

CURRICULUM VITAE.

- I. (a) Name: Mabel Ayebatonyo Charles-Davies
(b) Department: Chemical Pathology
(c) Faculty: Basic Medical Sciences
- II. (a) First Academic Appointment: Lecturer 1; 26 April, 2004
(b) Present Post (with date): Senior Lecturer; 1 October, 2010
Honorary Consultant (now designated Medical
Specialist Adviser, University College Hospital,
Ibadan; 15 September, 2006
(c) Date of Last Promotion: 1 October, 2010
(d) Date Last Considered (in cases where promotion was not through): Not Applicable
- III. University Education (with dates)
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| University of Port Harcourt. | 1981-1985 |
| University of Ibadan. | 1986-1987 |
| University of Ibadan. | 1988-2000 |
- IV. Academic Qualifications (with dates and granting bodies)
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| Bachelor of Science (Hons.) (Biochemistry) Port Harcourt. | 1985 |
| Master of Science (Chemical Pathology) Ibadan. | 1987 |
| Doctor of Philosophy (Chemical Pathology) Ibadan . | 2000 |
- V. Professional Certificate and Diplomas (with Dates)
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| Certificate of Immunology (Ibadan) | 2005 |
| Certificate of Clinical Molecular Biology (Milan, Italy) | 2006 |
| Certificate of Training in ICT in Teaching Research and Administration
(Staff Training and Research capacity Building Sub-Committee of the
MacArthur Foundation implementation Committee, University of Ibadan, | |

Nigeria)	2009
Certificate on Principles and Practice of Clinical Research 2010 (The National Institutes of Health, USA in collaboration with the University of Ibadan, Nigeria and the University of Chicago Global Health Initiative, USA)	2010
International Federation of Clinical Chemistry and Laboratory Medicine Certificate (IFCC) Certificate in Laboratory Quality Management	2011

Training Workshops Attended with Certificates

Regional (AFRA) Training Workshop on Methodological Aspects of Tumour Markers-Thyroglobulin (TG), CA15-3 and Carcinoembryonic Antigen (CEA) (C7-RAF-6.018-003) Accra, Ghana (5-9 July, 1999).	1999
UNDP/UNFPA/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction Organised 3 rd Semenology Workshop for sub-Saharan Africa Scientists, held at the Department of Obstetrics and Gynaecology, University of Stellenbosch and Tygerberg Hospital, Cape Town, South Africa (November, 1999).	1999
Doctors as Educators Workshop organised by the Royal College of Physicians and West African College of Physicians in the University College Hospital, Ibadan on 5-7 July, 2016.	2016
Centre for Excellence in Teaching and Learning (CETL), University of Ibadan organised Course Induction/National workshop on Pedagogy for Higher Education for National Development, August 2-4, 2016.	2016

VI. Scholarships, Fellowships and Prizes (with dates) in respect

of Undergraduate and Post Graduate work only

Teaching Assistantship in Chemical Pathology (by Postgraduate School, University of Ibadan).	1988-1991
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VII. Honours, Distinctions and Membership of Learned Societies

Honours

University of Chicago Global Clinical Research Network Fellow, May, 2013.	2013
Secretary, Central Organizing Committee, National Association of Clinical Chemists (NACC) 2001 Scientific Conference and Annual General Meeting, National Hospital, Abuja.	2001
Assistant Secretary, Association of Clinical Chemists of Nigeria (ACCN) (formerly NACC).	2003-2007
Secretary, ACCN.	2007- 2016
International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) National Representative (Nigeria)/ Member, IFCC Executive Council.	2008-2011, 2012-2016
Member, IFCC E-news Working Group.	2009-date
Member, Local Organising Committee for the Inauguration of the African Federation of Clinical Chemistry and 2009. Biennial Conference of the Association of Clinical Chemists, held in Ibadan, Nigeria from 25-28 Oct, 2009.	2009
Member, IFCC International Scientific Advisory Committee (for 2011 World Conference, Berlin).	2010
Alternate IFCC Representative (Nigeria) at the Twenty First Triennial Meeting of IFCC Council on 15 May, 2011 at Internationales Congress Centrum, Berlin, Germany.	2011
Member at large, Executive Council of the African Federation of Clinical Chemistry (AFCC).	2014-2017
IFCC Corresponding Member, Molecular Diagnostics Committee (C-MD).	2016-date
President-Elect, AFCC	2018-date

Membership of Learned Societies

Member, Association of Clinical Chemists of Nigeria (ACCN) -affiliated to the AFCC and IFCC	1999-date
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VIII. Details of Teaching/Work Experience

Undergraduate Teaching

-Teaching of Medical Students at Pre-Clinical and Clinical Levels in Theory and Practice of Chemical Pathology at Introductory, Blocks 1 and 2 postings in Chemical Pathology (Theory and Practice)

Lectures: Disorders of Endocrine Metabolism and Their Assessment, Quality Assurance in the Laboratory, Tumour Markers, Protein Metabolism in Health and Diseases/Disorders of Plasma Proteins/Protein Metabolism and Assessment, Lipid Metabolism and its Disorders, Urinalysis in Diagnostic Medicine, Tolerance and Clearance Tests: Basis and Testing, Assessment of Basic Metabolic Processes, Oral Glucose Tolerance Tests, Water Homeostasis with emphasis on Renin Angiotensin System and Tubular Mechanisms, Investigation of Disorders of Gonadal Function, Assessing Hormone Action, Obesity/Metabolic Syndrome,

Tutorials/Practicals: Laboratory Reports, Urinalysis (Diabetic Nephropathy, Obstructive Jaundice, Nephrotic Syndrome), Case Presentation, Metabolic Research Unit Investigations (Oral Glucose Tolerance Tests, Synacthen Test, Thyroid Function Tests, Dexamethasone Suppression, Water Deprivation Test-Joint teaching). Pre-analytical Errors, Laboratory Safety, Basic Concepts of Tolerance, Data Interpretation, Lipid Metabolism.

