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Dr. Mark Kaddu Mukasa

Message from the Program Director

Dear Reader

Effective communication for research trainees Greetings from the Brain Health training program. We are pleased to present to you the second edition of the brain health newsletter. Currently, we are completing year two of the brain health program implementation and have made great strides in accomplishing what we proposed to achieve, in spite of the COVID pandemic. Innovations like zoom meetings/ trainings as well as having blended training sessions have greatly helped.

This newsletter offers opportunities for the trainees to learn how to communicate their research experiences to the wider community. Learning scientific communication is part and parcel of a scientist's everyday life. Brain health training program emphasizes communication hence trainees learn how to give talks, write

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papers and proposals, communicate with a variety of audiences, and educate others. This sets trainees on a path for successful research communication. Providing students with sufficient opportunities to practice science communication is very helpful to our trainees.

When trainees are able to communicate effectively beyond their peers to broader, non-scientist audiences, it builds the necessary support for science. It also promotes a better understanding of science and its relevance to the wider society. Better understanding and utilization of research findings usually results in better informed decision-making especially in health related decisions that impact communities and individuals.

It also makes science knowledge

and research findings accessible to audiences that have been traditionally excluded from the process of science. It also makes science more diverse and inclusive especially within less privileged societies and gender.

The articles in this newsletter highlight the various research topics and experiences during this program. This newsletter has research articles ranging from traumatic brain injury, newborns with low Apgar scores, blood pressure control in stroke survivors and depression genetics in Uganda.

We look forward to further interactions with our trainees and faculty and having a better understanding of scientific communication skills to further propel them to higher levels within their specific fields.



MakCHS-UMU
**Brain Health
PROGRAM**





EFFECTS OF AN EDUCATIONAL INTERVENTION ON THE ACCEPTABILITY OF THE FULL OUTLINE OF UNRESPONSIVENESS (FOUR) SCORE AMONG HEALTH WORKERS AT MBARARA REGIONAL REFERRAL HOSPITAL: A PILOT STUDY .

By Tom Obongo, Resident Critical Care Nurse, Mbarara University of Science and Technology (MUST).

I am a graduate of Bachelor of Science in Nursing from Mbarara University of Science and Technology (MUST), I was also awarded a Post graduate Diploma in Hospital and Healthcare Management from Uganda Management Institute. Currently, am a year 2 postgraduate student of master of nursing in critical care at Mbarara University of Science and Technology.

I have 11 (Eleven) years of experience providing nursing care/ service through participation in preventive, curative and rehabilitative interventions. I also participate in educational training and research during my service. I have demonstrated leadership and innovation to successfully and competently deliver results while championing accountability, monitoring and evaluation, learning, team and capacity building. Promoting, practicing and helping others in valuing and respecting diversity of gender, culture, opinions and ideas. Performing effectively in unstable, uncertain, or risky environment while maintaining physical and mental health with minimum supervision.

Research project:

Research is one of the prerequisites for the award of Masters of Nursing Science in Critical Care Nursing of Mbarara University of Science and Technology.

The FOUR score is a newly validated coma scale that does not rely on verbal response, making it very effective in neurological assessment of intubated/aphasic patients. Most studies have shown that FOUR score has very good interrater reliability and predictability of patient's outcome yet its acceptability among health workers in sub-Saharan Africa remains unexplored. Acceptability and use of FOUR coma scale by health workers like nurses and doctors in resource limited settings could help in early identification of patients who require more aggressive physiological support, frequent monitoring or timely transfer to Intensive care units (ICU) or High dependency unit (HDU) where HDU is lacking.

Currently am at the stage of proposal development, and in preparation for submitting it to the Research and Ethics Committee (REC) of MUST for ethical clearance.

Benefits from Reducing stroke Project.

Am one of the four beneficiaries of Masters research support supported by the National institute of Neurological Disorders and Stroke of the national institute of Health

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under Award Number R01NS118544. Under this project, I have so far benefited from the following;

a) Mentorship: In addition to the research supervisor from the department of Nursing, MUST, I have been allocated two mentors under the project with expertise in my study area and scientific research to guide and support me in the research process and career development (Prof. Sajatovic Martha and Dr. Kaddumukasa Martin) I have also benefited from inputs from the Educational and training committee for the project regarding my work. With their guidance, am very optimistic that I will produce quality work that benefit science and develop career wise.

b) Serial trainings: I have also benefited from serial training programs conducted under Reducing stroke project on a monthly basis. These include; mentorship and leadership, GCP/IEC (R2) and GLCP, Research management training.

c) Meetings and presentations of Research progress: I have had opportunities to present my research work in different Educational and training meetings, the recent one being on 30TH May 2022 during the face-to-face meeting with Prof. Martha Sajatovic, one of the supervisors from Case Western Reserve University and my mentor. I have

benefited from these meetings and presentations because of the objective feedbacks I get from the mentors. Prof. Martha together with the PI (Dr. Kaddumukasa Mark) visited us from Mbarara University of Science and Technology on 31ST May, 2022.

