

BIOGRAPHICAL SKETCH

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NAME: Mwachiro, Michael

eRA COMMONS USER NAME (agency login): MICHAELMWACHIRO

POSITION TITLE: Director of Endoscopy

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Nairobi, Nairobi, Kenya	MBChB	12/2008	Medicine and Surgery
Tenwek Hospital, Bomet, Kenya	Fellowship	12/2011	Endoscopy/ Research
Tenwek Hospital, Bomet, Kenya	Residency	12/2016	General Surgery Fellowship
University of Edinburgh, Scotland	MPH	07/2021	Public Health

A. Personal Statement

I am a staff surgeon and Head of the Endoscopy Department at Tenwek Hospital in Bomet, Kenya. I am also the secretary general of the surgical society of Kenya. In addition, I am the Kenya country representative and chair of the Education, Scientific and Research Committee for the College of Surgeons of East, Central and Southern Africa (COSECSA) and have been coordinating surgical training through the college sites.

Through my training in general surgery and endoscopic methods, I have had extensive exposure to the diagnosis and management of esophageal cancer which has been my core research area. I have been co-mentored by Dr. Russ White at Tenwek Hospital and Dr. Sanford Dawsey at the NCI, with previous research focused on early detection, epidemiology and palliation of esophageal cancer. As PI and Co-Investigator on several of these projects, I gained experience with leading a research team and with seeing a project through to a timely completion. I am also a recent recipient of a GloCal Health Fellowship from the University of California Global Health Institute. I am leading a project focusing on the genomic analysis of esophageal squamous cell carcinoma, for which I am jointly mentored by Dr. Katherine Van Loon and Dr. Sanford Dawsey. I am a founding member and previous Chair of the Steering Committee of the African Esophageal Cancer Consortium (AfrECC). Through international networks, I have established additional mentoring relationships with the intention of expanding our research enterprise at Tenwek Hospital to focus on the genetic, molecular, and environmental determinants of esophageal cancer in East Africa.

B. Positions and Honors**Positions and Employment**

2009	Medical Officer Intern, Tenwek Hospital
2010-2011	Research Fellow, Tenwek Hospital
2017-present	Surgical Endoscopist and Director of Endoscopy, Tenwek Hospital

Other Experience and Professional Memberships

2006 Member, External Affairs Committee, Medical Students against AIDS

2006	Member, Scientific Committee, International Students Conference on the HIV/AIDS African Pandemic
2006	Associate Editor, <i>Nairobi Journal of Medicine</i>
2006-2007	Member, ICT Committee, University of Nairobi Association of Medical Students
2010-2014	Principal Investigator, Study of Esophageal Dysplasia at Tenwek Hospital, The STEP Study
2012-present	Assistant Editor, <i>The Annals of African Surgery</i>
2012-2016	Representative, Kenya Country Surgery Residents
2012-present	Member, Surgical Society of Kenya Council
2013	Member, African Cancer Leaders Institute, African Organization for Research and Training in Cancer
2014-present	Remote Site Course Liaison, Introduction to Principles and Practice for Research Course (NIH online course)
2015-present	Member, Research Committee, African Organization for Research and Training in Cancer
2015-present	Member, National Cancer Institute Kenya Research Panel
2016-present	Member, African Esophageal Cancer Consortium (AfrECC)
2017-present	International Editorial Board, Gastrointestinal Endoscopy (GIE)
2017-2019	Chair, Scientific and Research Committee, Surgical Society of Kenya
2018-present	Secretary General, Surgical Society of Kenya
2019-2020	Steering Committee chair- African Esophageal Cancer Consortium (AfrECC)
2020	Member, College of Surgeons of East, Central and Southern Africa (COSECSA) Institutional Review Board
2020	Member, International Committee, American Society of Gastrointestinal Endoscopy (ASGE)

