



Volume 3

RESEARCH Newsletter



March, 2014



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EDITORIAL



Welcome to the third –and the first in 2014 – edition of the UGMS Research Newsletter.

The Editorial Committee congratulates Professor Andrew Adjei, the indefatigable Editor-in-Chief, on his appointment as Director of Research, UG. The Committee acknowledges his continued support, not least of which are his untiring efforts made in ensuring this edition of the newsletter sees the light of day. We wish him God's guidance in his new position, and direction in the quest to propel UG research to new heights.

The Ag. Dean's inspirational message and call to duty is welcome, and is followed by the first article in this edition, current research at the Department of Community Health. The community health department is one that is known to have maintained a consistent research profile within UGMS through the years. We are pleased, therefore, to read about ongoing research activities from that department. Also prominent in this edition is the profile of a leading cardiothoracic surgeon, who, via an erudite feature article, educates on an area in which he has researched for many years. We are particularly pleased to introduce, starting with this volume, a "budding scientist" section. The aim of this new column is to highlight achievements of relatively "younger" academics. We proudly present the profile of one of the "rising stars" of UGMS research in this column in this edition..

The Editorial Committee is particularly pleased to feature summaries of the research projects of UGMS faculty members who were awarded grants from the University of Ghana Research Fund (UGRF-ORID) 7th call for applications. We congratulate all awardees; wish them the best in execution of their respective projects, and hope these awards would provide research opportunities for postgraduate students in their respective departments. In this respect, we are all encouraged by UG's steadily increasing research funding portfolio, and also appreciate the initial plans being made towards instituting a robust reward scheme for research output.

You are kindly invited to enjoy a write-up on the Clinical Skills and Simulation Centre, as an encouragement towards broader use of this promising resource.

The University of Ghana Medical Students Association has as usual, kept faith, as they draw our attention to aspects of student life that is important from their perspective. Their call this time - to see the mentorship program's revival, in their spirited but measured response to the Senior Tutor's initiative, is, in our view, worthy of support. We thank them for their interest, and wish them a vibrant and enhanced student experience from the soon-to-be-revived program.

Happy reading,

Dr. G. Obeng Adjei
Ag. Editor-In-Chief

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ACTING DEAN'S NEW YEAR MESSAGE

Happy New Year to all Staff and Students of UGMS. I trust you all had a good rest during the Xmas period, entering the New Year well refreshed for the task ahead.

To Students, I wish to encourage you to apply yourselves well in the semester you are in now, giving a good account of yourselves at the end of the road. Your teachers are there to guide you but the bulk of the work has to be done by you. The outcome of that will depend on your attitude to work. So gird yourselves up (you are all very capable) and rise to the occasion not forgetting your responsibilities too. Hard work does not kill.

To members of Staff, I welcome you back to work and hope that you are all tuned up to give of your best in all you do. It should not be business as usual. There is a better way for everything. Let us find it and do it. Our attitude to work will determine our final altitude in life.

In spite of the odds, let us be optimistic in our outlook, work diligently and we will have good success.

Wishing you all a fruitful year and may God bless us all.

Prof. Jennifer E. Welbeck



RESEARCH AT THE DEPARTMENT OF COMMUNITY HEALTH



The Department of Community Health is one of the eight Clinical Departments of the University of Ghana Medical School. Like all academic departments, the mission of the department is to fulfill the tripartite mission to teach, provide service and carry out research. Research is an essential tool for socio-economic development. The Department of Community Health has been one of the major contributors to research in the Medical School. It has done this by attracting research grants to the school, providing training in research, and by offering walk-in consultations on research methods, data management and statistics to senior members and postgraduate students on the Korle Bu Campus. Two (2) of its members currently serve on the Ethical and Protocol Review Committee of the Medical School and Noguchi Memorial Institute for Medical Research. The goal of the Department is to provide training in research, to build capacity and increase our ability to carry out longitudinal studies and clinical trials.

Ongoing Research Activities

1. The Multi-country Study of Global Ageing and Adult Health (SAGE) Wave 2 is being conducted in six countries (China, Ghana, India, Mexico, Russian Federation and South Africa). The aim of the study is to generate valid, reliable and comparable information on a range of health and well-being

outcomes of public health importance in adults and older populations. It also aims at studying changes in health outcomes and their determinants and how they impact the life course. The study is to supplement and cross-validate the self-reported measures of health through the use of measured performance tests, health examinations and biomarkers to improve the reliability of data on morbidity and risk factors. The study involves a nationally representative sample of around 6000 participants.

2. Reproductive and Child Health Research.

The Child Mortality Study at Princess Marie Louise Hospital, Accra. (BSU-PHH Grant) The aim of this study is to examine the mortality pattern of children at the Princess Marie Louise Hospital, to determine the medical and social risk factors for mortality, and to identify modifiable factors for reducing child mortality. This is a case-control study running from January 2010 to December 2011. Mortality trends over a 10-year period, from 2003 – 2012, will also be examined. A comparative group of children, who were discharged from admission, will be recruited to study risk factors for mortality.

3. Nutrition Research:

Choices of foods eaten by malnourished and well nourished children. The aim of this study is to

examine foods eaten by moderately and severely malnourished and well nourished children, under the age of five years, attending the Princess Marie Louise Children's Hospital, in order to determine inadequacies in food choices and identify ways in which nutrition can be enhanced.