I am hopeful that the trainings and mentorship will prepare me to conduct good research and also to be a better medical professional who upholds patients' safety in all procedures.



STROKE IN THE YOUNG, 30-DAY MORTALITY AMONG YOUNG ADULTS ADMITTED IN MULAGO AND KIRUDDU HOSPITALS.

By Adrian Mwota Nampogo, a third-year resident Internal Medicine, Makerere University.

I am a physician in training at Makerere university currently in my third year of training. My research topic is titled “Stroke characteristics, 30-day mortality among young adults admitted in Mulago and Kiruddu Hospitals”. Currently, I am completing my study participant recruitment for an estimated sample size of 198 patients. I am at 60 percent data extraction. I am looking forward to finalizing with recruitment so that I can focus on extraction and data analysis.

In this program I have met wonderful teachers and mentors that I am working with closely as I carry out

my research. I have been able to take part in various trainings as a trainee in this program and these have really equipped me with more knowledge in research methods, data analysis, research conduct and practice. And greatly, the program is funding my Master of Medicine in internal medicine research

I have been able to do two online certificate programs during the training; Certificate in ethics and a Certificate in Monitoring and Evaluation from Stanford University.

My experience has been a great journey of learning and unlearning many things. Over all I am grateful, and I thank God I enrolled in the program. I would gladly and highly recommend my fellow specialists in training to apply to the program. I am extremely grateful for the great support.



INTERVENTIONS AND IMMEDIATE OUTCOMES OF NEWBORNS WITH BIRTH ASPHYXIA IN MBALE REGIONAL REFERRAL HOSPITAL.

By Grace Apio post graduate student of Master of Nursing (Midwifery and Women’s Health) at Makerere University College of Health Sciences.

Am a nurse with Bachelor of Nursing Science from Uganda Christian University, Mukono. I have worked for 19 years in different capacities caring for patients. Currently working in Ngora District Local

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Government as a Senior Nursing Officer attached to Ngora Health Center IV. Ngora Health Center IV is located in Ngora district in the Eastern part of Uganda. It is a hard-to-reach district, about 326km by road northeast of Kampala the capital city of Uganda and the GPS coordinates are 01 30N, 33 48E.

My interest in Nursing came along away from my childhood when my father fell sick, got spinal injury, and could not support himself. This situation helped me to learn how to care for the sick and over time, I got interested in joining nursing as a profession a passion that I cherish dearly.

Following my first training, I have worked in various hospitals caring for patients as a general nurse and this built my passion to care for pediatrics

the reason for my research idea on Interventions and Immediate Outcomes of Newborns with Birth Asphyxia in Mbale Regional Referral Hospital.

Currently, pursuing Masters of Nursing Midwifery and Women's Health. My research study is titled "Prevalence, Interventions and Immediate Outcomes of Newborns with Birth Asphyxia in Mbale Regional Referral Hospital". I have received training from the Project on mentorship, leadership, Good Clinical Practice, Good Laboratory Practice and Non-communicable diseases – epidemiology training. The project allocated two mentors to guide and support me through the research work. These trainings and mentorship will prepare me to conduct good research and be a better medical professional who upholds patients' safety in all procedures.



FOREVER GRATEFUL FOR THE REDUCING STROKE PROJECT!

Hello! am super excited to write in appreciation of the Reducing Stroke Project! The offer came timely in my second year of post-graduate study when a lot of efforts and focus was on research but with limited support and funds. With this offer, I was able to sail through and earn my master's degree on time.

My research title was "Seizure control among children on anti-epileptic drugs at Mbarara Regional Referral Hospital". With the technical and financial support from this project, we carried out the study successfully and found that up to 60% of the participants had poor seizure control. Adolescent age group, history of birth asphyxia and having a co-morbidity were

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significantly associated with poor seizure control. We have disseminated these results to the hospital and the university, currently working on the manuscript for peer review publication.