Honors

2012	Young Investigator Award, Surgical Society of Kenya (SSK) Annual Scientific Conference, Kisumu, Kenya
2016	Overall Best Scientific Presentation, SSK Annual Scientific Conference, Naivasha, Kenya
2016	International Exchange Award, Chinese Cancer Institute, Beijing, China
2016	First Place, Scientific Paper Competition, Pan African Academy of Christian Surgeons, CMDA/ CMDE Conference, Greece
2017	Merit Award for Excellence in Research, Surgical Society of Kenya
2017	Lindsay Stewart Award for Research, College of Surgeons of East, Central and Southern Africa
2017	Fogarty/GloCal Health Fellowship, University of California Global Health Institute
2018	Top40Under40 Kenya Award
2022	International Guest Scholar Award, American College of Surgeons
2022	Annals of African Surgery Research Award, Surgical Society of Kenya

C. Contributions to Science

I have made contributions to science in 4 main scientific areas: 1) Investigating risk factors and early detection strategies in esophageal cancer, 2) Advanced esophageal cancer palliation with self-expanding metal stents, 3) Creating an international network of esophageal cancer researchers, 4) Research on Surgical training

1. I have spent the most time during my training investigating risk factors and early detection strategies. I have had extensive clinical exposure to patients with advanced esophageal cancer and have directed my own research efforts into determining whether it was possible to detect this deadly disease at an earlier stage. As such, our team decided to focus on early detection for esophageal dysplasia, a precursor of ESCC. We modeled our work on previous work done in Iran and China. We aimed to determine the prevalence of esophageal dysplasia

in an asymptomatic population, which would then help us focus our efforts in screening methods. This project involved endoscopic localization of dysplastic lesions which would be unstained by Lugol's iodine

- a. **Mwachiro M**, Burgert S, White R, Dawsey S. Esophageal dysplasia is common in asymptomatic Kenyans, *American Journal of Gastroenterology*. 2016 Apr;111(4):500-7.
 - b. Lando JO, **Mwachiro MM**, Parker RK, Albert PS et al. Prevalence of esophageal squamous dysplasia in relatives of patients with esophageal cancer in Southwestern Kenya. *Cancer Epidemiol*. 2022 Jun;78:102141. doi: 10.1016/j.canep.2022.102141. Epub 2022 Mar 15. PMID: 35299153
 - c. **Mwachiro MM**, Pritchett N, Calafat AM, Parker RK et al. Indoor wood combustion, carcinogenic exposure and esophageal cancer in southwest Kenya. *Environ Int*. 2021 Jul;152:106485. doi: 10.1016/j.envint.2021.106485. Epub 2021 Mar 6. PMID: 33689906
 - d. Nieminen MT, Novak-Frazer L, Collins R, Dawsey SP, Dawsey SM, Abnet CC, White RE, Freedman ND, **Mwachiro M**, Bowyer P, Salaspuro M, Rautemaa R. Alcohol and acetaldehyde in African fermented milk mursik--a possible etiologic factor for high incidence of esophageal cancer in western Kenya. *Cancer Epidemiol Biomarkers Prev*. 2013 Jan;22(1):69-75. doi: 10.1158/1055-9965.EPI-12-0908.
 - e. Pritchett N, Burgert S, Murphy , Brockman J, White R, Lando J, Chepkwony R, Topazian M, Abnet C, Dawsey S, **Mwachiro M**. Cross sectional study of serum selenium concentration and esophageal squamous dysplasia in Western Kenya- Manuscript in Press
2. Due to the large volume of patients many of whom have advanced ESCC, we have done a lot of research in palliation with self-expanding metal stents. Tenwek has significantly contributed to this by developing a technique that does not require fluoroscopic assistance to place the stents. This is ideal for resource limited settings and I have been involved in both training of stent placement and research. I have also been working on our surgical resection survival analysis alongside Dr White and this is ongoing.
- a. **Mwachiro M**, Parker R, Lando J, Simel I, Chol N et al. Predictors of adverse events and early mortality after esophageal stent placement in a low resource setting: a series of 3823 patients in Kenya.. *Endosc Int Open*. 2022 Apr; 10(4): E479–E487. Published online 2022 Apr 14. doi: 10.1055/a-1783-9829
 - b. White RE, Chepkwony R, **Mwachiro M**, Burgert SL, Enders FT, Topazian M. [Randomized Trial of Small-diameter Versus Large-diameter Esophageal Stents for Palliation of Malignant Esophageal Obstruction](#). *J Clin Gastroenterol*. 2015 Sep;49(8):660-5. doi: 10.1097/MCG.0000000000000333.
 - c. Ranketi S, **Mwachiro M**, Topazian M, Burgert S. Endoscopic treatment of cervical esophageal transluminal bridge. *Gastrointest Endosc*. 2017 Sep;86(3):561-562. doi: 10.1016/j.gie.2017.03.019.
 - d. **Mwachiro M**, Mitchell E, Topazian H, White R. Esophagectomy in Patients with Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome: A Viable Option. *Seminars in Thoracic and Cardiovascular Surgery*, DOI: <http://dx.doi.org/10.1053/j.semtcvs.2017.05.005>
 - e. **Mwachiro M**, Parker R, Chepkwony R, Burgert S, White RE. Esophageal stent placement without optical or fluoroscopic visualization. *VideoGIE*, DOI: <http://dx.doi.org/10.1016/j.vgie.2017.07.013>