4. Mortality Research

Factors influencing infant mortality in Pokrom Sub Municipality, Eastern Region, Ghana

The aim of the study is to determine the factors influencing infant mortality in a rural setting for the purpose of informing policy towards reducing infant mortality in the context of scarce resources. The study will assess the factors influencing infant mortality in a rural setting and determined the order of importance of these factors. Focus group discussions with mothers aged 15-49 years, indepth interviews with health care workers in the sub-municipality as well as observation of the environment will also be used. This is another West African College of Physicians Fellowship project supervised by the Department of Community.

5. Infectious Disease Research

HIV Research: Sex Differences in HIV Testing and Counselling in Ghana: Factors influencing low HIV testing among men in two fishing communities in Accra”.

Introduction: The risk of HIV infection and transmission is known to be relatively higher in communities such as the mining and fishing communities. This higher risk may be due to multiple social and economic factors including migration of young men and women to these communities and the consequences of transactional sex among vulnerable young females and male fisher folks.

Goal : Is to conduct an in-depth study to determine gender, demographic, cultural and socioeconomic factors that account for the differences in willingness to test for HIV in two fishing communities in Accra.

Study sites: Two fishing communities in Accra, *James Town* and *Chorkor* are being studied. These are typical fishing communities situated in the urban part of the country with migrant populations and high risk sexual activities.

Methods to be adopted: Both quantitative and qualitative methods are being employed to

determine the gender, demographic, cultural and socioeconomic factors that account for the differences in willingness to test for HIV.

Expected Outcome/ Significance: Male utilisation of HIV testing is important because in many societies men are the heads of households, and control decisions and resources essential for HIV prevention and care. It is hoped that the findings on the reasons for low HIV testing among men can provide policy direction for the Ghana Health Service to explore the possibility of structuring male-focused HIV testing service programs.

6. Malaria Research:

Malaria chemoprophylaxis in air travellers to Accra, Ghana. The aim of this cross-sectional study is to investigate the use of chemoprophylaxis in malaria prevention in malaria non-immune air travelers departing from the Kotoka International airport in Accra, Ghana. It is being conducted at the departure lounge of the Kotoka International airport, targeting travelers who had been away from malaria endemic regions for at least six (6) consecutive months and then lived in Ghana for at least two (2) consecutive weeks, using a structured self-administered questionnaires. Malaria chemoprophylactic usage habits, breakthrough episodes of malaria, side effects and cost of chemoprophylactic agents will be analyzed.

7. Non-communicable Disease and Conditions Research:

Clustering of risk factors for non-communicable diseases among rural and urban populations in the Akwapim South Municipality in the Eastern Region.

The study aimed to compare rural and urban populations with respect to the prevalence, degree and pattern of clustering of risk factors for non-communicable diseases. It is a West African College of Physicians Fellowship project supervised by the Department of Community Health

8. Primary Care Research

Evaluation of the management of acute hyperglycaemia in diabetics admitted in a poorly-resourced, urban primary care centre in Ghana.

The primary goal of this **observational prospective** study is to evaluate the management of adult patients admitted with acute hyperglycaemia on the inpatient wards at the Korle Bu polyclinic. **All patients**

admitted within the study period will have relevant data extracted from their medical records from the time of admission till discharge into a structured data sheet. Factors that precipitate acute hyperglycaemia, average insulin usage, compliance with protocols recommended for primary care settings in Ghana and cost of care will be evaluated. This study is funded by BSU-PHH pilot project research grant.

9. Family Medicine Research:

A study on views of key stakeholders in Sub-Saharan Africa on Family Medicine

The general aim of the study is to explore the **views** of key academic and government leaders, practitioners and students in countries of Sub-Saharan Africa on the potential contribution of Family Medicine to healthcare and the need for training. It involves a collaboration of family physician researchers from 9

Sub-Saharan African countries including Ghana. Phase 1 of the project (Sub-Saharan Africa) was supported by the HURAPRIM Project which received funds from the European Union's Seventh Framework Programme (FP7-AFRICA-2010) under grant agreement no. 265727. Phase 2 (Ghana) is ongoing.

10. Occupational Health Research:

Injuries associated with small scale gold mining in Ghana

The aim of this study is to characterise and document injuries associated with small-scale gold mining in Ghana. Data for this research is being collected from small scale gold mining areas in Ghana but with particular interest in Tarkwa. It is a collaboration between the Department of Community Health, UGMS, University of Michigan, McGill University and the Ghana Health Service.

UGMSA Corner

Mentorship in UGMS...

Henry Xorsenyo Kpeli

General Secretary, UGMSA

*"The easiest way to have a peek behind the curtain is to learn from those that are ahead of you."
-Ifeanyi Enoch Onuoha*

The University of Ghana Medical School being very much aware of the need for mentorship, adopted the tutorship system of mentoring its students academically, socially and psychologically. This system was adopted some years back and has thus far been helpful. Students are sorted into small groups and every group is assigned to a particular Senior Member. The senior member thus becomes responsible for the holistic build-up of the members of his or her group (even though they mostly would say "except the financial needs"). Senior members were to mentor students of their respective groups in all areas including best learning practices, effective ways of acquiring clinical skills and also how to do researches. As it is with the fresh start of everything, this system has been effective from the start. However as the years passed by, it has gradually withered and I must be quick to add that if care is not taken this very good system will soon lose its importance. As it is now, most