Reducing stroke project also gave me a great networking opportunity right for

Mbarara University across departments, Makerere University and internationally with different mentors. These enriched my research experience and broadened my view of science and career progress.

Forever grateful

DR. NAMUSISI JANE MBChB, MMED (MUST)



PREHOSPITAL DELAY AMONG ADULT ACUTE STROKE PATIENTS PRESENTING TO MULAGO AND KIRUDDU NATIONAL REFERRAL HOSPITALS.

By Keith Kakame, a third year internal Medicine resident Makerere University.

In low and middle-income countries like Uganda, stroke is much more common and stroke outcomes much worse than in high-income countries. Studies from Uganda, report a high 30-day mortality ranging from 27-30% of stroke patients admitted in a tertiary hospital. Late presentation to the tertiary hospital could be one of the contributing factors.

Our study set out to determine the prevalence of and factors associated with pre-hospital delay among acute stroke patients presenting to public national referral hospitals that is Mulago and Kiruddu hospitals.

Findings so far

We found that 91% of 143 adult acute stroke patients arrived after 3 hours from the time of onset of stroke symptoms. Most of our patients would not benefit from novel treatment modalities such as thrombolysis even if they were available. Receiving treatment at a primary facility, which was most likely a private facility, was associated with delayed arrival at the tertiary facility. Having some money at home at the time of onset of symptoms was associated with early arrival to the tertiary facility.

Of patients, who first received treatment at a primary facility, 67% received antihypertensive, 13% received cardiac aspirin yet only 2% had a definitive diagnosis by Brain CT scan. Thus, its highly likely that some of the patients received inappropriate care.

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From our study, we recommend the following;

1. Raising awareness among public to seek immediate stroke care in a facility where a Brain CT scan can be done to definitively diagnose the type of stroke.
2. Training of health workers on quick referral of stroke patients
3. Drafting national stroke care guidelines with clear guidance to health workers on when and where to refer stroke patients in a timely manner and the initial care to offer stroke patients in their care.

This training program has honed my concept and proposal writing skills, research conduct skills and communication skills. I have also received training in bioethics, good

clinical practice, data and statistical analysis and research management. In addition, I got an opportunity to network with like-minded researchers devoted to pursuing clinical and research careers in stroke.

I particularly thank the Reducing Stroke Risk factors in High Risk Ugandans Program, funded by National Institute for Health (NIH), National Institute of Neurological Disorders and Stroke (NINDS) for the financial support during conduct of this study. Additionally, I extend my sincere thanks to my supervisors, Dr. Mark Kaddumukasa, Dr. Jane Nakibuuka and Dr. Irene Andia-Biraaro for the guidance and support throughout the research project. I also thank my mentors Prof Elly Katabira and Dr. Christopher Burant for their invaluable input in this research project



MY RESEARCH MENTORSHIP JOURNEY

By Mariam Ndiwalana.

I am a graduate nurse in Uganda with a total of twelve years of clinical experience in midwifery, medical, surgical, neonatal and pediatrics nursing. Presently I work as a nurse hospital superintendent at Naguru hospital, and I am currently pursuing

a master's in Nursing with a specialty in midwifery and women's health from Makerere university.

As a requirement to this master's program, I am required to write a research dissertation and I personally chose to research and write on, "Immediate neonatal outcomes of women who received intrapartum

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magnesium sulphate”.

In this research project, I intend to conduct a prospective study and follow up mothers diagnosed with pre-eclampsia or eclampsia through the intrapartum period. I will observe the impact of magnesium sulphate treatment regimen administered to these mothers, assess their fresh new born using Apgar score over a 7 days period to gain more knowledge on their outcomes.

At the moment I have submitted my protocol to the institutional review board and am waiting for approval to

start data collection.

I was lucky enough to get a scholarship from MakCHS- Reducing Stroke program which has helped me a lot in writing my protocol. I was provided two mentors to help me with this process, I have attended lectures and courses on research methods, mentorship on leadership training, good laboratory and clinical practice which has made my research journey much simpler than I had anticipated. I also completed and attained a certificate in introduction to research Ethics through the help of this program and I have been able to present my concept to the educational and training committee of the program.



EMBARKING ON THE JOURNEY OF MY RESEARCH.

By John Baptist Ssenyondwa.