3. I have been actively involved in collaborative activities for esophageal cancer research in Africa. I have also been part of global discussions on networking between researchers in high incidence areas for ESCC including China, Iran, Brazil and Africa. I am one of the founder members of the African Esophageal Cancer Consortium- AfrECC and have been very involved in streamlining and standardizing projects in the member countries. I am also part of a team of stenting trainers for the region as my institution has a large experience with this.
 - a. Buckle GC, Mahapatra R, **Mwachiro M**, Akoko L, Mmbaga EJ et al. Optimal management of esophageal cancer in Africa: A systemic review of treatment strategies. *Int J Cancer*. 2021 Mar 1;148(5):1115-1131. doi: 10.1002/ijc.33299. Epub 2020 Oct 6. PMID: 32930395
 - b. Buckle GC, Mrema A, **Mwachiro M**, Ringo Y, et al. Treatment outcomes of esophageal cancer in Eastern Africa: protocol of a multi-center, prospective, observational, open cohort study. *BMC Cancer*. 2022 Jan 19;22(1):82. doi: 10.1186/s12885-021-09124-5. PMID: 35045815
 - c. African Esophageal Cancer Consortium. Expanding oesophageal cancer research and care in eastern Africa. *Nat Rev Cancer*. 2022 May;22(5):253-254. doi: 10.1038/s41568-022-00458-1. PMID: 35246668
 - d. Murphy G, McCormack V, Abedi-Ardekani B, Arnold M, Camargo MC, Dar NA, Dawsey SM, Etemadi A, Fitzgerald RC, Fleischer DE, Freedman ND, Goldstein AM, Gopal S, Hashemian M, Hu N, Hyland PL, Kaimila B, Kamangar F, Malekzadeh R, Mathew CG, Menya D, Mulima G, **Mwachiro MM**, Mwasamwaja A, Pritchett N, Qiao YL, Ribeiro-Pinto LF, Ricciardone M, Schüz J, Sitas F, Taylor PR, Van Loon K, Wang SM, Wei WQ, Wild CP, Wu C, Abnet CC, Chanock SJ, Brennan P. International cancer seminars: a focus on esophageal squamous cell carcinoma. *Ann Oncol*. 2017; 28:2086-93
 - e. Van Loon K, **Mwachiro MM**, Abnet CC, Akoko L, Assefa M, Burgert SL, Chasimpha S, Dzamalala C, Fleischer DE, Gopal S, Iyer PG, Kaimila B, Kayamba V, Kelly P, Leon ME, Mathew CG, Menya D, Middleton D, Mlombe Y, Mmbaga BT, Mmbaga E, Mulima G, Murphy G, Mushi B, Mwanga A, Mwasamwaja A, Parker MI, Pritchett N, Schüz J, Topazian MD, White RE, McCormack V, Dawsey SM. The African Esophageal Cancer Consortium: A Call to Action. *J Glob Oncol*. 2018 Sep;4:1-9. doi: 10.1200/JGO.17.00163. PMID: 30241229; PMCID: PMC6223465