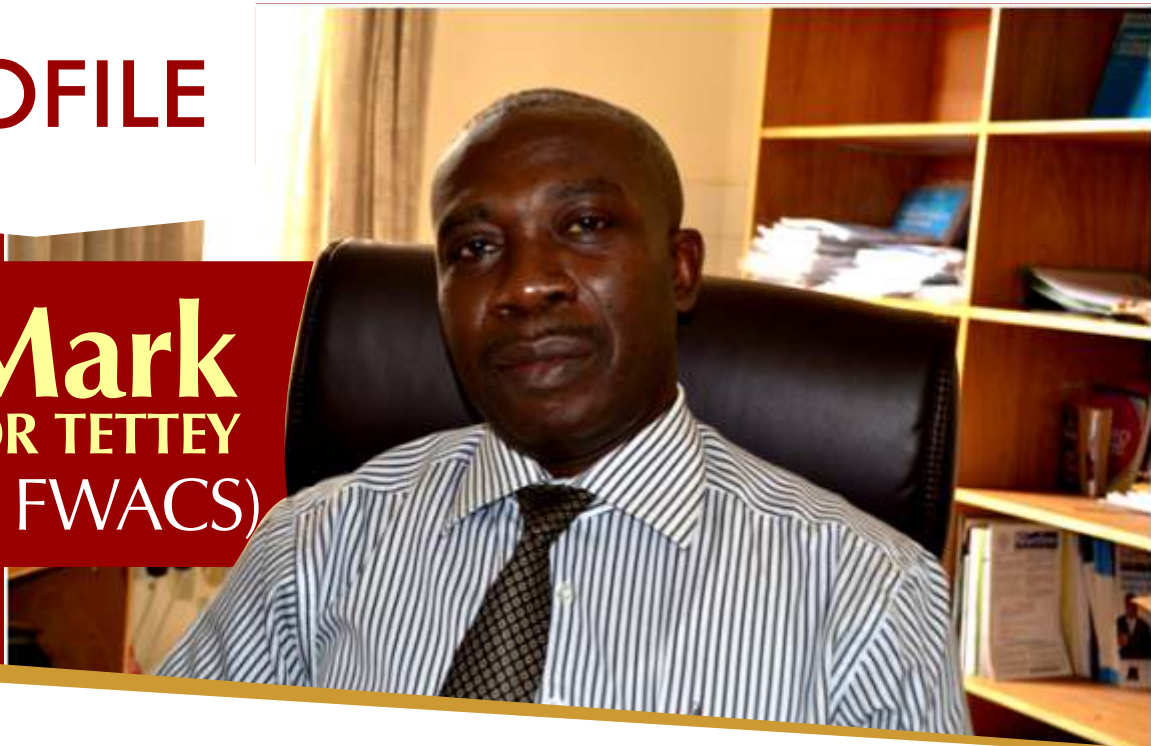
students are even unaware of the groups they belong to - not to mention knowing their respective tutors. This makes it difficult for the students to contact the respective senior members when necessary.

However, thanks to the new senior tutor (Dr John Ahenkorah), the mentorship system is about to see a resurrection. Currently the senior tutor is collaborating with the student association executives to get the students and senior members actively involved. Group leaders have now been elected and are in direct contact with the respective senior members (mentors) to relay information from both ends. Indeed, soon, the system will be going online.

As an association with the best interest of our members at heart, we are looking forward to the best collaboration with our senior tutor for a sustained revival of this once-effective system.

PROFILE

Dr. Mark MAWUTOR TETTEY (MBCChB, FWACS)



Dr. Mark Tettey was born on the 23rd of October 1963. He is currently a senior lecturer at the Department of Surgery, University of Ghana Medical School.

Dr. Tettey had his secondary education at Zion Secondary School for his ordinary level certificate and Accra Academy for his advanced level certificate. He proceeded to the School of Medical Sciences, Kwame Nkrumah University of Science and Technology to obtain his Bsc Human Biology and MB ChB. He worked in Agogo Hospital for 2 years as a medical officer and returned to Komfo Anokye Teaching Hospital (KATH) to start a post graduate programme in surgery in 1994. Dr. Tettey helped to organize the residency programme in the Department of Surgery, KATH. He was the first to pass the primary exams organized by the West African College of Surgeons (WACS) from the Department of Surgery in 1995. He joined the National Cardiothoracic Center (NCTC), Department of Surgery, Korle Bu Teaching Hospital (KBTH), in 1999. He became a specialist in Cardiothoracic Surgery in 2002, and subsequently awarded Fellowship of the West African College of Surgeons by examination. He has since worked as a cardiothoracic surgeon at the

National Cardiothoracic Center. Dr. Tettey went for an observership training in adult and paediatric cardiac surgery in University of Pennsylvania Health System, Department of Surgery Division of Cardiothoracic Surgery in 2005, and training in Video Assisted Thoracoscopic Surgery in University Teaching Hospital, Thoracic Surgery Unit, Freiburg, Germany in 2007.

From 2008 to 2011, Dr. Tettey worked as a consultant at the NCTC at the KBTH and joined the University of Ghana Medical School in August 2011. He is a researcher, published extensively and has to his credit 35 publications in peer-reviewed high impact journals. His main field of research work span through both cardiac and thoracic surgery. He is currently working on innovative surgical procedures in the management of corrosive pharyngoesophageal strictures and management of thoracic endometriosis in women. He has presented papers at local and international scientific conferences, serves on the Editorial board of the Journal of Cardiology and Therapy, and is a reviewer for local and international scientific journals.

PROFILE

Budding Scientist

Dr Alfred Edwin
YAWSON
(MBChB, MSc, FWACP)



Dr Alfred Edwin Yawson is a lecturer in the Department of Community Health, University of Ghana Medical School (UGMS), and is both the Quality Improvement coordinator and Mentoring coordinator of the Korle-Bu Teaching Hospital. He is a member of the UGMS class of 2002, and acquired the Fellowship in Community Health of the West African College of Physicians in October 2010. He has a Master of science degree in Health Policy Planning and Financing from the London School of Economics; and a Diploma of the London School of Hygiene and Tropical Medicine.