Embarking on the journey of my research was one of my best achievements last year. Not only has it been a path to the realization of my goal to submit my Master's degree dissertation, it has also been a learning venture ranging from the application of lessons learned from class regarding the conduction of research to development of interpersonal and soft skills that foster relationships. I have developed new connections and made new friends that have been crucial to the execution of my project. From the development of the concept to the current step of complete

participant enrollment and data collection, there have been several turning points including the approval of my project and the management of teams to execute tasks; points from which I have drawn life lessons. I have learned to deal with different cadres of health care providers such as nurses, doctors, senior doctors and colleagues through this project especially during the data collection exercise. I had the opportunity to manage teams comprising of all the above categories of individuals and I must say, it took extra work, patience and resilience all lessons that I embraced. Moving forward, I have been able to teach myself some skills especially, the use of research associated software such as the plagiarism checks, Epidata tool for data

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entry and STATA. This has enabled me to confidently help my colleagues with the development of research topics, concepts and analysis plans.

By far the most important aspect of the program was the provision of funds to accomplish the tasks necessary for this project. I am grateful for the support provided not only through the regular training sessions but also the supervisors and mentors we have

that have made it possible hitherto.

The experience I have generated from the weight of this program has imprinted life long competences in the field of research such as being able to develop research concepts, seeking and providing mentorship to others and professionalism in research conduct. This is an opportunity that I would highly recommend everyone to experience.



WHEN DO WE SAFELY PERFORM CRANIAL SURGERY FOR STABLE PATIENTS WITH TRAUMATIC BRAIN INJURY? A TRAFFIC - LIGHT DECISION-MAKING MODEL TO OPTIMIZE THE NEUROLOGICAL OUTCOMES

Traumatic brain injury (TBI) is one of the leading causes of worldwide mortality, and disability. Sixty-nine million persons are estimated to suffer TBI from all causes each year, affecting the young adult productive population.

In low/middle-income countries (LMIC), there has been observed in the last decade changing the epidemiology of TBI with an increased number of patients and worsened outcomes due to the increased motorization without adequate road traffic education; hence, TBI is referred to as “the silent epidemic”, since most of its long-term consequences, especially cognitive impairments, and epileptic disorders are not obvious. Current guidelines emphasize saving lives in

acute situation, but the long-term disability among survivors constitute the real socio-occupational, economic, and reintegration burden for both patients and government. In Uganda, the growing population and increased motorization make the road environment increasingly complex; there is an increased number of TBI generally due to road traffic crashes and assaults. Several features are observed in head injuries, and one of them is skull fractures. Depressed skull fracture (DSF) is a type of head injury in which a segment of the vault of the skull is depressed below its anatomical position, and its edges may become locked underneath the adjacent intact bone, as a result of high-energy rapid compression force applied to a small area of the skull, often associated with intracranial injuries which include vascular damage and direct brain damage.

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It may constitute an abnormal area of direct physical irritation of the pulsating brain. The timing for DSF surgery in LMIC remains unclear due to the risks from the intraoperative bleeding, surgical site infection (SSI), and other long-term outcomes. There is an increased number of cases of post-traumatic epilepsy (PTE) following TBI.

We hypothesized that Neuro-inflammation induced by trauma, anaesthesia, and surgery stress (trending with timing of surgery) could be the predisposing factors to late PTE. The aim of the study is to determine whether the timing of surgery of DSFs has an impact on the systemic inflammatory response, intraoperative blood loss, the occurrence of SSI, and the incidence of PTE. This will be achieved through 5 sub-studies. We will then be able to possibly guide our decision-making of the safer timing of surgery based on the outcomes. Our research proposal was approved, and ethical clearance was obtained. We conducted the initial studies during the acute phase of management of TBI patients with DSF, and we are about to reach the required sample size.

Initial data without deep analysis show tends aligning with some of our hypotheses on intraoperative blood loss and occurrence of surgical site infections in relation to the timing of surgery. Blood samples for immunological studies are undergoing laboratory analysis. The next step of the long-term follow-up

will consist of obtaining the EEG records of patients after 1 year of injury.

Brain Health has funded some sub-studies of my projects which was a major limitation for conducting properly this research. On top of that, we benefited from closed mentorship, and peer-support working within neurological research. We also benefited from serial training opportunities on Bio-ethics, clinical epidemiology, biostatistics, and other supportive training to enhance our ability to conduct doctoral studies. In the last face-to-face mentorship meeting, I had an opportunity to be part of critical observations of my research and also of my peers from very experienced researchers of Makerere University and Case Western Reserve University, to cite mainly Prof. Elly Katabira, Prof. Martha Sajatovic, Dr. Kaddumukassa Mark, and Dr. Kaddumukasa Martin. Indeed, networking with my peers from different neurological fields is an incredible experience within the Brain Health training opportunity.

