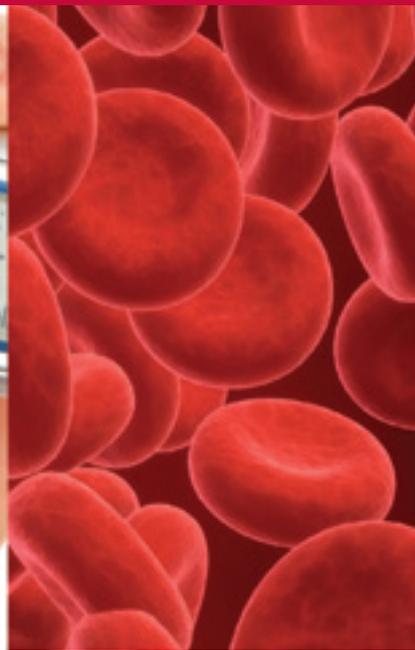


Working together to find a cure for Diabetes

ANNUAL
REVIEW

2015



Diabetes Research &
Wellness Foundation



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DRWF Annual Review 2015

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Living with diabetes

Neil Nutburn



“

I was diagnosed back in 1966 when just 18 months old, yep, still here some 51 years later having had most of my life to get used to it ... and still getting used to it.

I used to hide the fact I was living with type 1 diabetes and only told an employer once I had the job ... how things have changed and now, with a broadened understanding, this is no longer the case.

I believe physical exercise has made a huge difference to my life and to the control of my type 1 diabetes. Karate is a TRULY physical sport and I used to train three or four times a week from 7.20pm through to 10.00pm. I won numerous competitions and always came away exhausted, so when people say that living with diabetes should prevent someone from doing manual work or physical exercise, I would beg to differ.

I closely monitor my blood levels before I eat and every time I get into the car to drive. This is also something that some people may not realise, I have to go through a medical check-up every three years to make sure I'm fit to drive. The DVLA will not issue a continuation of my licence if I am unfit.

My insulin regime consists of one injection taken at the same time every day as a base to work from. Throughout the day I then inject the required amount of fast acting insulin based on a calculation of what my sugar levels are, what the carbohydrate content of the food I'm about to eat is, and/or the exercise I'm planning to do. I take all these factors into consideration, do the maths and hopefully not get it wrong as my old school nurses once did! So many things to consider and that's without even taking on-board how hot sunny days or freezing winter ones can also have an effect on sugar levels.

Having had this condition all my life, by now, I should really have a strict regime of what to do and when to do it without failing ... this would be okay if I stuck to the really old way of eating roughly the same food, taking the same dosage and doing (or not) the same exercise but I'm not prepared to have my life ruled in such a manner. When out and about or engrossed in a project or work, I can get caught up in the moment as can anyone else and this is where I find technology helps immensely.

At 4pm every day, my phone reminds me to test my blood. Why then? I happen to know that my blood levels enjoy creeping up sometime between lunch and dinner so this is a good time for me just to check it, if it's a little lower than I would like I can deal with it, if it's higher, I can easily calculate how much insulin I need to take to ensure by dinner time, my levels will be back in line. The other alarm is set for 7pm, again, if out and about or just distracted with what life throws me, this alarm is a reminder to take my long term (the base one) insulin, once again, technology helps me to gain further control.

What amazes me about this condition is that your body gives out signals that others can also sense. My wife can look at me, give that little frown she does while registering what she sees and then announce that I look pale, my eyes are giving her the nod or that I'm clammy when the temperature isn't that hot and that I should test my blood! I do what most guys and/or those with diabetes (being a guy means twice the hassle) and state that I feel ok. Begrudgingly, then go and test only to find it's below where it should be and some carb intake is needed. It's great to have those around us notice such things and I think the 'begrudging' bit comes because it means I may have missed the signs.

With regards getting the sugar levels back up, different people have different likes etc. I used to eat a few jelly babies but find I now prefer marshmallows much more. They give an immediate fix, however, that's just the start. Sometimes I need a digestive biscuit or something slower burning to ensure a long term effect. So whenever I'm out and about, you'll always find me with some marshmallows bagged up in one of my pockets!

Having been diagnosed with diabetes at such an early age, it has meant that I missed out on some things such as eating sweet foods when I felt like it. I did once eat the best part of two candy flosses at a fair and then spent three days in hospital, oops! Nowadays I tell people that a little of something naughty is actually good for you and the way diabetes is managed, generally means we can have those occasional treats that we savour and enjoy it far more than if eaten regularly.

Diabetes ... Yeah, my life has had its ups and downs as a result of having this condition but with reasonably good management, a continued education on how to handle it (after all, our metabolism changes constantly so there's another factor to consider) and a real urge to grab a hold onto life to enjoy it to its full, it hasn't been a detriment to the way I live but rather an attribute to having a better and healthier lifestyle.

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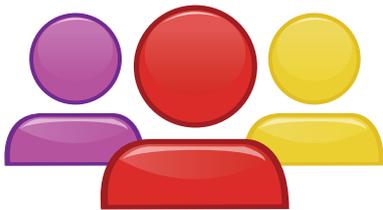
The impact of diabetes

Diabetes is a chronic, progressive disease that can have a debilitating impact on almost every aspect of life.

Type 1 diabetes cannot be prevented. It occurs when the pancreas doesn't produce any insulin and is considered to be an auto-immune response in the body.



Type 2 diabetes is considered to be largely related to lifestyle factors. It can be prevented, or at least its onset delayed, in many cases by changing diet and exercise habits.



The scale of the problem

More than 3.5 million people in the UK have diabetes and it is thought that around a further 500,000 adults have undiagnosed T2.



Diabetes is a global issue with more than 464 million people living with the condition around the world.



Diabetes, its care and treatment, is reported to cost the NHS almost 10% of its annual budget which is approximately £10 billion.

It is thought that around 80% of these costs is attributed to treating the complications of diabetes - many of which can be avoided.

Self-management is the cornerstone of diabetes care and to be effective, requires strong partnerships with health care providers and support networks.

We provide the information and tools to encourage and support a proactive approach to self-care.