-Teaching of Bachelor of Medical Laboratory Sciences Students

CPY 501: Carbohydrate, Protein and Lipid Metabolism

Lectures: Plasma Proteins in Health and Disease, Protein Degradation.

CPY 506: Clinical and Reproductive Endocrinology

Lectures: Physiology of Human Reproduction, Investigation of Male and Female Infertility

CPY 507: Analytical Techniques in Clinical Chemistry

Lectures: Hormones, Radio Immunoassay, Enzyme Linked Immunosorbent Assay/Enzyme Immunoassay

HAE 507: Specialized Hematological Techniques

Postgraduate Teaching

CPY 701: Introductory Chemical Pathology

Lectures-General Metabolism and the Steady State, Tolerance Tests in Chemical Pathology, Hypothalamic-Pituitary-Thyroid and Adrenal Axis, Plasma Proteins, their Disorders and Investigations, Hypothalamic-Pituitary, Thyroid and Adrenal Axis, Basic Concepts of Hormone Action, Introduction to Molecular Biology, Overall Overview/Assessment of Course, Identification of Supervisors

CPY 711: Nutrition and Metabolic Disorders

Lectures-Lipid Metabolism (including digestion, Absorption and Assimilation of Lipids), Plasma Lipids: Transportation and Cardiovascular Diseases, Relationship of Lipids to other Biomarkers of Cardiovascular Diseases, Metabolic Relationship between Lipid Metabolism and other Major Macronutrients such as Carbohydrate and Proteins Introduction to Protein and Amino Acid Metabolism, Digestion, Absorption, Assimilation, Utilization and Transportation of Protein, Structure of Proteins, Plasma Proteins in Relation to Immunochemistry, Amino Acid Structure and Classification, Amino Acid Properties and Reactions, Disorders of Amino Acid Metabolism, Aminoaciduria, Important Biochemical Compounds from Individual Amino Acid Metabolism I and II, Neuro Transmitters and Modulators, Synthesis of Haemoglobin, Choline and Porphyrin and Creatine etc., Interrelationship between Amino Acid and Macronutrients, Interrelationship between Amino Acid and Other Micronutrients such as Vitamins, Obesity, Metabolic Syndrome, Overall Assessment of Course.

CPY 703: Chemical Pathology Laboratory Methods and Management

-Part 1 (Lectures)

Quality Assurance in Laboratory Practice, Principle of Immunoassays and Spectrophotometry and their applications, Practical Immunoassay, Radioimmunoassay and Related Techniques 1 and 11, Application and Evaluation of Procedures to cover CPY 701 and CPY 703, Urinalysis in Clinical Practice, An Overview of Common/Useful Biochemical Tests and their Diagnostic Applications, Immunoassay Techniques, Fluorimetry: Introduction to Clinical Chemistry Laboratory/Clinical

Application, Chromatography, Case Presentation, Theory and Practice of Chemical Pathology Techniques: Spectrophotometry, Fluorimetry; Overall Assessment of Course.

-Part 2 (Practical)

Routine Techniques/Immunoassay (Hands On).

-Part 3 (Seminar Presentation)

Suggestion of Topics, Examination of Seminar Presentations.

CPY 721: Reproductive Endocrinology

Lectures-Adolescent Reproduction and Sexuality, Biochemistry of Hormones-Steroids, Peptides etc., Gonadotropic Hormones and Prolactin: Biological Chemical Properties and Control of Secretion, Endocrinology of the Menstrual Cycle, Biochemistry of Pregnancy and the Puerperium, Laboratory Investigation of the Infertile Couple/ Male and Female Infertility, Endocrine Function Testing (Current Trends, Recent Diagnostic Tools), Contraception (Biochemical Basis, Advantages and Disadvantages, Current Trends, Technological Development), Assisted Reproductive Technologies, Endocrine Aspects of Tumours and their Markers.

CPY 731: Immunology

Lectures- Endocrine System and Immune Interactions, Endocrine Diseases (Immunological Basis), Endocrine-Immune Interactions in Reproduction, Infertility in Males and Females (Immunological Basis and Management), Immune Responses During Normal Pregnancy and Pregnancy with Complications (Regulatory Mechanisms of Maintaining or Rejecting Pregnancy), MHC Structures and Functions: Regulation of Maternal Recognition of Fetal Allograft, Allogenicity of the Feto Placental Unit, Immune Function of Pregnant Mothers), Maternal/Neonatal Immunology (The Transfer of Antibodies from the Mother to her Child, The Maturation of the Immune System: The Immune System/Functions of the Foetus, Newborn and in Childhood).

CPY 704: Biochemical Aspects of Nuclear Medicine (CPY 704)

Lectures-Principles of Radioimmunoassay, Applications of Radioimmunoassay/ Immunoradiometric Assay, Instrumentation-Stable Isotopes, Stable Isotopes: Application in Protein Metabolism, Stable Isotopes: Application in Lipid Metabolism, Stable Isotopes: Applications in Vitamins.

CPY 705: Seminar

Suggestion of Topics for Presentation, Examination of Seminar Presentation.

