

Professor Martin Stevens MBBCh MD FRCP

Professor of Medicine

Endocrinology, Diabetes and Metabolism

Contact details

Telephone [+44 \(0\)121 424 2593 \(tel:+44 121 424 2593\)](tel:+441214242593)

Email [m.j.stevens@bham.ac.uk \(mailto:m.j.stevens@bham.ac.uk\)](mailto:m.j.stevens@bham.ac.uk)

School of Clinical and Experimental Medicine
College of Medical and Dental Sciences
University of Birmingham
Edgbaston
Birmingham
B15 2TT
UK



About

Professor Stevens is Professor of Medicine at the University of Birmingham and Honorary Consultant Physician at Heart of England NHS Foundation Trust

Martin has published over 100 research papers in scientific journals as well as reviews and book chapters in the fields of diabetes and metabolism. He has received major grants from the National Institutes of Health, the American Diabetes Association, the British Heart Foundation and Diabetes UK.

He has a particular interest in understanding the cause and consequences of diabetic neuropathy and the effects of autonomic dysfunction on the heart. He has over 20 years experience in the design and implementation of clinical trials in the field of diabetic neuropathy.

Qualifications

- 2004 Specialist Register for General Internal Medicine and Diabetes and Metabolism (UK)
- 2003 Diplomat American Board of Endocrinology and Metabolism
- 2000 Diplomat American Board of Internal Medicine
- 1996 Doctorate of Medicine from the University of Wales, U.K.
- 1991 Education Commission for Foreign Medical Graduates #460-075-5
- 1986 Member of Royal College of Physicians of London
- 1983 MBBCh

Biography

Martin Stevens qualified as a physician at the University of Wales in 1983. He developed an interest in diabetes and its complications during his period as a Medical Registrar and Research Fellow at the University of Southampton and Kings College London between 1986-1991. He has dedicated his research career to understanding the cause and developing new treatments for diabetes complications using cell culture, animal models and translational studies.

He has a particular interest in the prevention and treatment of diabetic neuropathy and during a 14 year period as Scientist, Assistant and Associate Professor at the University of Michigan, Ann Arbor, Michigan, USA he served as a Neuropathy Consultant for DCCT and developed a new treatment tool for screening for diabetic neuropathy. He has a particular interest in understanding the effects of autonomic dysfunction on the heart. These studies were initiated at the University of Michigan in which position emission tomography was utilized to characterize cardiac sympathetic denervation in subjects with type 1 diabetes (T1DM). These studies identified a unique pattern of denervation which could predispose to enhanced cardiac risk.

After returning to the UK in 2005, he continued research on the diabetic heart at the University of Birmingham which demonstrated that subjects with diabetes complicated by early cardiovascular autonomic neuropathy exhibit impaired cardiac energetics and increased left ventricular torsion which may be some of the earliest deficits contributing to enhanced cardiac risk. These observations formed the basis of a collaborative NIH supported ongoing research project.

He serves as Director of the Foot and Neuropathy Clinic at Heart of England NHS Foundation Trust which is one of the largest centres for treatment of diabetes and its complications in the United Kingdom. He has over 20 years experience in the design and implementation of clinical trials in the field of diabetic neuropathy and have established a large international group with an interest in complications of the diabetic heart.

Teaching

- BMedSci
- Year 3 academic tutor

Postgraduate supervision

Martin is interested in supervising doctoral research students in the following areas:

- The effect of diabetes on cardiac metabolism and function
- The pathogenesis of diabetic neuropathy
- Complications of the diabetic foot

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Research

Research Themes

Clinical trials, cell culture models of diabetes, human physiology

Research Activity

Diabetic Neuropathy

Over the past 23 years the principal theme of his research has been understanding the cause and developing new treatments for diabetes complications using cell culture, animal models and translational studies. He has a particular interest in the prevention and treatment of diabetic neuropathy. His work was the first to demonstrate an important role for taurine deficiency in the pathogenesis of diabetic neuropathy, studies which were initiated in cell culture models and culminated in a clinical trial funded by the National Institutes of Health in subjects with diabetes. He has explored and elucidated mechanistic pathways of diabetes complications using models which have highlighted the important of oxidative and nitrosative stress. He developed a new tool for screening for diabetic neuropathy (the Michigan Neuropathy Screening Instrument) which has been extensively utilized in clinical practice and pivotal clinical trials.