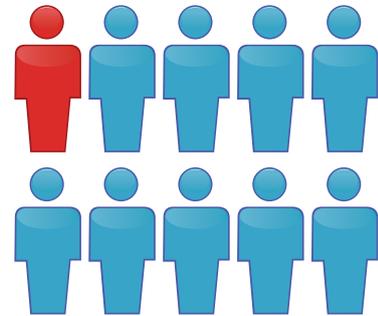
There are 2 main types of diabetes



Type 1

cannot be prevented

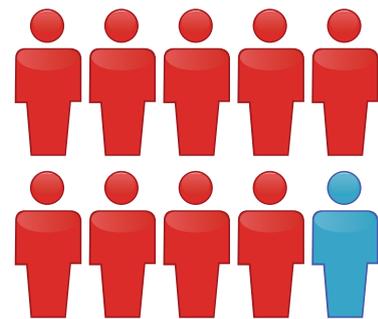
- Type 1 diabetes accounts for around 10% of those diagnosed with diabetes in the UK



Type 2

can be prevented

- Type 2 diabetes accounts for around 90% of all those diagnosed with diabetes in the UK



Both Type 1 and Type 2 diabetes are associated with serious health complications, with an increased risk of cardiovascular disease, kidney disease, eye disease, nerve damage, amputation, poor oral health and sleep apnoea. People with Type 2 diabetes can sometimes go undiagnosed for many years whilst long term damage is being done because of the condition. It has been proven over time that good self-management can significantly reduce the risk of these complications.



Message from our **Chairman**



MICHAEL GRETSCHEL

DRWF was founded in the US in 1993 to represent the diabetes patient community. Our groups in the US, UK, France, Sweden and Finland fund fast-track research which we believe will lead to benefits for people with diabetes in the shortest time-frame. Our long term multi-year funding of comprehensive projects aims to find a cure for those who have battled this disease for many years.

Unlike many doctors and investigators we know first-hand the challenges and burdens that this debilitating and increasingly prevalent condition brings not only to the person diagnosed, but to their family and friends.

Since our inception we have seen an explosion in the number of people being diagnosed with 'diabetes' and a lack of understanding of the difference between Type 1 and Type 2.

It is anticipated that by 2040 more than 640 million people will be affected by diabetes worldwide – around 80-90% of these having type 2. In the UK, the NHS is spending about 10% of its annual budget on treating diabetes and its associated complications. That is a mind boggling £10 billion a year or £1 million an hour and much of this cost is attributed to treating complications that can often be prevented.

Our strapline of 'staying well until a cure is found...' underpins our research funding and delivery of our information and educational event programmes. Whilst we're funding in many cases "one of a kind" research in the UK and around the world, we are also providing authoritative, relevant and clinically evidenced patient information with the aim of supporting a pro-active approach to good self-management. Around 90% of day to day care for people with diabetes is self-administered. It's a daunting and challenging prospect and ensuring that the right information and support is available is crucial to enabling people to take the best care of themselves whilst limiting the impact that diabetes has on physical and mental health and wellbeing.

I would like to thank our supporters for their continued commitment to our work. It's sometimes hard to envision how making a donation today can reap benefits for people with diabetes in the future. Research can take many years to come to fruition but we are intent on maximizing potential and endeavour to support work that will provide clinical benefit in the shortest time frame. We have certainly seen success in this respect from our commitment to supporting islet transplant and research at the Churchill Hospital, Oxford and within the UK Islet Transplant Consortium. More information can be found on this and all of our research funding commitments on our website www.drwf.org.uk/funded-research

What is clear to me, is that as the prevalence of both Type 1 and Type 2 diabetes continues to increase at an alarming rate, our work becomes ever more important.

We are investing in a brighter future for people living with these long-term chronic conditions and have our supporters to thank for making this possible.

Information on all of our activities can be found on our website www.drwf.org.uk or for general enquiries please email enquiries@drwf.org.uk

W. Michael Gretschel
Chairman



A handwritten signature in black ink, appearing to read 'W. Michael Gretschel', written in a cursive style.

W. Michael Gretschel

Trustees

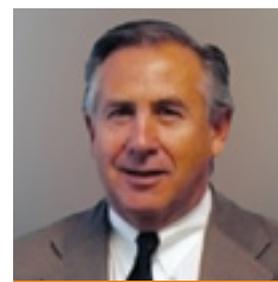
DRWF was born from a very personal connection with type 1 diabetes. Having two children diagnosed with the condition made for a commitment and dedication to the cause from Mike Gretschel and his business partner, John Alahouzos, that has never wavered and remains true to its original desire - to find a cure for diabetes.

The DRWF group was established in 1993 in the U.S. and in 1998, DRWF was incorporated and registered as a charity in the UK. Over the last 17 years we have become a recognised provider of awareness, educational support programmes and leading funder of diabetes research. The DRWF Board of Trustees are an engaged and committed group of individuals who bring a significant level of expertise to the governance of the charity in the fields of law, business strategy & management, international fundraising, psychology, healthcare and education.

Michael Gretschel

Co-Founder Chairman of the Board

Volunteer fundraiser for diabetes research for over 30 years. Mike has a very personal interest in diabetes, with two children having Type 1. In 1993, Mike – along with others – founded the Diabetes Research & Wellness Foundation (DRWF). Since then, the DRWF International Network of charities has grown to include the Diabetes Research & Wellness Foundation (DRWF) in the UK; Association pour la recherche sur la diabete (A-rd) in France; Diabetes Wellness Network Sverige (DWNS) in Sweden and a new group just starting out in Finland. All groups work autonomously, but with the same objective, and work collaboratively on international awareness and research funding campaigns. Collectively, the groups have committed more than £55 million in awareness, education and research funding since inception.



John Alahouzos

Co-Founder Volunteer fundraiser for diabetes research since 1978

John Alahouzos is a marketing executive by profession and a volunteer for 'The Diabetes Cure' by choice. For almost 38 years he has worked alongside his friend Mike Gretschel to raise funds and awareness for the need to cure diabetes. After many years of volunteer fundraising for the Juvenile Diabetes Research Fund in the US, John, Mike and their wives founded the Diabetes Research & Wellness Foundation (DRWF) in 1993. John is the Chairman of the Board of Trustees of the Diabetes Research & Wellness Foundation in the US and serves as a trustee on the board of the Diabetes Research & Wellness Foundation in the UK, as well as their affiliates in France, Sweden, and Finland.