CPY 741: Project Supervision

Research Supervision

(a) Completed

Under Graduate Dissertation 5 Students

 Biochemistry (3)

 BMLS (2)

Master of Science Dissertation 21 Students

Master of Philosophy Thesis 2 Students

Doctor of Philosophy Thesis 5 Students

(b) In progress

Master of Philosophy Thesis 1 Student

Doctor of Philosophy Thesis 8 Students

Positions Held

Coordinator, CPY721: Reproductive Endocrinology	2006-2008
Coordinator, CPY 704: Biochemical Aspects of Nuclear Medicine	2009-2010
Coordinator, CPY 703: Chemical Pathology Laboratory Methods	2009-2010
Voluntary Counselor, College of Medicine, University of Ibadan	2010
Member, Departmental Postgraduate Admission Committee	2012-13
Member, Academic Board, College of Medicine, University of Ibadan, Ibadan.	2014
Member, Senior Staff Disciplinary Committee, College of Medicine, University of Ibadan, Ibadan.	2014
Coordinator of Postgraduate Studies in Chemical Pathology/Member, Faculty of Basic Medical Science Postgraduate Committee.	2008- 2009, 2012-2016
Chairperson, Departmental Postgraduate Laboratory Committee.	2014-2016
Member, Post Graduate Admission Committee (Chemical Pathology).	2012-2016
Head of Department, Biomedical Laboratory Sciences	2021-2022

Appointment as Examiner

Internal Examiner

Internal Examiner, Department of Chemical Pathology, College of Medicine, University of Ibadan (2 Ph.D. Thesis).

Internal/External Examiner, Department of Physiology, College of Medicine, University of Ibadan (1 Ph. D. Thesis).

External Examiner

External Examiner, Faculty of Health and Wellness Sciences, Cape Peninsula University of Technology, Cape Town, South Africa (1 Ph.D. Thesis) (13 December, 2013).

Appointment as External Examiner for the Master of Science Programme, Department of Chemical Pathology, Ladoke Akintola University, Osogbo, (10 February, 2016).

External Examiner, Department of Chemical Pathology and Immunology, Olabisi Onabanjo University, Ago-Iwoye, Nigeria. 25 May, 2017.

Appointment as External Examiner (Undergraduate and Postgraduate Studies) in Clinical Chemistry in the Department of Human Pathology, University Examinations, University of Nairobi, Nairobi (4 May, 2016; From 15/2016-2018, 2019).

Peer Reviewer

Journal of the National Medical Association.

African Journal of Medicine and Medical Sciences.

African Journal of Biomedical Research.

Journal of US-China Medical Science, USA.

UCH/UI Institutional Review Board.

African Health Sciences.

Postgraduate Teaching in the Department of Physiology

Topic: Principles of Immunoassay Technique

2013-14

Teaching of Intensive Revision/ Update Course

Scientific Basis of Obstetrics and Gynaecology in Reproductive Immunology (organised by the National Postgraduate Medical

College, Faculty of Obstetrics and Gynaecology) in Preparation for the Primary Fellowship hosted by the Department of Obstetrics and Gynaecology, University College Hospital, Ibadan. 2008-2010, 2012-2013

Travel Grants

University of Ibadan Travel Grant-Paediatriac Clinical Chemistry, Fortaleza, Brazil, 26-28th September, 2008 2008

IFCC/Roche Travel Grant for The IFCC World Lab in Fortaleza, Brazil-28th Sept.-2nd Oct., 2008. 2008

International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) Professional Scientific Exchange Programme (PSEP) Grant from April to July, 2011 at St Raffaele's Hospital, Milan, Italy. 2011

University of Ibadan Travel Grant- the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) World lab from 15th -19th May, 2011 at the ICC, Berlin, Germany. 2011

University of Stellenbosch Conference Grant Assistance to attend the PathPoint Conference in CapeTown from 28-30 September, 2012. 2012

IFCC Travel Grant for National Representatives to attend the IFCC General Conference in Malaysia in November, 2012. 2012

African Federation of Clinical Chemistry Grant to attend the 22nd Congress of the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) (Istanbul 2014 Worldlab) in Istanbul from 22-26 June, 2014. 2014

IFCC Travel Grant for National Representatives to attend the IFCC General Conference in 2016, Madrid, Spain, 18-21 March, 2016. 2016

AFCC Travel Grant for 6th Congress of the African Federation of Clinical Chemistry and the 19th Congress of the Moroccan Association of Clinical Biologists, Marrakech, Morocco, 25th-28th September, 2019. 2019

Research Grants

Mac Arthur Foundation Grant, Co-Investigator, Risk Assessment 2009

of Type2 Diabetes Mellitus and Dementia in Nigerians with Metabolic Syndrome (2009-2011, Report submitted in 2012)

Mansard Piuta Ibadan Mini Fellowship, Principal Investigator, 2014
Centre for Urology, Department of Surgery, University of Ibadan and University College Hospital, Ibadan (2014-2015)
Field Work Completed. (Report on stage of research submitted)

University of Ibadan Foundation Grant, Co- Investigator (2014-2017) 2014
(1st year report submitted)

Bassir Thomas Grant, Principal Investigator (2014-15) 2014
(Completed and presented; Report has been submitted)

Sabbatical Period (2011-2012)

The period was spent at the St Raffaele's Hospital, Milan, Italy (Jan.12, 2011- Jan11, 2012). This was to understand and develop modern techniques in the Biochemical and Molecular Aspects of Human Reproduction. This was achieved in the Molecular Biology, Routine Biochemistry, Endocrine and Assisted Reproductive Technology Laboratories.

Molecular Biology Laboratory: The focus in this laboratory was the application of molecular techniques to identify classical and non-classical forms of 21-hydroxylase enzyme deficiency in the Congenital Adrenal Hyperplasia as well as develop a laboratory method to identify Azoospermic Factor (AZF) in deleted individuals.

Routine Biochemical Laboratory: The workings of an accredited routine biochemistry laboratory with networked automated instruments that measure biochemical, endocrine and haematological analytes were observed.