Metabolic Heart Disease

He has a particular interest in understanding the effects of autonomic dysfunction on the heart. These studies were initiated at the University of Michigan in which position emission tomography was utilized to characterize cardiac sympathetic denervation in subjects with type 1 diabetes. These studies identified a unique pattern of denervation which could predispose to enhanced cardiac risk. This focus of research has continued at the University of Birmingham with recent studies demonstrating that asymptomatic healthy subjects with diabetes complicated by early subclinical cardiovascular autonomic neuropathy exhibit impaired cardiac energetics and increased left ventricular torsion which may be some of the earliest deficits contributing to enhanced cardiac risk. These observations formed the basis of a collaborative ongoing international research project. This work has been supported by the British Heart Foundation, the National Institutes of Health and Industry.

Diabetic Foot

Over the past 10 years, Martin has continued research into the factors that contribute to diabetic foot ulceration. He studies demonstrated specific skin functional and structural deficits in diabetes which predispose to increased skin fragility. He has demonstrated the ability of retinoid therapy to reverse these deficits. He is currently working on the development and testing of synthetic retinoids with improved efficacy and reduced toxicity to reduce the risk of foot ulceration. These studies have been supported by grants from the National Institutes of Health, Diabetes UK and Industry,

Other activities

Trust representative for the 3rd year student curriculum Committee-Integrated Medicine and Surgery Planning Group

Publications

Kellogg AP, Converso K, Wiggin T, Stevens M, Pop-Busui R (2009) Effects of Cyclooxygenase-2 Gene Inactivation on Cardiac Autonomic and Left Ventricular Function in Experimental Diabetes **Am. J. Physiol. Heart and Circ. Physiol** 296: H453-H461. PMID: PMC264389

Pop-Busui R, Oral E, Raffel D, Byun J, Bajirovic V, Vivekanandan-Giri A, Kellogg A, Pennathur S, Stevens MJ (2009). Impact of rosiglitazone and glyburide on nitrosative stress and myocardial blood flow regulation in type 2 diabetes. **Metabolism Clinical and Experimental** 58, 7, 989-994. PMID19394661 58, 7, 989-994. PMID19394661

Askwith T, Wei Z, Eggo M, Stevens MJ (2009). Oxidative Stress and Dysregulation of the Human Taurine Transporter in High Glucose Exposed Schwann Cells: Implications for the Pathogenesis of Diabetic Neuropathy. **Am. J. Physiol Endocrinol. Metab.** 297:, E620-E628. PMID19602579 297:, E620-E628. PMID19602579

Shivu G, Abozguia K, Phan T, Ahmed I, Weaver R, Narendran P, Stevens MJ, Frenneaux M (2009). Increased left ventricular torsion in uncomplicated type 1 diabetic patients: the role of coronary microvascular dysfunction. **Diabetes Care** 32: 1710-1712. PMID:PMC2732135 32: 1710-1712. PMID:PMC2732135

Shivu G, Phan T, Abozguia K, Ahmed I, Wagenmakers A, Narendran P, Stevens, MJ, Frenneaux M (2010). Relationship between coronary microvascular dysfunction and cardiac energetics impairment in type 1 diabetes mellitus. **Circulation** 121:1209-15

Stevens MJ (2010) Diabetic autonomic neuropathy. In **UpToDate**. Endocrinology and Diabetes (www.uptodate.com (<http://www.uptodate.com/>)) PMID 20194884

Stavniichuk R.; Drel, VR, Shevalye, H, Vareniuk, I.; Stevens MJ, Nadler JL, Obrosova, I (2010). Role of 12/15-lipoxygenase in nitrosative stress and peripheral prediabetic and diabetic neuropathies. **Free Rad. Biol. Med.** 49:1036-45 PMID:PMC2928975

Piya MK, Shivu GN, Tahrani A, Dubb K, Abozguia K, Phan TT, Narendran P, Pop-Busui R, Frenneaux M, Stevens MJ (2011). Abnormal Left Ventricular Torsion and Cardiac Autonomic Dysfunction in Subjects with Type 1 Diabetes. **Metab Clin Exp.** (in press)