Jeffrey Harab

Bachelor of Arts, Juris Doctor. Attorney-at-Law, 1979

Jeff has been a member of the Board of Trustees of the Diabetes Research & Wellness Foundation (DRWF) since 2001. He is also a board member of the Association pour la recherche sur le diabete (A-rd) and is an alternate board member for Insamlingsstiftelsen Diabetes Wellness Network Sverige (DWNS). Each of these groups, along with DRWF in the UK, form part of the International Diabetes Wellness Network, and collaborate on global diabetes awareness campaigns, educational programmes and research funding initiatives.



Valerie Hussey

Retired Nurse, Musgrove Park Hospital, Taunton

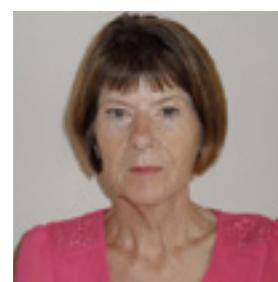
Val has been a member of the Board of Trustees of DRWF since 1999. She is also an alternate board member for Insamlingsstiftelsen Diabetes Wellness Network Sverige (DWNS). Having worked as a nurse within the NHS for many years, Val has a keen interest in ensuring that people with long-term conditions have the resources available to them to self-manage their condition as effectively as possible. She is a keen supporter of the charity's educational event programme.



Rae-Marie Lawson

Retired Psychotherapist MA.Dip; CertEd., Warsaw College, West Midlands

Rae was diagnosed with Type 1 diabetes more than 30 yrs ago and experienced a debilitating lack of hypo awareness which impacted on all aspects of her life. She received two islet cell transplants at the Oxford Centre for Diabetes, Endocrinology & Metabolism (OCDEM) in 2010 which houses the DRWF Human Islet Isolation Facility and has been insulin injection free since then.



My diabetes odyssey

Robin Cowley



In 2000 I remember my GP finally diagnosed me as having type 2 diabetes. He said I would have to give up lots of foods, like biscuits, cakes and chocolates. He then went on for what seemed ages listing almost every food that he could think of before taking a breath. He said, "Of course you have to give up smoking and alcohol." I remember asking if he had a gun I could borrow so I could shoot myself. I was about 38-years-old at the time.



My odyssey took me from Enfield to East London to live and work. I joined the Attendance and Welfare Service. I had no health concerns at this time apart from smoking, drinking too much and being overweight. The medication that I was on was difficult to manage my weight with and I put on 4 stone. In order to address this I took up swimming using the steam rooms and sauna. This is when I started getting foot ulcers. I visited the foot clinic several times and had several hospital admissions having antibiotics intravenously. It was after an admission to Stoke Mandeville in 2008 that I was prescribed insulin. I didn't want to go on insulin as I didn't know anyone who rated it. I knew it would cause employment, travel, and insurance problems and would have to renew my driving licence every three years. I also couldn't be a pilot.

My ulcers became worse and I developed a severe ulcer, got gangrene, and was admitted to the Royal London Hospital at the end of 2009. I lost the ends of four of my toes on my left foot.

I later developed a fracture of my left ankle known as a Charcot foot. This was very painful and it is like having a fracture that never heals and you have to manage every day in constant pain. I was issued with special boots which cost several hundreds of pounds and advertise quite frankly that the person wearing them has a disability.

The next part of my odyssey was being withdrawn from insulin in 2011 I was a very willing participant and changed to medication which is produced from lizards. This helped me lose four stone in weight - something I am most pleased about. This loss of weight took place over a period of 12 months. I somehow now have a fascination with flies.

In 2012 I got an infection in a bone in my left leg from a long standing foot ulcer. I was advised that I should consider an amputation. This scared me and I was very anxious about it all, but had great advice from my colleagues who mostly were social work trained and medical staff who invested time in supporting me. This enabled me to be emotionally prepared for the amputation and I became an elective amputee.

On 16th July 2012 I was admitted to the London Hospital for my amputation. I hated being in a wheelchair with a passion and decided that I would try to get out of it as quickly as possible. This determination helped me reach that goal. The next part of my diabetes odyssey took me to the Prosthetic Centre at Harold Wood to get a new leg.

Thanks to Anna Rose and her team for helping me learn to walk with my new leg. I was told I am a novelty as they have never known such a speedy rehabilitation. I was walking and back at work in five months. The Physio team were reluctant to discharge me as I was quite involved in motivating other patients to exercise and encourage them to feel as positive as possible about their amputations. I do feel that I did encourage some of the other patients, even if it was just to put a smile on their face. By November 2013 I was awaiting the provision of a second prosthetic leg which I would be able to get wet so I could paddle in the sea, get sand on it and shower with it on.

I'm still at work and looking forward to the future. I don't consider myself disabled, only that I have an adaptation and I am "alternatively abled". I see my amputation as a positive outcome and a challenge.

In conclusion, the advice I wish I had received as somebody with diabetes is: attend medical appointments when expected; take notice of the medical advice you receive; take your medication that is prescribed; exercise regularly; look after your feet; eat what you like (but in moderation!) and eat aeroplane meal portions or child's portions; avoid all-you-can-eat buffets and consider not eating short crust pastry. That is also good advice to people that do not have diabetes. I now look forward to the next part of my odyssey and all the challenges I will face in the future.



Editorial Advisory Board

Dr Sarah Brewer

GP, Health Journalist and Specialist in Nutritional Medicine

Dr Sarah Brewer MSc (Nutr Med), MA (Cantab), MB, BChir, RNutr, MBANT qualified from Cambridge University with degrees in Natural Sciences, Medicine and Surgery. After working in general practice, she gained a master's degree in nutritional medicine from the University of Surrey. As well as being a licensed doctor, Sarah is now also a Registered Nutritionist, a Registered Nutritional Therapist and an award winning health writer. Sarah is the author of over 50 popular self-help books, including *Overcoming Diabetes* (Duncan Baird) and *Natural Approaches to Diabetes* (Piatkus). Her latest books are *Live Longer Look Younger*, and *Eat Well, Stay Well*, published by Connections. Sarah is the editor of *Your Wellness* magazine www.yourwellness.com. Follow her occasional nutritional Tweets at www.twitter.com/DrSarahB.