Endocrine Laboratory: Screening for endocrine disorders using the enzyme linked immunosorbent assay was done in this laboratory. I participated actively in analyzing seminal fluid, especially the identification of morphological characteristics of sperms on stained slides.

Cytogenetics Laboratory: Identification of human chromosomes and detection of aneuploidy in polar bodies of human ova were done in this laboratory.

Assisted Reproductive Technology Laboratory: This laboratory handled various In-vitro Fertilization Technologies (sperm swim up, identification of sperm morphology, ova retrieval and embryo development). Of special interest was the identification of sperms in testicular

biopsy and the intracytoplasmic sperm injection technique (ICSI) in respect of severe oligospermia.

Sabbatical Appointment (20/11/2018-19/11/2019)

Department of Chemical Pathology, College of Health Sciences, Nnamdi Azikiwe University (Nnewi Campus)

- Teaching of Medical Students: The investigation of Kidney Diseases and Therapeutic Drug Monitoring
- Teaching of M.Sc. Students: Endocrinology
- Internal Examiner at M.Sc Seminars, Ph.D Proposal, Ph.D Post Field Examinations.

Previous Employment

General Manager, Immunoassay Laboratories Ltd (now Clina-Lancet),

31 Glover Street, Lagos (Pioneers of Clinical Homone Assay in Nigeria).

1999-2002

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IX. Research

(a) Completed

Research Interest: Reproductive Endocrinology

- Male and Female Infertility
- Maternal and Child Health
- Reproductive Health in Metabolic Diseases
- Reproductive Oncology and Toxicology

(b) In progress

Male Reproductive Dysfunction

1. **Title:** Azoospermic Factor (AZF) in Infertile Nigerian Men with Idiopathic Dyspermia

Background: Infertility affects about 15% of couples. Declining sperm quality has long been reported with a 50% contribution of male factor to infertility. Although several aetiologies have been implicated, 20% of these men have oligozoospermia or azoospermia of unknown aetiology. Deletions in azoospermic factor (AZF) are currently associated with defective spermatogenesis but have not been investigated in Nigeria.

Aim: To identify frequency and pattern of deletions in AZF as a molecular genetic component of male factor infertility in Nigeria.

Research Stage: Collection of Biophysical Data and Samples (Blood and Semen) is completed. Completed Thesis and awaiting defence for the award of Ph.D

Reproductive Health in Metabolic Diseases

1. **Title:** Beta Thalassemia as a Correlate of Metabolic Syndrome, Type 2 Diabetes Mellitus and some Endocrine Dysfunctions

Background: The metabolic syndrome, a cluster of related factors that predispose individuals to type 2 diabetes mellitus and cardiovascular diseases, affect 33.1% of Nigerians. Although its genetic basis has been established, the specific genes in its aetiology are not clearly defined. Recently, a high prevalence of beta-thalassemia (a genetic disorder of haemoglobin synthesis), which was previously associated with the Mediterranean region, was reported in Ibadan. Individuals with beta thalassemia minor

had been observed with features of metabolic syndrome particularly insulin resistance. The rising prevalence of type 2 diabetes mellitus as well as the association of metabolic syndrome with hypothyroidism, hypoparathyroidism and hypogonadism has also been reported. It is possible that beta thalassemia minor is the genetic disease that underlies the insulin resistance observed in the metabolic syndrome, type 2 diabetes mellitus and other endocrine disorders. This has not been previously investigated.

Aim: To investigate the possible association of beta-thalassemia minor, with metabolic syndrome, hypothyroidism hypoparathyroidism and hypogonadism in individuals with type 2 diabetes mellitus.

Research Stage: The first student is awaiting conversion from MPhil/ Ph.D to Ph.D and has few laboratory analysis left while the second has completed thesis writing and is awaiting Ph.D defence (Research is supported by University of Ibadan Research Foundation).

2. Title: Cardiovascular Risk in Pre and Post-Menopausal Women: The Role of Hormones, Inflammation and Oxidative Stress.

Background: Cardiovascular diseases (CVD) are the leading cause of death in women in the Western world and hormone signaling has been implicated in the regulation of cardioprotective mechanisms. Oestrogen has long been known to be cardioprotective in females indicating an advantage of females over males in CVD risk. The risk of death from CVD, which is higher in postmenopausal women than males, was been attributed to reduced oestrogen levels at post-menopause. However, the benefit of hormone replacement therapy (HRT) in postmenopausal women is now controversial as recent evidence suggests that HRT actually increases the risk of CVD. Our previous studies showed that more Nigerian females (44.5%) than males (12.4%) had metabolic syndrome, a type 2 diabetic and CVD risk factor. Alarmingly, 99.2% of postmenopausal women in Ibadan had metabolic syndrome implicating CVD risk. We postulated that the cardioprotection of oestrogen might be lost in pre and postmenopausal women with the metabolic syndrome. Peripheral conversion of testosterone to oestradiol by aromatase in increased adipose tissue was implicated. Elucidation of this is necessary to improve maternal morbidity and mortality.

Aim: To evaluate endocrine, inflammatory and oxidative stress factors associated with CVD risk in pre and postmenopausal women with metabolic syndrome.

Research Stage: This research is at the sample collection stage.