He joined the Medical School in November 2012 and has been actively involved in departmental and University activities. He is a member of the following: Academic Board of the University of Ghana, the Ethical and Protocol Review Committee the Tutorial Board and Strategic Implementation Committee of the UGMS, the Council of the West African College of Physicians (WACP); and secretary to the faculty of Community Health, Ghana Chapter of the WACP.

Research activities

Dr Yawson's research interests are in health systems and quality of care, health policy planning, and health economics and financing (with special interest in the national health insurance of Ghana). He also has interest in ageing and gender, HIV and AIDS, and chronic non-communicable diseases. He is a reviewer for several local and international journals.

He is a member of the World Health Organization (WHO) Multi-country Study Team on the Study of Global Ageing and Adult Health (SAGE), which involves the conduct of longitudinal studies among older person in six countries - Russia, India, China, Mexico, South Africa and Ghana.

He was one of six principal investigators from University of Ghana who won an Office of Research, Innovation and Development (ORID) grant (GHc 100,000.00) for the study of non-communicable disease among children in Ghana. The research was led by The Regional Institute of Population Studies, Legon. He is currently working on Sex differences in HIV testing in two fishing communities in Accra, supported by a grant from the Brown University-University of Ghana Collaborative Project.

Dr Yawson has seventeen (17) peer reviewed research publications in reputable journals and has written several international and national reports for health development in West Africa.

He is a member of the Ethical and Protocol Review Committee of the UGMS, and provides statistical and research support for faculty, postgraduate students, and undergraduate students of the University, and residents of the Korle-Bu Teaching Hospital.

Dr Yawson is a committed family man, with a lovely wife, two daughters and two sons. He believes his firm trust in God, and the extraordinary support from his spouse and family have greatly influenced his work output. He has been fortunate to be mentored by dedicated older faculty of the Department of Community Health and other senior members of the College of Health Sciences and Korle-Bu Teaching Hospital.

Looking forward, Dr Yawson plans to continue to support research in the University and Teaching Hospital, and to provide mentoring for budding researchers in the University.

ORID, 7TH CALL GRANT AWARDS

Association between the serum 25-hydroxy vitamin D level and its common genetic determinants in patients with chronic liver disease (CLD) at Korle Bu Teaching Hospital, Accra, Ghana.



Dr. Batholomew Dzudzor
Principal Investigator
Department of Medical Biochemistry

SUMMARY:

Liver fibrosis, complicating chronic liver diseases, is a major cause of morbidity, mortality and expense worldwide. The burden of liver diseases attributable to hepatitis B and C and alcoholism is increasing annually, with cirrhosis and hepatitis alone being the 9th leading cause of death globally. Indeed nearly 45% of all deaths in developed countries are attributable to chronic fibro-proliferative diseases. In Ghana, published data on severity of liver fibrosis are unavailable, however records from the Gastroenterology clinic at Korle Bu Teaching hospital (KBTH) indicate that about ten new cases of liver disease, associated with chronic hepatitis B infection, are recorded every week. Furthermore, an average of ten liver biopsies are taken monthly for staging and further analysis. This high liver disease burden from KBTH records is not surprising; the main causes of liver fibrosis such as heavy long-term alcohol consumption, chronic infections with hepatitis viruses, nonalcoholic steato-hepatitis, and

consumption of foods which are high in fats and fructose corn syrup, are highly prevalent in Ghana. Currently, organ transplant which is the only means of reversing liver cirrhosis is not unaffordable to the average Ghanaian. It will therefore be useful to generate baseline data in Ghana to support clinical management of liver fibrosis and its complications through non-invasive and cost-effective means.

Recent studies in other populations have associated histologically proven severity of hepatic fibrosis with low serum 25 (OH) D levels. Its deficiency or insufficiency has also been associated with autoimmune disorders, various cancers as well as certain infectious diseases. Therefore, the serum 25 (OH) D level has become a target for research to help ameliorate these conditions elsewhere but little data are available in Africa. Additionally, genetic determinants can influence the biosynthesis and/or bioavailability of 25(OH) D. It is therefore necessary to identify genes involved in vitamin D metabolism in order to determine their association with liver fibrosis in Ghana.

The present proposal seeks to determine 25 (OH) vitamin D levels in the serum of CLD patients and their healthy controls. It will also study three genes related to vitamin D metabolism in order to help understand the genetics of 25 (OH) D deficiency and its links with severity of liver fibrosis.

Liver biopsies of the CLD patients will be staged to determine the degree of fibrosis, and to correlate this with both 25-hydroxyvitamin D levels and SNPs determined from the three genes. The results from this project could lead to trials of vitamin D supplementation in the management of CLD in Ghana and sub-Saharan Africa. Hopefully, this will reduce the need for liver transplantation for liver cirrhosis.

Cryptococcal meningitis in hospitalized HIV patients in Accra, Ghana

Japheth A. Opintan (*Principal Investigator*),

Ernest Kenu, Margaret Lartey, Mercy J. Newman, Kwara Awewura

Department of Microbiology

Even with increasing access to antiretroviral therapy (ART), cryptococcal meningitis (CM) is increasingly causing high morbidity and mortality, especially in Africa and Asia. Many deaths from CM may be prevented through early diagnosis and treatment but the rapid serum cryptococcal antigen test is often not available in resource-limited settings (RLS). Diagnosis of CM is usually made by lumbar puncture (LP) and India ink microscopy of cerebrospinal fluid (CSF) in RLS. However, the presenting symptoms of headache and fever are very nonspecific, and LP is often deferred until the disease is advanced. The prevalence and outcome of CM in Ghana is unknown and there is little information on susceptibility levels to commonly used antifungals.