Dr Deborah Broadbent

MRCOphth, Ophthalmologist / Director of Liverpool Diabetes Eye Centre

Deborah Broadbent MB ChB (Liverpool) DRCOG (London) DO (London) MRCOphth graduated from Liverpool University in 1976 and has been working as an ophthalmologist since 1978. In conjunction with colleagues she set up the Liverpool Diabetic Eye Study in 1991 and in 1996 she became the full-time Director of the Liverpool Diabetes Eye Centre.

Over the past 20 years she has developed an expertise in the epidemiology, diagnosis and management of diabetic eye disease, published many original papers and been an invited speaker at both national and international meetings. In September 2002 she was appointed as the Lead in Workforce, Training and Education to the English National Screening Programme for Diabetic Retinopathy, and has worked with Skills for Health, NHSU, the National Open College Network and City and Guilds to develop National Occupational Standards in retinopathy screening and a suite of mandatory national qualifications awarded by City and Guilds for all personnel involved in the identification of sight threatening diabetic retinopathy across the UK. She was appointed as Honorary Associate Clinical Professor with Warwick University, advising on the Masters in Diabetic Retinopathy programme, in 2010, and as Honorary Senior Lecturer in the Department of Eye and Vision Science at the University of Liverpool in 2013.



Andrea Cameron

Head of the School of Social and Health Sciences, Abertay University

Andrea has worked in Health Care since 1982. After qualifying as a nurse she specialised in Coronary Care Nursing before becoming a Nurse Teacher. She then moved to teaching Sports Science, but remains a registered nurse and qualified exercise instructor. She has undertaken doctoral studies examining the information given to patients with diabetes by health professionals in the primary care sector and has published in the area of volunteering and employment skills. Andrea has also run for Scotland at international veteran events, and has been a contributor for DWRWF since 2004.



Professor Edzard Ernst

Professor in Complementary Medicine, Exeter

Professor Edzard Ernst is emeritus professor at the University of Exeter. His expertise lies in acupuncture, autogenic training, herbalism, homeopathy, massage and spinal manipulation and other alternative therapies. He has published more than 1,000 articles in peer reviewed medical literature, 500 original research papers and has written or edited 48 books. Edzard has his own blog <http://edzardernst.com/>, is Editor-in-Chief, and founder of two medical journals, and sits on the editorial board for more than 20 other journals, including DRWF's *Diabetes Wellness News*.



Azmina Govindji

Registered Dietitian and TV Nutritionist

Azmina is a registered dietitian, consultant nutritionist, broadcaster and best-selling author. She is director of Azmina Nutrition www.azminanutrition.com and shares daily tips at <http://on.fb.me/AzNutrition>. Azmina has written 15 books including the Gi Plan with Nina Puddefoot and The Diabetes Weight Loss Diet with Antony Worrall Thompson. She was Chief Dietitian to Diabetes UK from 1987-1995 and is currently a media spokesperson for the British Dietetic Association.



Gwen Hall

DSN, Community Diabetes Services Portsmouth, Primary Care Team

Gwen Hall, Diabetes Specialist Nurse, Solent NHS Trust, Community Diabetes Team Portsmouth, trained as a Mental Health Nurse in Scotland and, having moved to England, completed her general training in Surrey. She worked for many years as a Practice Nurse/Nurse Practitioner, Practice Nurse Trainer and Diabetes Facilitator. Latterly she became a Diabetes Specialist Nurse in Primary Care and this year took up a post with the award winning Community Diabetes Team in Portsmouth.

Gwen is Associate Editor-in-Chief of Diabetes & Primary Care and on the editorial board of the Journal of Diabetes Nursing and Diabetes Digest. She has regularly published articles in these and other journals. In 2005 Gwen was elected Vice-Chairman of the Primary Care Diabetes Society. She was responsible for updating Mary MacKinnon's book Providing Diabetes Care in General Practice and was awarded the Mary MacKinnon lecture at Diabetes UK's Annual Professional Conference in 2008. She continues to lecture widely on diabetes nationally. She is an Associate Clinical Teacher for the University of Warwick and a past Visiting Fellow of the University of Surrey.

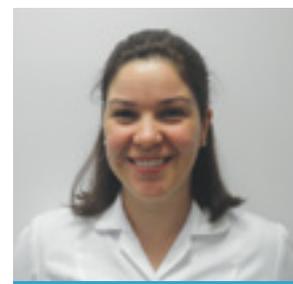


Emma Howard

Community Diabetes Lead Podiatrist, Oxford Health NHS Foundation Trust

Emma qualified with a BSc Hons Podiatry from the University of Brighton in 1997 and began working as a community podiatrist for the NHS in Shropshire. During this time she completed the Society of Chiropodists and Podiatrist Diabetic Foot Module and began working in acute diabetic foot clinics in Telford and Shrewsbury. After nearly 10 years she moved to work at Knowsley PCT on Merseyside as a Diabetes Team Leader in a community trust.

In 2009 Emma accepted a position for Oxford Health NHS Foundation Trust where she works as a Community Diabetes Lead Podiatrist. She specialises in the care of the diabetic foot and high risk wound care. The clinics run across community settings and within OCDEM (Oxford Centre for Diabetes, Endocrinology and Metabolism). She has worked with DRWF since 2007 developing the foot care advice leaflet and attending the Walking holidays and Wellness Weekends to give presentations and informal advice on foot care in diabetes.



Dr Alison Kirk

Lecturer in Physical Activity for Health, University of Strathclyde, Glasgow

Alison was appointed in January 2009 as a Lecturer in Physical activity for Health at Strathclyde University, Glasgow. She completed a BSc in Physiology and Sports Science at the University of Glasgow (1998) before undertaking a PhD through the same university (completed 2003). She was then appointed as Lecturer at Dundee University before moving to Strathclyde University. Alison currently teaches on the BSc Sport and Physical Activity degree course. She teaches various aspects of physical activity and health and clinical exercise science. Alison's specialist research area is in behaviour change of physical activity and sedentary behaviour with emphasis towards prevention and management of chronic disease. She has particular focus towards diabetes but with past and current funded research in breast and colon cancer, respiratory and cardiovascular disease. Alison has a drive towards implementation of research findings and knowledge exchange within community and clinical practice and has worked with a number of community and clinical groups on related projects and guidelines.