Reproductive Endocrine Oncology

- 1. Title:** Insulin-like Growth Factor 1, Testosterone and Components of Syndrome in Prostate Cancer Patients before and after Bilateral Orchiectomy

Background: Most males diagnosed of prostate cancer undergo bilateral orchiectomy as a preferred mode of treatment due to late presentation. Reports show poor management outcome with rapid progression to key features of metabolic syndrome (MS) and increased mortality rate of 64% within 2 years. This was attributed to reduced testosterone levels resulting in altered metabolism characterized by features of the metabolic syndrome. We demonstrated in our preliminary report that 25.8%, 30.6%, 30.0% of males with prostate cancer, benign prostatic hyperplasia and control respectively had metabolic syndrome. The prevalent metabolic syndrome components were different from those of males in the general population. Whether this difference is attributable to age (above 50 years) or prostatic disease is not known. However, the reduced testosterone levels were attributed to prostatic diseases in our study. Since reduced testosterone levels were also associated with metabolic syndrome in our previous studies in the general population, we hypothesized that preexisting metabolic syndrome in males with prostate cancer before bilateral orchiectomy might inform the high mortality observed after BO. It was therefore necessary to undertake metabolic screening before and after orchiectomy. Moreover, the laboratory testing of prostate specific antigen is largely unreliable. This informs the search for newer non-invasive laboratory tests for adequate diagnosis and management of individuals with prostate cancer. Insulin like growth factor-1 is now associated with prostate cancer in other studies. A mathematical model with insulin-like growth factor 1, testosterone and prostate specific antigen may be useful and will be explored to replace PSA alone in the diagnosis of prostate cancer.

Aim: To evaluate IGF-1, testosterone and components of MS in Nigerian males with prostate cancer before and after bilateral orchiectomy.

Research Stage: Thesis completed and awaiting defence

(c) Project, Dissertation and Thesis

- The Effect of Umbelliferones and Benzoic Acid Derivatives on Heamoglobin SS Erythrocytes – B. Sc. Dissertation, Department of Biochemistry, Faculty of Science, University of Port Harcourt. 1985
- The Relationship between Maternal Protein, Lactose and Immunoglobulins in Breast Milk – M. Sc. Dissertation, Department of Chemical Pathology, College of Medicine, University of Ibadan. 1987
- Sperm Antibodies as a Factor of Infertility in Nigerian Males – Ph. D thesis in Reproductive Endocrinology, Department of Chemical Pathology, College of Medicine, University of Ibadan. 2000

X. Publications

1. **Charles-Davies, M.A.** and Agbedana, E.O. (2017). Overweight, Obesity and Metabolic Syndrome: Implications in Resource Poor Settings. In (Agbedana E.O., Anetor J.I. and Ogundahunsi O.A. (Eds.) *Recent Advances in Nutrition and Metabolism*. Ibadan: Ibadan University Press, 135-150pp. ISBN 978-978-54045-1-7.
2. Akanji, A. O., **Charles-Davies, M. A.**, Ezenwaka, C., Abbiyesuku, F. A. and Osotimehin, B. O. (1989). Dietary Salt and the Glycaemic Response to Meals of Different Fibre Content. *European Journal of Clinical Nutrition* Vol. 43: 699 – 703.
3. Akanji, A. O., Adeyefa, I., **Charles-Davies, M.** and Osotimehin, B. O. (1990): Plasma Glucose And Thiocyanate Response To Different Mixed Cassava Meals in Non-Diabetic Nigerians. *European Journal of Clinical Nutrition* Vol. 44. No.1: 71 – 77.
4. **Charles-Davies, M.A** and Osotimehin, B.O. (2001). Spermatozoal, Seminal Plasma and Blood Sperm Antibodies in Nigerian Males. *African Journal of Endocrinology and Metabolism* Vol. 2:13-18.
5. **Charles-Davies, M.A.** and Osotimehin, B.O. (2001). Reproductive Hormones in Infertility and Infection in sub Saharan Males. *African Journal of Endocrinology and Metabolism* Vol. 2: 19-21.
6. **Charles-Davies, M.A.** and Osotimehin, B.O. (2002). Zinc in infertility and infection. *BioScience Research Communications* Vol.14. No.3: 273-275.
7. **Charles-Davies, M.A and** Osotimehin, B.O. (2003). Sexually Transmitted Diseases and Male Infertility in the Nigerian. *BioScience Research Communications* Vol.15. No.1: 39-47.
8. **Charles-Davies, M.**, Arinola, O.G, Sanusi, R., Osotimehin, B.O. (2006). Immunoglobulin Classes and Nutritional Factors in Plasma and Breast milk of Lactating Mothers in Nigeria. *Iran. Journal of Immunology* Vol.3. 181-186.
9. Arinola, O.G. and **Charles-Davies, M.A.** (2008). Micronutrient Levels in the Plasma of Nigerian Females with Breast Cancer. *African Journal of Biotechnology* Vol. 7. 1620-1623.
10. Etuk, A.I., **Charles-Davies, M.A** and Arinola, O.G. (2009). Oestrogen Levels and Humoral Immune Parameters in Nigerian Breast Cancer Patients. *Tanzania Medical Journal* Vol. 24. No 2: 1-4.