I made significant progress on my doctoral research studies through the help of Brain Health funding. I also got a new community of other doctoral students of Makerere University College of Health Science where we can obtain peer support and advice. On top of that, additional supports from experienced mentors have helped me to improve my critical thinking skills. I also achieve my personal academic growth, by exposing myself to an interdisciplinary environment and philosophical reasoning.

Brain Health training is a wonderful opportunity for me to interconnect with different knowledgeable people who consistently contribute to my academic

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growth. Makerere University Doctoral School scheduled less often doctorate cross-cutting studies during the last academic year, but in the Brain Health

training, we have this opportunity to attend frequently high-quality interactive tutorials and lectures despite the COVID-19 restrictions and challenges.



PREVALENCE OF POSTSTROKE SEIZURES AND ASSOCIATED RISK FACTORS AMONG STROKE INPATIENTS AT ST. FRANCIS HOSPITAL, NSAMBYA

My name is Kasekende Ronald, a second year student of M.Med Internal Medicine at Uganda Martyrs University, Mother Kevin Postgraduate Medical School, Nsambya Hospital.

This research was informed by the fact that stroke is increasing in Uganda and seizures among the stroke inpatient are one of the causes of Early Neurological Deterioration (END) among these patients. Many of these patients have non-convulsive seizures which further poses a diagnostic challenge in our setting.

The Electroencephalogram (EEG) is a functional test of the brain that can be used to increase the chance of detecting the seizure activity in stroke inpatients but it is not routinely done in our settings. This research involves performing EEG examination on stroke patient to detect the seizure activity. I am currently doing data collection from Nsambya Hospital. I thank “Brain Health Program” for

this support that has enabled me to carry on this research that is rather resource demanding. Brain Health Program has helped me to improve on my research method and skills through scheduled trainings in the research process that have spanned the whole period of more than one year despite the hardships brought about by the notorious pandemic of COVID-19. Some of the areas we received training on included: How to get research topic, writing a grant winning research Proposal, research designs, Data analysis and presentation, manuscript writing and publication.

My experience: Research is very instrumental in shaping clinical practice and informing policy development. With good mentorship like the one offered by the Brain Health Program one can easily develop into a prolific researcher overtime. I have also learnt that research requires time and that the writing skill can be developed if one is interested. The research done should be published and good research work can be published in reputable peer review journals around the world.



HUMAN GENETICS AND ITS ROLE IN NON-COMMUNICABLE DISEASES

Hey All,

I am Olga Nsangi an enthusiast of research in human genetics and its role in non-communicable diseases especially on the African continent. My research is about identifying genetic determinants of major depressive disorder (MDD) among adult persons living with HIV in Uganda. It entails genotyping humans diagnosed with depression and those without depression to find single nucleotide polymorphism (SNPs) that would be associated with depression.

So far, I have got ethical clearance from my school ethics review board, got clearance from Uganda National Council for Science and Technology to ship samples for genotyping, I have developed a genome wide association pipeline for the analysis so as to find SNPs associated with MDD and now awaiting for the genotyping to start with the real data analysis.

As a growing research, this research support has greatly empowered me to work harder to acquire more and bigger research support in future. This programme has enabled me better understand what Non-Communicable diseases are and their burden on

human life and the economy and how they can be managed for better quality life. It has also highlighted the gaps in research about the NCDs that exist especially in Uganda and sub-Saharan Africa at large and I aspire to have some of these gaps covered. Also given the short course that I have taken, the greatest has been the guidance on how to write manuscripts as one of the important skills needed by any researcher. As of now I have a draft manuscript for my research including some sections such as literature review and other sections still in development.

It's been a great and humbling experience to be part of this program despite the COVID-19 outbreak that had us do virtual trainings, I am glad that the training did not stop. This had us have less physical interactions with the facilitators and other colleagues on the same program which was a bit limiting. My goal is to finish my research on time and also contribute to the science community by publishing my findings and also establish a network with my fellow trainees on the same programme and coordinators to have more genetics studies in non-communicable diseases done in Uganda.

Regards,
Olga Tendo Nsangi