Prospectively, we will recruit consecutive hospitalized HIV patients with clinical symptoms of meningitis in

Accra. CSF antigen test, culture and microscopy will be performed on CSF samples taken by LP. Sensitivity and specificity analysis of India Ink microscopy will be performed, and isolates of *Cryptococcus* will further be tested for azole resistance. The outcome of CM will be analyzed from laboratory and clinical data. The study has both clinical and laboratory components, and will be executed with our medical collaborators at the Fevers Unit of the Korle-Bu Teaching Hospital. The results of this study have the potential to improve clinical practice and the care of HIV patients who present with clinical symptoms of meningitis. In addition, the findings will be used as pilot data to inform the design of clinical intervention(s) targeted at early diagnosis and/or treatment to reduce mortality of CM in Ghana and sub-Saharan Africa through NIH R01 or R34 mechanism.

SCREENING TRICHILIA MONADELPHA, A GHANAIAN HERB FOR ANTIDEPRESSANT EFFECT.

Dr Kennedy K. E. Kukuia, *Principal Investigator*
Department of Pharmacology

EXECUTIVE SUMMARY

Depression is an extremely common pathological complex with psychological, neuroendocrine and pathological symptoms (Holmes, 2003). It is a leading cause of disability worldwide and has significant impact on morbidity, mortality and health care cost (Alonso et al., 2004; Ustun et al., 2004; Gilmour and Patten, 2007). More than 120 million people suffer from depression globally. In fact, depression is no respecter of person- it affects men and women alike; young and old; rich and poor; educated and uneducated. Unfortunately the efficacy of current antidepressants are unsatisfactory and multiple side effects are common (Poleszak et al., 2011). It is estimated that about 40% of patients have conditions refractory to current medications. Furthermore,



these drugs require at least 2-4 weeks of administration before producing clinically meaningful improvement in the symptoms (Skolnick et al., 2009). These reasons underscore the need for alternative medicines that will cater for the needs of those with refractory depression and also provide rapid onset of action.

In Ghana and many other developing countries, about 80% of the populace use herbal medicines especially for mental health conditions like depression, anxiety, psychosis, epilepsy, etc. Though the practice is common, most of these herbal medicines have not been scientifically validated for their purported indications. This has prevented the standardizations of these remedies and also the isolation of novel compounds that can offer more

rapid, better safety and efficacy profiles than the current antidepressants from these plants. It is therefore not out of place to screen Ghanaian medicinal plants for their therapeutic potentials. This will ensure that bioactive compounds are isolated and investigated for possible use in man.

This proposal therefore seeks to screen *Trichilia monadelpha*, a plant used traditionally in neuropsychiatric conditions in Ghana for their antidepressant effect. Well validated animal models like forced swimming and tail suspension tests will be used. It is envisioned that the work will provide a basis for standardizing an herbal remedy in Ghana to be used for managing depression and also preempt the discovery of new chemical entities with more rapid, efficacious and safer antidepressant effect.



Psychological Well-Being and Quality of Life in Chronic Kidney Disease Patients at Korle Bu Teaching Hospital, Accra

Dr. Patrick Adjei, Principal Investigator
Department of Medicine & Therapeutics

Chronic kidney disease (CKD) is defined as kidney damage as evidenced by proteinuria or haematuria or an estimated Glomerular Filtration Rate (GFR) of less than 60 ml/min/1.73m² that has persisted for at least three months. CKD is classified into five stages with Stage Five known as End-Stage Renal Disease (ESRD). ESRD is the loss of renal function requiring treatment such as chronic dialysis or transplantation. The disease, treatment and associated demands have a significant impact on the patient's physical and emotional wellbeing and interfere with the patient's social roles. Patients with CKD who are being prepared for, or receiving renal replacement therapy often experience difficulties in participating in various domains of life such as paid work, sports and other social and leisure activities. Poor quality of life, depression and other psychological problems tend to worsen their prognosis.

Currently, there are no figures from Ghana on the prevalence of CKD. Recent data from Korle-Bu Teaching Hospital showed that 15% of all medical admissions have kidney disease. In addition 10% of all deaths on the medical wards are due to chronic kidney disease. Most patients with CKD are aged between 20 and 50 years, representing the economically active group of our society.

Considerable progress has been made in the treatment and nursing intervention of CKD, however, health-related quality of life (QoL) continues to be a significant problem for patients receiving hemodialysis⁹. This has been important especially for chronic conditions such as CKD. The combination of a decrease in energy, the unavoidable emergence of socioeconomic problems, and emotional reactions associated with haemodialysis compounds the stress facing the patient¹⁰.

Depression remains under-recognized and undertreated, particularly among ESRD patients²³. A cross sectional study conducted in 2011 to determine the prevalence of depression and to determine the quality of life among ESRD patients on dialysis in Korle-Bu Teaching Hospital showed a prevalence of depression of 44.3% among these patients and the quality of life among these patients was poor but interestingly, this had no significant bearing on socio-economic status of these patients. Nevertheless this research involved only ESRD patients on haemodialysis and therefore the findings may not represent the true prevalence of depression among CKD patients and in addition cognitive status was not assessed.

This 3 year study therefore seeks to establish the prevalence of depression and assess quality of life among non-dialysis ESRD patients and ESRD

individuals on haemodialysis. Further, this study seeks to examine the nature, pattern extent and severity of cognitive deficits among these individuals. This study will determine the association between quality of life, psychosocial profile and cognitive functioning in this cohort of patients.