11. Arinola, O.G. and **Charles-Davies, M. A.** (2008). The Serum Levels of Trace Metals in Nigerian Males with Different PSA Values. *Malaysian Journal of Medical Sciences* Vol. 15: 39- 42.
12. **Charles-Davies M.A.** (2009) Challenges of Endocrine Function Testing in Resource Poor Settings (Letter to the Editor) (peer-reviewed). *Electronic Journal of the International Federation of Clinical Chemistry* Vol. 20. No.4:
<http://mail.ifcc.org/cgi-bin/mailman/listinfo/ifcc-eneews>
13. Umoh, U., **Charles-Davies, M. A.** and Adeleye, J. (2010). Serum Testosterone and Lipids in Relation to Sexual Dysfunction in Males with Metabolic Syndrome and Type2 Diabetes Mellitus. *International Journal of Medicine and Medical Sciences* Vol. 2. No.12: 402-412.
14. Fabian, U.A., **Charles-Davies, M.A.**, Adebusuyi, J.R, Ebesunun, M.O, Ajobo, B.M, Hassan, O.O., Adigun, K, Owolabi, M.O., Oyewole, O.E, Olaniyi, J.A., Fasanmade, A.A., Akinlade, K.S., Arinola, O.G. and Agbedana, E.O. (2011). Leptin Concentrations in African Blacks with Metabolic Syndrome and Type 2 Diabetes Mellitus. *Journal of the US-China Medical Science* Vol. 8: No.8: 493-500.
15. Nsonwu-Anyanwu, A.C., **Charles-Davies, M.A.**, Oni, A.A., Taiwo, V.O. and Bello, F.A. (2011). Chlamydial Infection, Plasma Peroxidation and Obesity in Tubal Infertility. *Annals of Ibadan Postgraduate Medicine* Vol. 9: No. 2. 983-88.
16. Ajayi, O.O., **Charles-Davies M.A.** and Arinola, O.G. (2012). Progesterone, Selected Heavy Metals and Micronutrients in Pregnant Nigerian Women with a History of Recurrent Spontaneous Abortion. *African Health Sciences* Vol. 12. No 2: 152 – 158.
17. **Charles-Davies, M.A.**, Arinola, O.G., Fasanmade, A.A., Olaniyi, J.A., Oyewole, O.E, Owolabi, M.O., Hassan, O.O, Ajobo, M.T., Adigun, K.S., Akinlade, K.S., Adebusuyi, J.R., Ebesunun, M.O., Popoola O.O., Ogunbolade, W., Fabian, U.A., Rahamon S.K., Ogunlakin, M.A. and Agbedana E.O. (2012). Indices of Metabolic Syndrome in 534 Traders. *Journal of the US-China Medical Science* Vol. 9: No. 2: 91-100.
18. Aborisade, O.B., **Charles-Davies, M.A.** and Okunlola, M.A. (2013). Environmental Influences in Normal Weight Women with History of Recurrent Pregnancy Loss *International Journal of Tropical Disease & Health* (formerly American Journal of Tropical Medicine & Public Health) Vol. 3. No.3: 257-266.

19. **Charles-Davies, M.A.**, Fasanmade, A.A., Olaniyi, J.A., Oyewole, O.E., Owolabi M.O., Adebusuyi, J.R., Hassan, O., Ajobo, M.T., Ebesunun, M.O., Adigun, K., Akinlade, K.S., Fabian, U.A., Popoola, O.O., Rahamon, S.K., Okunbolade, W., Ogunlakin, M.A., Arinola, O.G. and Agbedana, E.O. (2013). Metabolic Alterations in Different Stages of Hypertension in an Apparently Healthy Nigerian Population. *International Journal of Hypertension*, 2013, Article ID 351357, 6 pages, <http://dx.doi.org/10.1155/2013/351357>.
20. Ikeh-Tawari, E.P., Anetor, J.I. and **Charles-Davies, M.A.** (2013). Cadmium Level in Pregnancy, Influence on Neonatal Birth Weight and Possible Amelioration by Some Essential Trace Elements. *Toxicology International* Vol. 20. No.1: 108-112.
21. Ajayi, O., **Charles-Davies, M.**, Anetor, J. and Ademola, A. (2014). Serum Polychlorinated Bisphenol-A Levels in Nigerian Women with Breast Cancer. *Archives of Basic and Applied Medicine*. Vol. 2: 71-75.
22. **Charles-Davies, M.A.**, Fasanmade, A.A., Olaniyi J.A., Oyewole, O.E., Owolabi, M.O., Adebusuyi J.R., Hassan, O., Ajobo, M.T., Ebesunun, M.O., Adigun, K., Akinlade, K.S., Fabian, U.A., Popoola, O.O., Rahamon, S.K., Okunbolade, W., Ogunlakin, M.A., Arinola, O.G. and Agbedana, E.O. (2014). Prevalent Components of Metabolic Syndrome and their Correlates in Apparently Healthy Individuals in Sub-Saharan Africa. *International Journal of Tropical Disease & Health* (formerly known as American Journal of TROPICAL MEDICINE & Public Health) Vol. 4: No.2 :740-752.
23. Oporum, H.C., Abbiyesuku, F.M. and **Charles-Davies, M.A.** (2014). The Impact of Heavy Metals to Dyspermia in Nigeria. *ASJ International Journal of Advances in Medical Sciences and Biotechnology* Vol. 2. No. 1: 6-10.
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39. Nsonwu-Anyanwu, A.C., **Charles-Davies, M.A.**, Bello, F.A., Taiwo, V.O, Bin, L. and Oni A.A., (2016). Cytokine Profile in Nigerians with Tubal Infertility. *Central European Journal of Immunology*. *Central European Journal of Immunology* Vol. 41. No. 1: 1-6. (Poland)
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61. Rahamon, S.K., **Charles-Davies, M.A**, Akinlade K.S., Olaniyi, J.A. (2020) Changes in Biochemical Factors, Inflammatory Mediators and Prothrombotic Acute Phase Proteins in Patients with Type 2 Diabetes Mellitus on 12 Months of Dietary Modification. Diabesity 6 (4), 28-35.
62. Oladele, F.C. **Charles-Davies, M.A.**, Ojengbede O.A., Agbedana, E.O. (2022) Estimation of Anthropometric, Demographic, Diet and Past Medical History of Normotensive and Hypertensive Women During Pregnancy in Nigeria. Asian Journal of Pregnancy and Childbirth. Vol.5 (3), 16-25.
63. Oladele, F.C. **Charles-Davies, M.A.**, Ojengbede O.A., Agbedana, E.O. (2022) Implication of Lipid and Fasting Blood Glucose in Hypertensive Pregnant Women in Nigeria. Asian Journal of Pregnancy and Childbirth. Vol.5 (3), 68-77.