Dr Alastair Leckie**MBChB DRCOG MRC GP FFOM, Consultant in Occupational Medicine, OHSAS**

Alastair is a consultant in occupational medicine and director of OHSAS, an NHS based service provider for occupational health. He graduated from Edinburgh University in 1986 and initially trained and worked as a general practitioner. He trained in occupational medicine at the Institute of Occupational Medicine before moving into his current role. Alastair is involved in postgraduate training for GPs, specialist trainees, and occupational health colleagues. He is an honorary senior clinical lecturer at the University of Glasgow. He frequently sees people in his clinic with diabetes to advise them and their employer regarding any work issues or work based assistance that may be required. Alastair is currently President of the Society of Occupational Medicine.

**Henrietta Mulnier****RGN MSc PhD, Lecturer in Diabetes Nursing/DSN, King's College London and Guy's & St Thomas' Trust**

Henrietta Mulnier RGN MSc PhD is a Lecturer in Diabetes Nursing at the Florence Nightingale School of Nursing and Midwifery, King's College London. She also works clinically as an Honorary Diabetes Specialist Nurse at St Thomas' Hospital London. She has been nursing for nearly 30 years; specialising in diabetes since 1995. Having completed a Doctorate in 2008 her current focus is on research to benefit patient care for those with diabetes. Henri has published widely and is a reviewer for several journals. She is a member of the current National Institute for Health and Clinical Excellence Guidance Development Group for type 1 diabetes and is also on the editorial board for Diabetes & Primary Care.

**Professor Philip Preshaw,
Specialist in Periodontics, University of Newcastle**

Philip Preshaw is Professor of Periodontology and Consultant in Restorative Dentistry at Newcastle University, UK. He received his Dental Degree from the University of Newcastle in 1991 and his PhD in 1997. He is a registered specialist in Periodontics and is a Fellow of the Royal College of Surgeons of Edinburgh. His main research interests are investigations of the pathogenesis of periodontal disease, and links between diabetes and periodontal disease. Professor Preshaw lectures frequently, and has numerous publications in peer-reviewed scientific journals. He has been awarded a UK NIHR National Clinician Scientist Fellowship, a Distinguished Scientist Award from the International Association of Dental Research, and a King James IV Professorship from the Royal College of Surgeons of Edinburgh for his contributions to research.



Awareness, Information & Support

Diabetes continues to escalate globally with around 464 million people currently affected by the condition. If current trends continue, it is expected that more than 640 million will be affected by 2040.

In the UK, there are more than 3.5 million people diagnosed with diabetes and an estimated 500,000 more who have the condition, but don't yet know it. Whilst 'diabetes' has seen an increased awareness in the media and public health arena in more recent years there is still a lack of understanding around the two main types of diabetes, type 1 and type 2, and their risks, symptoms and management strategies.

- We have continued to raise awareness via multi-media channels with consistent messages that differentiate between the two main types to ensure that people are aware that type 1 diabetes is an auto-immune response and cannot be prevented, but much can be done to prevent or at least delay the onset of type 2.
- We distributed more than 938,000 direct mail appeals in 2015 containing awareness information and calls to action. With a 10.25% positive response rate, we know that at least 96,000 people across the country were exposed to the information contained within the package. It is most likely that significantly more than this number opened and read the information but chose not to make direct contact with us at that time. Historically, we have seen a good number of people send responses to communications which have been mailed out many months before, sometimes even years, as they have held onto the information provided for future reference.
- We encourage people to carry emergency identification and so distribute a free diabetes awareness necklace for this purpose. Diabetes and related healthcare professionals request these necklaces in bulk along with medical check-up cards used to record tests and results in support of their patients self-management strategies. More than 6,100 necklaces were requested during the year by HCPs and people with diabetes. This is a 36% increase on the numbers distributed in 2014.
- We publish a series of patient information leaflets which are covered by our NHS England Information Standard accreditation. These assets are available to the public free of charge and can be accessed on our website as pdf or audio files. HCPs also request these leaflets in bulk to distribute to their patients. More than 48,000 leaflets were distributed to diabetes and related healthcare professionals in support of their patients or for awareness raising activities during 2015. This remains consistent with the volumes circulated in 2014. Additionally, there were more than 6,000 downloads of this information from our website during the year. We expect this number to increase as we develop our activities to drive traffic to the website.

More than 96,000 people were responsive to our awareness messages across the country in 2015.





More than 143,000 copies of our monthly Diabetes Wellness News were distributed during the year. This is a small increase of 1% on the previous year. The newsletter is circulated to paying subscribers and healthcare professionals on a complimentary basis. It is available in large print, audio format or alternative on request. It is somewhat difficult to calculate the true readership of the newsletter given that there are around 4300 diabetes and related health professionals who receive a copy each month and share it with patients within their communities. The number of healthcare professionals signing up to our HCP database has increased 2.4% on 2014.

Supporting people with diabetes in their self-management skills through encouraging a proactive self-care approach can significantly reduce the risk of associated complications and ultimately improve quality of life. This fits with the NHS Domain 2 aim of 'enhancing quality of life for people with long term conditions'. This is key to all of our outreach programmes. Both type 1 and type 2 diabetes are progressive conditions which present many challenges and are associated with debilitating complications. Supported self-management for both physical health and mental wellbeing is important to achieve the best results possible. There is no one size fits all approach to treating and managing the condition, but it can be done successfully. The wider impact of this is the possible reduction in number of diabetes-related inpatient hospital stays and associated financial burden on health care services.

We successfully maintained NHS England Information Standard accreditation for the 6th year running. This accreditation also covers the publication of health and social care information within the Living with Diabetes section of our website.

Diabetes Wellness educational events

Four Diabetes Wellness events were held across the country in 2015 accommodating more than 400 delegates with a programme tailored to provide information on all aspects of living with and managing type 1 and type 2 diabetes. These events were supported by diabetes and related healthcare professionals who facilitated interactive and engaging sessions around nutrition, exercise, managing medicines, complications and the psychosocial impact of life with a long-term condition.