It is envisaged that the results will expand our understanding of the psychological impact of end stage renal disease in the Ghanaian population. High rate of depression and poor quality of life are expected among these patients in Ghana compared to developed countries due to added factors such as poor socio-economic situation in our part of the world. This will foster collaborations between psychology and psychiatric departments, and the Renal unit with the hope that a more holistic treatment and management of ESRD individuals will advance our understanding ESRD.

Epidemiology of Pneumococcal Carriage among HIV Positive Children in Accra, Ghana.

Dr Eric Sampane-Donkor, Principal Investigator
Department of Microbiology

HIV positive children have about forty times greater risk of invasive pneumococcal disease compared to healthy children. In sub-Saharan Africa, very little is known about pneumococcal disease in relation to HIV patients. With the recent availability of pneumococcal vaccination in sub-Saharan Africa, there is an urgent need for epidemiological data on at-risk populations of pneumococcal disease such as HIV positive individuals, in order to inform vaccination policies.

The pneumococcus is carried as a normal flora of the upper respiratory tract. Carriage is a precursor of pneumococcal disease, and is also responsible for pneumococcal transmission from person-to-person. **Pneumococcal vaccines reduce pneumococcal carriage and hence incidence of pneumococcal disease.** Therefore, pneumococcal carriage studies represent a suitable model for understanding host-pathogen interaction of the pneumococcus as well as evaluating vaccine coverage of this important human pathogen.

The aim of the proposed study is to investigate the epidemiology of pneumococcal carriage among HIV

positive children less than 5 years old, in Accra. This is a cross sectional study involving 100 subjects recruited at the Outpatient Department of Korle-Bu Teaching Hospital. Nasopharyngeal specimens collected from the study subjects would be cultured for the pneumococcus, and the isolated organisms would be subjected to antibiotic susceptibility testing and serotyping. Epidemiological data on demographic and clinical features would be collected from the study subjects. Expected outcomes of the study include identification of risk factors of pneumococcal carriage among HIV positive children, antibiotics suitable for treating HIV related pneumococcal infections, and evaluation of the potential impact of pneumococcal vaccination among this at-risk population.



CLINICAL SKILLS AND SIMULATION CENTRE

The Clinical Skills and Simulation Centre was set up by the University of Ghana Medical School to run demand-oriented clinical skills training for medical students.

Our Mission is "To improve patient safety through quality learning"

We provide training to medical students in a synthetic learning environment by offering:

- Clinical skills training for some of the skills required for medics to acquire in their chosen profession.
- Team skills training
- Train-the-trainer

We advance simulation as a tool for education and research in health care, and aim to:

- Develop and evaluate educational methods for training in patient safety
- Conduct research in clinical performance and human factors

Currently, the Centre offers simulation training to the students of the University of Ghana medical school. In 2013, the Centre recorded 137 organised teaching sessions for 7 departments of the medical school; 2,471 medical students were taught various clinical procedures; 1,743 medical students used the Centre for Self Directed Learning out of which 501 were students who used the Simulation Centre on Saturdays to practice and learn various clinical skills and procedures.

We are encouraging all medical students to fully utilise the centre in order to acquire the skills needed to improve patient outcomes in future.

The Simulation Centre operates from Monday to Saturday; 8:30am to 5:00 pm on week days, and 8:00am to 2:00pm on Saturdays.