+Corresponding **Author in Publications 1, 4, 5, 6, 7, 10, 12, 13, 14, 16, 17, 18, 19, 22, 26, 28, 29, 32, 34, 35, 36, 41, 44. 45, 50.**

XI. Major Conferences Attended with Papers Read (in the last 5 years)

Charles-Davies M. A. Presenter of Preliminary Research Findings (on behalf of the Co-Investigators- Olapade-Olaopa O.E, Agbedana E.O.) on Insulin-like Growth Factor 1, Testosterone and Components of Metabolic Syndrome in Prostate Cancer Patients before and after Bilateral Orchiectomy at a Symposium organised by Bassir Thomas Foundation, which held at the Conference Centre, University of Ibadan, Ibadan on 22 November, 2015.

Charles-Davies M.A. (as IFCC Representative (Nigeria)/Member, E-news Working Group IFCC General Conference in 2016, Madrid, Spain, 18-21 March, 2016

Charles-Davies M.A. Facilitator (as IFCC Representative (Nigeria)/Speaker at the International Conference of the Association of Clinical Chemistry and Laboratory Medicine, which held at the Medical Research Centre, Lagos State University Teaching Hospital, Ikeja, Lagos from 12-14 October, 2016.

Charles-Davies M.A. The Metabolic Syndrome: Implications in the Nigerian Population. A paper presented as an Invited Speaker at the 7th Biennial Scientific Conference of the Association of Clinical Chemists of Nigeria and African Federation of Clinical Chemistry, 15-20 October, 2018 at the Nnamdi Azikiwe University, Awka, Nigeria.

Charles-Davies M.A. (as Member, E-news Working Group and Corresponding Member, IFCC Committee on Molecular Diagnostics) Attendance of Closed Door Meetings and Conference. 23rd IFCC-EFLM European Congress of Clinical Chemistry and Laboratory Medicine, Barcelona, May 19-23, 2019.

Charles-Davies M.A. Metabolic Syndrome in Africa. A paper presented as an Invited Speaker at the 6th Congress of the African Federation of Clinical Chemistry/ 19th Congress of Clinical Biology, in Marrakech, Morocco 25-28 September, 2019.

Several Presentations at the 24th International Congress of Clinical Chemistry and Laboratory Medicine (IFCC) & 16th Asia-Pacific Congress of Clinical Biochemistry at Seoul, Korea from June 26 to 30, 2022 (Hybrid). Abstracts were published as below:

[W234 Prevalence of dyspermia in infertile African black men](#)

IL Uke, M Charles-Davies, P Carrera, M Ferrari, O Amodu, OM Akinosun
Clinica Chimica Acta 530, S411

[T025 The influence of follicular and luteal phases of the menstrual cycle on the indicators of](#)

[obesity, endocrine disruptors, reproductive and thyroid hormones in African black ...](#)

O Ajayi, M Charles-Davies, J Anetor, A Ademola
Clinica Chimica Acta 530, S60

[T178 Adiponectin-Resistin Index in individuals with autoimmune thyroid diseases](#)

R Nwaelugo, F Abbiyesuku, M Charles-Davies, FB Sani
Clinica Chimica Acta 530, S140

[W151 Antioxidants and biomarkers of inflammation as risk factors of vascular cognitive impairment in adult hypertensives](#)

OB Aborisade, MA Charles-Davies, MO Owolabi, OE Agbedana
Clinica Chimica Acta 530, S349-S350

[W150 Proxy measures of obesity and selected lipids as risk factors of vascular cognitive impairment in adult hypertensives](#)

OB Aborisade, MA Charles-Davies, MO Owolabi, OE Agbedana
Clinica Chimica Acta 530, S349

[W025 FGF 23 and NT-proBNP as predictive markers of mortality among chronic kidney disease patients](#)

A Ogunleye, M Charles-Davies, Y Raji, A Akinbodewa, O Adejumo, ...
Clinica Chimica Acta 530, S225-S226

[T174 Prevalence of haemoglobin variants and thyroid disorders in African blacks with type 2 diabetes mellitus](#)

FA Mapayi, M Ogunlakin, MA Charles-Davies, TR Kotila, JO Adeleye, ...
Clinica Chimica Acta 530, S138