It is clear that attendees of these events have varying needs in terms of information and support. Understanding the impact that these events can have is very important and we endeavour to embed a process for measuring outcomes which utilise validated models such as the Diabetes Distress Score 17 and the Wellbeing Outcomes Star. Previous evaluation of these events has helped us to identify how the information and support helps to improve positivity, confidence and knowledge. The next step is to understand whether this type of educational event can play a part in sustained behavioural change and we will be looking at this in more detail in 2016.

Support of external health and wellbeing events

In addition to the educational Wellness event programme, we facilitated three events supporting the University of Central Lancashire with their Living with Diabetes Awareness Day (60 delegates); Tata Steel in Hartlepool to deliver a 'Better Health at Work' event where we worked collaboratively with Lloyds Pharmacy conducting diabetes health assessments and taking pledges from participants to increase their activity/exercise levels. Tata Steel plan to follow up on those pledges as part of their ongoing commitment to the health and wellbeing of their employees.

Nursing in Practice - healthcare provider educational events

We were also asked to provide the diabetes symposium at the Nursing in Practice event held in Bournemouth in October. This event targeted all nurses working within the Wessex region, providing information on the latest clinical advice and guidance updates. We were supported by the diabetes team from the Bournemouth Diabetes Education centre who facilitated a session on the management of diabetes and the newly diagnosed patient pathway, touching on treatment regimens for type 1 diabetes in the Wessex region. This event supported more than 250 healthcare professionals many of whom requested to receive our monthly Diabetes Wellness News and free information resources for their patients.

Gifts in Kind

In 2015 we received two donations of diabetes and related health medicines with a wholesale value of approximately £2.1 million. These medicines were gifted onwards to our programme partner, Dominican Republic Instituto Dominicana de Accion, and subsequently enabled the treatment of 7505 adults between the ages of 20-59 years; 5755 adults over the age of 60 in rural and city hospitals.

The medicines were specifically used in the treatment of diabetes; related eye complications; diabetic neuropathy and other related health complications. The provision of these medicines increased availability and access; provided opportunity for new patient treatment; enabled ongoing and follow-up treatment which is often not possible and reduced the need to re-use medical supplies, improving the quality of health services delivered and improving the ongoing management of diabetes in people who might otherwise not have treatment available to them.



A Few Kind Words...



As a Diabetes Consultant, it is both a privilege and an honour to support education events for people with diabetes. Not all patients can be seen regularly by a diabetes specialist. Patients live with diabetes day in day out. Access to high quality education, of an appropriate standard, in an appropriate setting is fundamental if we are to get successful patient engagement. Education is absolutely pivotal if we are to successfully support and empower patients to take charge of their diabetes as much as is possible. The programmes and events that the DRWF organise and run have always been well received by patients and as long as I am needed, I am happy to support this worthwhile cause.

Dr Mayank Patel Consultant Physician in Diabetes, University Hospital Southampton NHS Foundation Trust – Outstanding Educator Quality in Care Diabetes (QiC) awards 2015.

“Joining DRWF Diabetes Wellness Network and attending several events has been an eye opener, it has enabled me to mix with my peers to work towards a healthier lifestyle and to receive terrific information and advice from healthcare professionals.”

Caroline Bolton - Type 2



“Following the Living with Type 1 psychological event Siobhan Murphy said: “It was awesome I loved it. I think it’s about being around other people with diabetes. It was good to learn from each other and bounce around ideas, particularly for me to see what others do in terms of managing their hypos; learning how others deal with things has shown me how I can deal with it in the future.”

Siobhan Murphy - Type 1

Are you being “difficult”? It could be a **hypo!**

Heather Davie, lay member on the DRWF Editorial Advisory Board



Having had type 1 diabetes for 45 years, I have certainly learned a bit about it! I remember well the 24/32” needles – the massive spear one had to stab oneself with - and all the stainless steel and glass to be boiled each week and then immersed in surgical spirit, plus all the difficulties associated with drawing up insulins! There will be many people who were brought up on this in their early days of having type 1 diabetes. We should not forget how fortunate we now are to have pre-filled pens and tiny needles!



Type 1 diabetes in the teenage years

During this stage in life, I think it may not be the parents who are best equipped to get through to their son or daughter about how to handle the condition, while also keeping up with their friends. Equally, teachers and other professionals, with all their knowledge and wisdom, may not have the best understanding of the needs of somebody with type 1 diabetes. It is the Diabetes Specialist Nurse who is the professional and best able to help – provided of course that the teenager keeps their appointments! Sometimes it can take a short, sharp shock for the young person to take on board the gravity of the condition, and also that type 1 diabetes lives with him or her - and not the other way round. Careful management does not stop people with type 1 diabetes from doing what they want to do in life, and one has only to look at some of the elite athletes or high-flying professional in any sphere with the condition, to believe this.

I do take issue with using the term wobbles to describe the feelings and what happens when the blood sugar falls too low or is too high.

To me this is not a wobble, suggesting something quite mild and soon dealt with. It can be very serious – whether diabetic ketoacidosis (DKA - lack of insulin) at one end of the scale, or a severe hypo (hypoglycaemia - low blood sugar) at the other, and in the past I have had many of the latter. People around us may have difficulty understanding what is going on, and we can't tell them as the mind and body disconnect for a while until the brain is no longer starved of glucose. We try desperately to be in control, but we panic: “Where's the glucose?” We may lose our balance, as if drunk, and not be able to string words together - and the words that do come are the wrong ones.

There can be constriction round the neck, fog before the eyes, double or treble vision, and fear - all of these prevent us from being in control. For anyone around us who do not understand this behaviour, we seem uncooperative when they try to help.

After a bad hypo, I have been told I was stroppy and difficult! It has usually taken me 24 hours to feel normal, and to stop feeling cold when the hypo has been a bad or severe one. My experience of hyperglycaemia (high blood sugar) is feeling tired, lethargic, and just generally unwell.

My comments are not designed to be scaremongering, but just to remind those of us with the condition how it is or how it can be. We are not robots, and there will be few, if any, of us with type 1 diabetes who have not had a wide ball thrown at them at some time or other.