*Ms. Ayishetu Muniru
Coordinator, CSSC*



Front view of the Clinical Skills & Simulation Centre

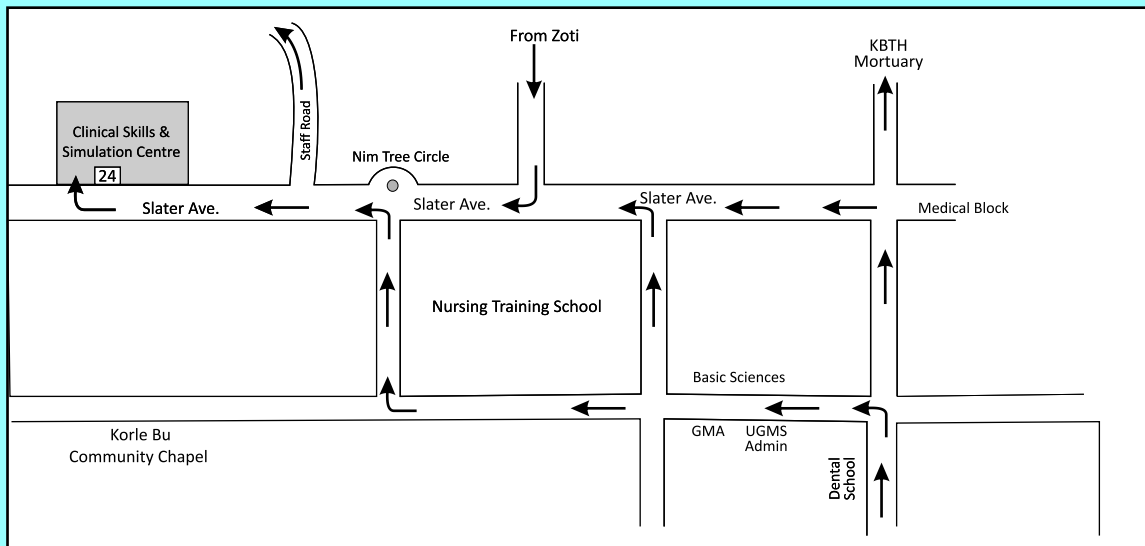


A teaching session with a Clinical Lecturer

Some examples of mannequins available at the centre for training



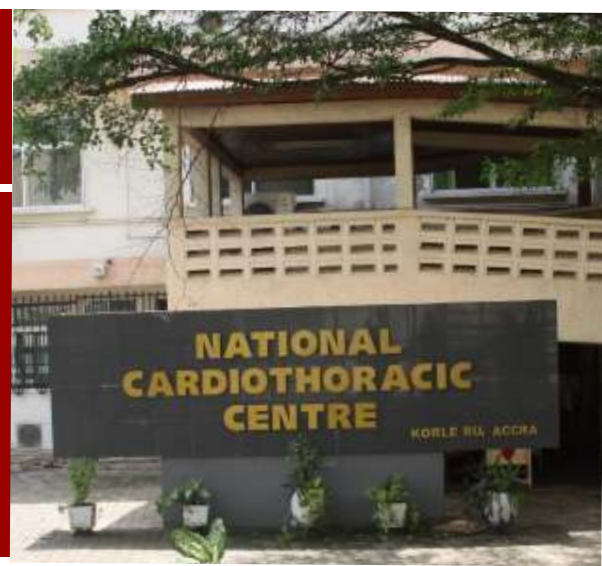
Students practising core skills



Directions to Clinical Skills & Simulation Centre

Colon-Flap Pharyngoesophagoplasty: An Innovation Pioneered by the National Cardiothoracic Centre.

Lead Surgeon: Dr. Mark Tettey



Background

Caustic stricture of the upper aerodigestive system is a severe injury which permanently deforms the oropharynx and laryngopharynx. Extensive pharyngo-esophageal tissue necrosis and subsequent scarring permanently destroys the normal swallowing mechanism. Invariably associated with severe pharyngeal stricture is complete stricture of the esophagus; these patients are unable to swallow for life.

Pharyngeal involvement in caustic strictures accounts for 4.4% of the caustic strictures treated at the National Cardiothoracic Centre in Accra. A patient with pharyngoesophageal stricture poses very unique challenge – reconstruction (pharyngoplasty) interferes with normal mechanisms for airway protection setting the stage for aspiration during swallowing. After pharyngoplasty, rehabilitative training to allow deglutition without aspiration is imperative; up to five months may be required to achieve near normal swallowing.

Colon-flap pharyngoesophagoplasty, an upper digestive tract augmentation procedure, was developed to volume-enhance the constricted pharynx and simulate normal deglutition; this was envisaged to minimize the risk of aspiration during swallowing.

Case Series

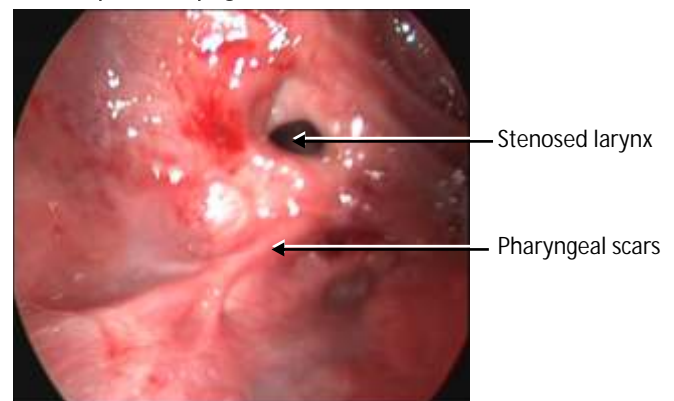
Three patients who presented with severe pharyngoesophageal strictures form the basis for the Colon-Flap Pharyngoesophagoplasty (CFPE). Their ages were Case A: 16 years, Case B: 4 years and Case C: 18 years. All accidentally ingested caustic soda and presented with absolute dysphagia. Gastrostomy for nutritional rehabilitation was performed in each case after initial resuscitation. Duration from caustic ingestion to CFPE was 9 months for the Case A and more than 12 months for the Case B and C.

Patient Selection

All patients sustained severe pharyngoesophageal stricture with laryngopharyngeal stenosis. Diagnostic contrast imaging was challenging due to swallowing difficulties. The decision to perform CFPE was taken intraoperatively in each case – laryngopharyngeal stenosis was an absolute indication. When laryngopharyngeal stenosis is complete, a suprahyoid colopharyngoplasty is performed as reported earlier by our team [Tettey et al. Interactive Cardiovascular and Thoracic Surgery. 2011 Feb; 12(2):213-217].

Anatomical Challenges Following Severe Caustic Injury.

Fig. 1. A patient with features of severe pharyngeal stricture. Note pharyngeal scars, distorted pharyngeal anatomy and laryngeal stenosis.



- Scarred and destroyed epiglottis
- Oropharyngeal and laryngopharyngeal stricture
- Restricted movement of some of the oropharyngeal muscles caused by extensive scarring.
- Severe laryngeal stricture; most of these patients end up with permanent tracheostomy. Fortunately, none of the patients operated sustained severe laryngeal stricture.

SURGICAL PROCEDURE

Patient Preparation

- Nutritional Status assessment
- General laboratory tests (FBC, BUE & Cr, LFT)
- Bowel preparation before surgery

Anaesthesia

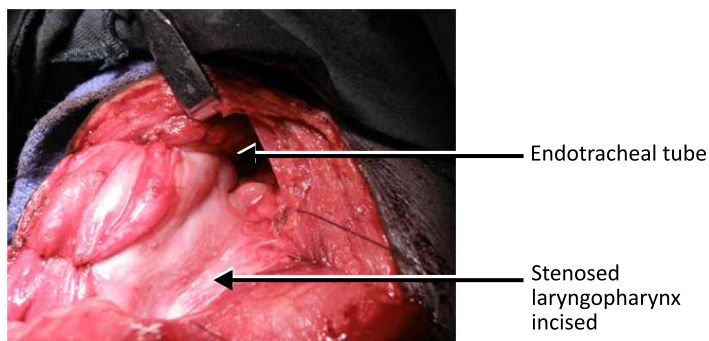
General anaesthesia is used in all cases.