XI. Ten Best Publications to Reflect the Totality of my Contributions to Scholarship

1. **Charles-Davies, M.A** and Osotimehin, B.O. (2001). Spermatozoal, Seminal Plasma and Blood Sperm Antibodies in Nigerian Males. *African Journal of Endocrinology and Metabolism* Vol. 2:13-18.
2. **Charles-Davies, M.A and** Osotimehin, B.O. (2003). Sexually Transmitted Diseases and Male Infertility in the Nigerian. *BioScience Research Communications* Vol.15. No.1: 39-47.
3. **Charles-Davies, M.**, Arinola, O.G, Sanusi, R., Osotimehin, B.O. (2006). Immunoglobulin Classes and Nutritional Factors in Plasma and Breast milk of Lactating Mothers in Nigeria. *Iran. Journal of Immunology* Vol. 3: 181-186.
4. **Charles-Davies, M.A.**, Arinola, O.G., Fasanmade, A.A., Olaniyi, J.A., Oyewole, O.E, Owolabi, M.O., Hassan, O.O, Ajobo, M.T., Adigun, K.S., Akinlade, K.S., Adebuseyi, J.R., Ebesunun, M.O., Popoola O.O., Ogunbolade, W., Fabian, U.A., Rahamon S.K., Ogunlakin, M.A. and Agbedana E.O. (2012). *Indices of Metabolic Syndrome in 534 Traders. Journal of the US-China Medical Science* Vol. 9: No. 2: 91-100.
5. **Charles-Davies, M.A.**, Fasanmade, A.A., Olaniyi, J.A., Oyewole, O.E., Owolabi M.O., Adebuseyi, J.R., Hassan, O., Ajobo, M.T., Ebesunun, M.O., Adigun, K., Akinlade, K.S., Fabian, U.A., Popoola, O.O., Rahamon, S.K., Okunbolade, W., Ogunlakin, M.A., Arinola, O.G. and Agbedana, E.O. (2013). Metabolic Alterations in Different Stages of Hypertension in an Apparently Healthy Nigerian Population. *International Journal of Hypertension*, 2013, Article ID 351357, 6 pages, <http://dx.doi.org/10.1155/2013/351357>.
6. **Charles-Davies, M.A.**, Fasanmade, A.A., Olaniyi J.A., Oyewole, O.E., Owolabi, M.O., Adebuseyi J.R., Hassan, O., Ajobo, M.T., Ebesunun, M.O., Adigun, K., Akinlade, K.S., Fabian, U.A., Popoola, O.O., Rahamon, S.K., Okunbolade, W., Ogunlakin, M.A., Arinola, O.G. and Agbedana, E.O. (2014). Prevalent Components of Metabolic Syndrome and their Correlates in Apparently Healthy Individuals in Sub-Saharan Africa. *International Journal of Tropical Disease & Health* (formerly known as American Journal of Tropical Medicine & Public Health) Vol. 4: No.2 :740-752.

7. Fabian, U.A, **Charles-Davies**, M.A., Fasanmade, A.A., Olaniyi, J.A., Oyewole ,O.E., Owolabi, M.O., Adebuseyi, J.R., Hassan, O., Ajobo, M.T., Ebesunun, M.O., Adigun, K., Akinlade, K.S., Arinola, O.G. and Agbedana, E.O. (2016). Male Sexual Dysfunction, Leptin, Pituitary and Gonadal Hormones in Nigerian Males with Metabolic Syndrome and Type 2 Diabetes Mellitus. *Journal of Reproduction and Infertility* Vol. 17. No. 1: 17-25.
8. Famuyiwa, I.O., Bitrus D.P., **Charles-Davies, M. A.**, Fabian, U.A. , Fasanmade, A.A., Olaniyi, J.A., Oyewole, O.E., Owolabi, M.O., Adebuseyi, J.R., Hassan, O, Ajobo, B.M. Ebesunun, M.O., Adigun, K., Akinlade, K.S., Okoli, S.U., Arinola, O.G and Agbedana E.O. (2016). Reproductive function in Premenopausal African Blacks with Metabolic Syndrome: Associations among Inhibin B, Adipokines, Pituitary and Sex Hormones and Sex Hormone Binding Globulin. *International Journal of Medicine and Medical Sciences* Vol. 8. No. 8: 84-90.
9. Chikezie, I. C., **Charles-Davies, M. A.** and Okoli S. U. (2017). Exposure to Endocrine Disrupting Heavy Metals: Effect on Pituitary and Gonadal Hormones in Normal Weight Automechanics in Ibadan. *African Journal of Biomedical Research* Vol. 20. No.1: 25-35.
10. **Charles-Davies M.A.**, Oniye A.H., Olapade-Olaopa E.O., Anetor J.I., Agbedana E.O. Metabolic Alterations In Africans With Prostate Cancer Before Bilateral Orchidectomy. *African Journal of Medicine and Medical Sciences* (accepted on 28 July, 2017).

+ **Corresponding Author in publications 7, 8 and 9**

Research Focus

My research focus is Reproductive Endocrinology, particularly in reducing infertility in males and females, improving maternal and child health, understanding the basis of metabolic diseases that affect reproductive health as well as the impact of environmental pollution on the reproductive system.

Our studies implicated sexually transmitted diseases (STDs), endocrine disruptive mechanisms, oxidative stress (resulting from environmental pollution) and reduced antioxidant status as contributory factors to dyspermia and chlamydia induced tubal damage, resulting in infertility. Further investigations in males, using the immunobead binding technique, showed the presence of anti-sperm IgG, IgA and IgM on the head, midpiece, tail and tail tip on the sperm cell, in seminal plasma and serum of infertile males and males with STDs. These antibodies were however, not associated with fertility. Contrarily, abnormal immune responses (elevated interleukin-10 and reduced interferon gamma levels) might contribute to Chlamydia induced tubal pathology.

A study from our research group showed increasing levels of nutritional/immunological indices in the maternal blood but declining levels of similar parameters in breast milk with increasing period of lactation. The superiority of colostrum over mature milk in the nourishment and protection of Nigerian infants was also established in this study. Toxic metals and preeclampsia were also associated with neonatal birth weight reduction in other studies. Studies also reveal that toxic metals and other endocrine disruptors (polychlorinated bisphenyls and bisphenol A) accumulate in increased adipose tissue resulting in the disruption of endocrine signaling systems and oxidative stress, which may underlie the pathogenesis of breast cancer. Associations of subtle thyroid abnormalities with obesity in women with breast cancer were demonstrated.

Some of our studies showed that abdominal obesity in females and reduced high density lipoprotein cholesterol in males were the key components of the Metabolic Syndrome (MS) in a significant number of Nigerians, with the preponderance of MS in females over males. Though the reproductive potential appeared conserved in individuals with MS, the associations of MS with cardiovascular diseases, type 2 diabetes mellitus and prostate cancer via alteration of hormones were demonstrated. However, the beneficial effect of dietary modulation in individuals with MS was shown and resulted to additional recommendation for the management of MS. Further biochemical, genetic and molecular studies are ongoing to elucidate the processes involved in reproductive health and diseases.