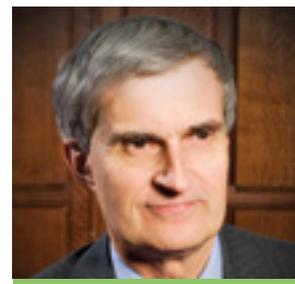


Research Advisory Board

Our Research Advisory Board comprises experts in a wide variety of research disciplines to ensure that all applications are assessed knowledgeably and fairly. As a member of the Association of Medical Research Charities we are committed to maintaining a rigorous peer review process for the assessment of research applications, for which the Advisory Board are responsible. This process ensures that only the highest quality research at the best institutions receives DRWF funding. When we are awarding a DRWF Fellowship, we are also intent on rewarding determined and committed individuals who have a proven track record in diabetes research and can display an intention to continue working in the field. It is our hope that a DRWF Fellowship can serve as a significant and fruitful step in the career of a bright, young and ambitious researcher.

Chairman - Professor David R Matthews, MA, DPhil, BM, BCh, FRCP

Professor of Diabetes Medicine, University of Oxford. Medical Tutor and Vice Principal at Harris Manchester College, Oxford. Emeritus founding chairman of the Oxford Centre for Diabetes, Endocrinology and Metabolism. David's interests include mathematical modelling of insulin resistance, homeostatic model assessment of beta-cell function and insulin resistance. He is the author of the HOMA model; has a long-standing interest in new therapeutic agents for type 2 diabetes, and was a co-investigator of the UKPDS. A founding trustee of the Oxford Health Alliance, he was the first Executive Director of the Global Alliance for Chronic Disease; a world-wide association of six research councils collaborating in the fight against Chronic Disease. He is Co-Director of the UK Diabetes Research Network; has over 230 publications and is on the editorial boards of several professional journals.



Professor Paul Squires

Paul Squires is Professor of Biomedical Science at the Joseph Banks Laboratories, University of Lincoln. He was previously a Reader in Diabetes & Endocrinology and Course Director for Biomedical Science at the University of Warwick and a Diabetes UK, RD Lawrence Research Fellow (King's College London). With 25yrs experience researching diabetes, including placements at the University of British Columbia in Canada and Uppsala University, Sweden, he has published 70+ papers and contributed to Research Advisory Boards for Diabetes UK, the European Foundation for the Study of Diabetes and DRWF. Prof. Squires studies sub-cellular mechanisms that regulate insulin secretion and action and his group is currently involved in determining how cell adhesion, cell-coupling and cell-to-cell communication synchronize activity and function within the renal nephron and pancreatic islet.



Dr Parth Narendran, MRCP, PhD

Parth Narendran qualified from Kings College London in 1992 and undertook his post-graduate clinical training in Manchester, Bristol and London. He conducted his PhD studies on the immune mechanisms underlying the development of type 1 diabetes while at Bristol, completing these in 2000 with funding from the British Diabetic Association. He was subsequently awarded a JDRF post-doctoral fellowship to undertake a two year period of basic science research at the Walter and Eliza Hall Institute of Medical Research in Melbourne, Australia. He took up his current post of clinical senior lecturer at the University of Birmingham in 2005. Parth's research interests continue to focus on the immunology of type 1 diabetes, on the influence of obesity and insulin resistance on this disease process, and the mechanisms of immune tolerance as it relates to type 1 diabetes. He has received funding from Diabetes UK, JDRF, DRWF and the Insulin Dependent Diabetes Trust to support his research. His clinical interests also focus on type 1 diabetes and he drives the structured education programme, the adolescent transition and insulin pump service for University Hospital Birmingham NHS Foundation Trust.



Professor Ewan Pearson PhD MB BChir MRCP

Clinical Senior Lecturer, Biomedical Research Institute, University of Dundee and Honorary Consultant in Diabetes & Endocrinology, NHS Tayside. Ewan qualified from Cambridge University Medical School in 1995. Following clinical training, he studied for a PhD in Andrew Hattersley's lab in Exeter, where he carried out physiology and clinical phenotyping in patients with Maturity Onset Diabetes of the Young (MODY) and Neonatal diabetes. Ewan moved to Dundee in 2005, where supported by a clinician scientist fellowship he pursued his research interest in genetic and phenotypic determinants of response to diabetes treatments. He was appointed to a clinical senior lecturer post at the University of Dundee in 2008. Ewan's current research areas are the pharmacogenetics of metformin, sulphonylureas and thiazolidinediones; clinical predictors of response to these agents; and pharmacovigilance.



Dr. Ian Salt PhD

Senior Lecturer at the Institute of Cardiovascular & Medical Sciences, University of Glasgow
 Ian graduated as a biochemist at the University of Bristol prior to gaining his Ph.D. in beta-cell biochemistry from the University of Dundee in 1997. He held fellowships from the British Heart Foundation and Diabetes UK before taking up his current academic post at the University of Glasgow. Ian is currently a senior lecturer in the Institute of Cardiovascular and Medical Sciences at the University of Glasgow. His principal research interests are the molecular mechanisms that link diabetes, insulin resistance and the risk of developing cardiovascular disease.

**Professor Anna Gloyn DPhil**

Anna's research is focused on using naturally occurring mutations in humans as tools to identify critical regulatory pathways and insights into normal physiology. Her early post-doctoral research led to the identification a new genetic aetiology for permanent and transient neonatal diabetes due to KCNJ11 mutations and resulted in one of the first examples of the determination of the molecular genetic aetiology leading to improved treatment options for patients. Current research work focuses on the translation of association signals for T2 diabetes and glycaemic traits into molecular, cellular and physiological mechanisms and clinically useful tools. Anna is a member of several international consortia, including DIAGRAM (Diabetes Genetics Replication and Meta-analysis), MAGIC (Meta-analysis of Glucose and Insulin traits Consortium) and the Genetics of Type 2 Diabetes (GoT2D).

**Dr Rory McCrimmon**

Dr Rory McCrimmon underwent his basic medical training at the University of Edinburgh and completed his clinical training in the South-East of Scotland before becoming an NHS Consultant Physician in Diabetes and Endocrinology at University Hospital Aintree, Liverpool, in 2000. In 2002, he left his NHS position and joined the faculty at Yale University, Connecticut, to further develop his basic research in the central regulation of glucose homeostasis. In 2009 he returned to the UK to join the University of Dundee and is currently a Clinical Reader in Translational Medicine.