- Invasive monitoring to ensure stable hemodynamics throughout surgery and prevent overloading of patient.
- Patient is positioned supine with the neck extended. Adequate exposure of the neck is vital in enhancing dissection.

Surgical Technique

- Routine cleaning and draping exposing the neck and the abdomen
- Neck dissection is first carried out using a J-shaped skin incision starting from the suprasternal notch and then extending medial to the left stenoceidomatoid muscle. This incision is deepened carefully using a combination of blunt and sharp dissection, retracting the carotid sheath laterally until the cervical vertebrae is visibly palpable. The esophagus and the pharynx are in direct contact with the cervical vertebrae. The dissection is continued and the pharynx is separated from the vertebrae proximally up to the angle of the left mandible.
- The anaesthetist then introduces a nasogastric tube which helps to locate the proximal extent of the stricture as the tube is moved in and out of the pharynx. A longitudinal incision is made above the stricture close to the median raphe in the pharynx. The laryngopharynx is completely laid open and this is extended into the pharynx at least 2 cm above the level of the laryngeal opening. At this point the endotracheal tube is visible as it enters the larynx.

Fig. 2. The stenosed laryngopharynx is completely laid open with the endotracheal tube showing as it enters the larynx.



- Through a median laparotomy, the left colon and its arterial supply are assessed. The length of colon to be harvested for replacing the esophagus and reconstruction of the pharynx is determined by the distance between the level at which the left colic artery enters the colon and the proximal extent of the pharyngeal incision at the neck. The colon to be harvested may extend from the level of the left colic artery to the level of the right colic artery. The harvested colon is pedicled on the left colic artery. Colonic continuity is established by end-to-end colo-colic anastomosis. The distal end of the harvested colon is anastomosed to the body of stomach to create an isoperistaltic anastomosis when the proximal end is subsequently used to reconstruct the pharynx.
- A retrosternal tunnel is created by blunt dissection from the xyphisternum to neck. The proximal end of the colon is then routed through this tunnel to the neck. Care is taken not to twist the vascular pedicle in the process. The length of the pharyngeal incision is measured to determine length of colon flap to be created. Fig. 3. A longitudinal incision is made at the antimesenteric border of the colon to correspond with the length of the pharyngeal incision. Fig. 4. Five stay sutures are placed at the apex of the pharyngeal incision as shown. Fig. 5. This is used to anchor the colon initially before posterior interrupted sutures are placed followed by anterior interrupted sutures. Fig. 6. Resection of scar tissue was avoided in all cases operated. The colon flap is used to enlarge the stenosed pharyngeal space resulting from the stricture by forming the posterior wall. Food swallowed now has enough space in the laryngopharynx; this reduces laryngeal contamination and aspiration. The gastrostomy tube is maintained for decompression post-operatively and feeding. The neck and abdominal incisions are closed in two layers.

Post-operative Care

- Patients were admitted to the ICU for invasive hemodynamic monitoring after they were extubated in theatre.
- Hypotension was avoided in the immediate postoperative period. Vessels supplying the harvested colon could go into spasm with hypotension and this can affect the integrity of the anastomosis.
- Total parenteral nutrition was used in all patients before commencement of oral feeding on the 10th day.

Results

- Case B and C started swallowing without aspiration by the 10th day after surgery when feeding was commenced. Case A had a technical challenge related to the extent of the pharyngeal incision. This was corrected in case B & C. Case A however started swallowing 14 days after discharge on the day 14.
- Post operative recovery was uneventful in all three cases with no complications.
- Case B & C were discharged on the 12th day post operative and case A was discharged on day 14.
- Follow-up period: Case A – 2 years, Case B – 18 months, Case C – 2 months. All three patients are doing very well. They eat any type of food and had no significant dysphagia.

Learning Points:

- Caustic ingestion with severe pharyngoesophageal stricture potentially leaves a patient unable to eat and swallow for life.
- Reconstraspiration. uction of the damaged oropharynx and laryngopharynx with esophageal replacement is an uphill tax because swallowing after repair often interferes with respiration.
- Colon-flap pharyngoesophagoplasty technique developed uniquely eliminates the difficulty that patients go through in learning to swallow without aspiration.

Fig. 3. The length of the incision made in the pharynx is measured.



Fig. 4. The corresponding length of the fashioned colon-flap is measured



Fig. 5. Extensive pharyngeal incision and the five stay sutures placed proximally.

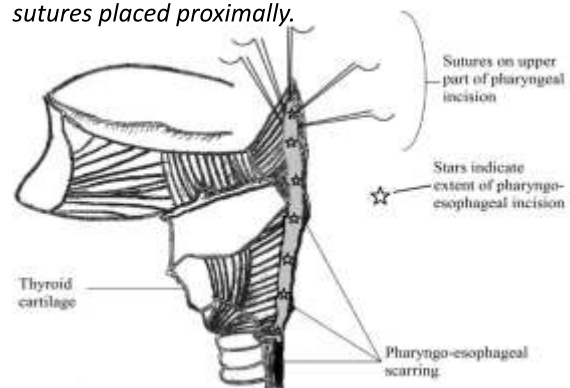


Fig. 6. The colon-flap is used to close the incision made in the pharynx. The anterior interrupted sutures are shown.

