional Councils of Nigeria (MDCN, VCN, MLSCN)
 - Deans, Heads of Department, and Professors from 17 Science, Medical, & Veterinary Colleges
 - National Postgraduate Medical College of Nigeria
 - National Veterinary Research Institute Vom
- Central Coordinating & Outreach Committee:
 - Comprised at least 2 representatives from Medical Laboratory Sciences, Veterinary, & Medical professions
- Curriculum drafting teams:
 - Organized 6 multi-sectoral teams focused on developing each of the agreed-upon student learning objectives.
- Meeting formats:
 - Held remote sessions (April 2021 – present)
 - In-person (March 2021, May 2022, Fall 2022)



2. Curriculum Mapping & Consensus Strategy:

- *Collectively reviewed curriculum for the different disciplines.*
- *Mapped the common core courses and identified BRM needs across the disciplines.*
- *Defined 6 consensus student learning objectives (SLO's).*
- *Adopted "Patch work" approach for integrating BRM into existing curriculum as consensus strategy.*

3. Consensus Student Learning Objectives (SLO):

- *SLO-1: Understand risks associated with biological work and the framework for BRM.*
- *SLO-2: Understand and conduct a basic biosafety risk assessment.*
- *SLO-3: Understand the core strategies for mitigating biosafety risks.*
- *SLO-4: Understand the pillars for mitigating biosecurity risks.*
- *SLO-5: Understand what biorisk performance evaluation is, and its importance.*
- *SLO-6: Appreciate the relevance of BRM as part of the global health security mandate.*

4. Developing locally-adapted content:

- *Leverage the SNL GBRMC library and incorporate adult learning techniques in material design.*
- *Ensure that experiential formats are well integrated during course of the students multi-year academic progression.*
- *Ensure that materials are adapted to be culturally relevant and suitable for a wide uncontrolled audience.*

5. Next Steps:

- *Stakeholder peer-review and planning of roll out strategies.*

Conclusion: *Incorporating laboratory biosafety and biosecurity knowledge and competencies in university curriculum is a strategic path to sustainability in Nigeria's public health and biosecurity posture. The One Health approach emerged as a solution to the practical constraints of resources. Despite its challenges, this approach serves to strengthen interdisciplinary collaboration, and ensures control and standardized quality of biosafety training across the country. Upon completion, this is effort promises to be a major accomplishment toward enhancing laboratory biorisk management in Nigeria.*

Acknowledgements: *We are grateful for the engagement funding and support from US DTRA-BTRP to attend ABSA conference. We appreciate Sandia National Laboratories USA for the extensive training, mentorship and GBRMC library resource. We thank ABSA international for the conference opportunity. Contact: mikeagbaje@gmail.com; asabezik@yahoo.com*