4. In my role as an educator with the College of Surgeons of East, Central and Southern Africa I have been involved in a number of research projects on surgical training. I have also been part of research on pediatric surgery including a trauma study and a multi-center project on Wilms tumor focused on the role of government health insurance on outcomes as well as the overall survival rates. We also looked at racial disparities in the peptide profiles in the African and North American specimens. I also previously completed research in critical care, evaluating outcomes of patients who presented at our facility and had cardiopulmonary resuscitation either in the emergency room or in the wards.
 - a. Parker RK, Topazian HM, Parker AS, **Mwachiro MM**, Strain S, White RE, Thelander K, Riviello R. Operative Case Volume Minimums Necessary for Surgical Training Throughout Rural Africa. *World J Surg*. 2020 Jun 2. doi: 10.1007/s00268-020-05609-9. Epub ahead of print. PMID: 32488662
 - b. **Mwachiro M**, Mwachiro E, Wachu M, Koske W, Thure L, Parker RK, White RE. Assessing Post-operative Pain with Self-reports via the Jerrycan Pain Scale in Rural Kenya. *World J Surg*. 2020 Jul 13. doi: 10.1007/s00268-020-05685-x. Epub ahead of print. PMID: 32661692.

- c. Axt J, Abdallah F, Axt M, Githanga J, Hansen E, Lessan J, Li M, Musimbi J, **Mwachiro M**, Newton M, Ndung'u J, Njuguna F, Nzioka A, Oruko O, Patel K, Tenge R, Ukoli F, White R, O'Neill JA Jr, Lovvorn HN 3rd. Wilms tumor survival in Kenya. Journal of pediatric surgery. 2013; 48(6):1254-62. NIHMSID: NIHMS459005 PubMed [journal]
- d. Kiragu A, Dunlop S, Wachira W, Saruni S, **Mwachiro M**, Slusher T. Pediatric Trauma Care in Low- and Middle-Income Countries: A Brief Review of the Current State and Recommendations for Management and a Way Forward. J Pediatr Intensive Care DOI <http://dx.doi.org/10.1055/s-0036->
- e. Parker RK, Mwachiro EB, **Mwachiro MM**, Pletcher J, Parker AS, Many HR. Mortality Prediction in Rural Kenya: A Cohort Study of Mechanical Ventilation in Critically Ill Patients. Crit Care Explor. 2019 Dec 10;1(12):e0067. doi: 10.1097/CCE.000000000000067. PMID: 32166248; PMCID: PMC7063927.

Complete List of Published Work in MyBibliography:

<https://www.ncbi.nlm.nih.gov/sites/myncbi/1vMPf2hgCRxkd/bibliography/51434528/public/?sort=date&direction=ascending>.

D. Research Support

Ongoing Research Support

Kenya National Research Fund

Mwachiro M (PI)

March 2021 to March 2023

A Pilot Study on Increasing in-Country Capacity for Early Detection of Esophageal Cancer through Lugol's Chromoendoscopy and Palliation with Stenting for Advanced Disease in Select Counties-A Multi-Site Collaborative Project

Role: PI

NIH Fogarty UCGHI GloCal Fellowship

Mwachiro M (PI)

July 2017 to June 2021

Genomic analysis of Esophageal Squamous Cell Carcinoma in Bomet County, Kenya

The goal of this study is to determine the molecular determinants of esophageal cancer in Bomet, Kenya.

Role: PI

Completed Research Support

NIH Intramural funding

Abnet C (PI)

February 10 2014 to April 20 2020

THINKER Case control study for esophageal cancer

The goal of this study is to determine the epidemiological factors for esophageal cancer in Bomet, Kenya.

Role: Co- Investigator

BIGCAT

Mwachiro M (PI)

01/01/10-12/31/11

Prevalence of Esophageal Squamous Dysplasia in Asymptomatic Kenyans

The goal of this project was to determine the prevalence of ESD in asymptomatic Kenyans in an area that is high risk for esophageal cancer.

Role: PI