**Professor David Russell-Jones**

David Russell-Jones Qualified from Guy's and St Thomas' Hospital medical school in 1985. In 1998 he was appointed Professor of Diabetes and Endocrinology at the University of Surrey and consultant physician at the Royal Surrey County Hospital. Prior to this he was Senior lecturer at Guy's and St Thomas' and Consultant Physician. He runs a full specialist diabetes and endocrine service. His department has attracted large research grants and was highly rated in the University RAE (research assessment exercise).

His research interests include the use of stable isotopes to understand peptide hormone physiology. He also has been principal investigator on a number of international clinical trials. He has published widely on insulin, IGF-I and Growth Hormone.



Professor Luigi Gnudi

Professor Luigi Gnudi of Diabetes & Metabolic Medicine, King's College London School of Medicine, Cardiovascular Division, Waterloo Campus, London, UK obtained his MD with Honours from the University of Parma (Italy) in 1988. He subsequently joined the residency programme in Diabetes and Endocrinology at the University of Padua Medical School - Italy (1989-1993). During 1992-1995 he worked as a postdoctoral fellow with Prof Barbara B Kahn at Beth Israel Hospital, Harvard Medical School in Boston. In 1999 he obtained a PhD in Endocrinological Sciences from the University of Milan and in 2005 he became a Fellow of both the Royal College of Physicians and the American Society of Nephrology.

In 1997 Luigi Gnudi was appointed Senior Lecturer in the Unit for Metabolic Medicine within the Cardiovascular Division of King's College London School of Medicine, and in 2011, was promoted to Professor of Diabetes & Metabolic Medicine. He has been Head of the Unit for Metabolic Medicine since 2010. He is an Honorary Consultant Physician in Diabetes, Endocrinology and Metabolic Medicine at Guy's and St. Thomas' Hospital NHS Foundation Trust in London.

He is an active researcher, clinician, and teacher with major research interests in the study of diabetic nephropathy and diabetic vascular complications in man. He has published more than 70 original papers, books and monographs and meeting proceedings on these topics.



Professor Angela Shore

Professor Angela Shore is the inaugural Vice-Dean Research for the University of Exeter Medical School, and was previously Interim Vice-Dean Research for the Peninsula College of Medicine and Dentistry since 2009. She is the Scientific Director of the NIHR Exeter Clinical Research Facility for Experimental Medicine and Associate Director for Experimental Medicine for the UKCRN diabetes research network.

Professor Shore graduated in Physiology from the University of Newcastle and was awarded her PhD for an investigation of the vascular mechanisms underlying fluid homeostasis in patients with Liver Disease. Following postdoctoral positions at the University of London where she expanded her research into the vascular aspects of hypertension, Professor Shore moved to the Postgraduate Medical School Exeter in 1987 to establish the clinical microvascular research unit funded by the Wellcome Trust. Currently Professor Shore's work which is funded by the British Heart Foundation, Diabetes UK, European Union IMI JU and NIHR investigates novel approaches to the identification of early vascular complications and patient stratification for cardiovascular risk.

She was appointed Professor of Cardiovascular Science in 2000.



Research Funding Programme

We provide funds to researchers whose work offers the best hope and most expedient path to improved understanding of **T1** and **T2** diabetes; new and improved treatments and management strategies and ultimately a cure. Awards are offered as 3-year Clinical and Non-Clinical Fellowships and 1-year Pump Priming awards. Institutional awards are available on a multi-year basis. Contract funding of key personnel within the DRWF Islet Isolation Facility, Churchill Hospital, Oxford is provided on a 2-3 year basis dependent upon results.

We published a number of articles relating to our research funding in 2015. Our Research Manager, Dr Eleanor Kennedy, followed up on a number of areas of research in more detail to ascertain outcomes and impact. These testimonials demonstrate the impact that relatively small pump-priming awards can have -

**Professor Susan Wong, University of Cardiff -
Development of regulatory B cell assay in type 1 diabetes:**

'Our project showed that there is a population of B cells that have key regulatory function, and that there is a trend to an increase in this population in newly-diagnosed patients with type 1 diabetes. Because these cell numbers can be low, in order to do any meaningful research on them, a lot of blood samples need to be taken to be able to conduct the research on the relevant cell populations. Without the DRWF funding we would not have been able to get enough blood samples to get a handle on this little population of cells. Most importantly, we will be publishing the results of the work we have conducted and presenting it at several leading conferences next year. This work has allowed us to secure further funding from other charities and funding agencies which proves how invaluable the DRWF pump-priming awards can be.'

**Dr Parth Narendran, University of Birmingham -
Lifestyle intervention for reducing beta cell autoimmunity in type 1 diabetes: a preliminary ex-vivo study:**

Adiponectin is a relatively abundant hormone and one that is secreted almost exclusively from fat stores in the body. Not only does it play an important role in energy and fat storage, it also appears to have an important anti-inflammatory effect on the immune system. It does this by signalling via adiponectin receptors found on the surface of certain cells in the immune system. In people with type 1 diabetes, the levels of receptors expressed on these cells is markedly lower than in people without type 1 diabetes. Previous research had indicated that adiponectin levels could be altered with exercise. The aim of our research programme was to study whether an exercise intervention could also affect the expression of adiponectin receptors on human immune cells and whether this change in receptors resulted in modulating the system's attack against the pancreatic beta cell. Our work showed that an increase in the expression of adiponectin with exercise training and that a change in the expression levels of adiponectin receptor modulates the ability of the immune system's T cells to migrate across inflamed endothelium and potentially reducing the autoimmune attack of the beta cell. We also showed that a change in the receptor levels can alter how the T cell recognises and attacks the beta cell. So altering receptor levels can protect beta cells in two different ways. DRWF funding helped

us to get vital pilot data that we needed and to demonstrate that an exercise intervention programme could be effective at, and be used alongside new drugs in, protecting beta cells from autoimmune destruction.'



Islet Cell Research & Transplant in the UK and around the world

Over the past 16 years, DRWF has made a considerable contribution to the funding of islet cell research and transplant in the UK and the US. Indeed, the DRWF Islet Isolation Facility at Churchill Hospital, Oxford plays a key role in providing islets for research and transplant as part of a national treatment programme, the clinical element of which is funded by the NHS.

In 2015 new contract funding commenced for 3 staff within the isolation facility. We secured a major donor grant to support 2 of these positions (concludes April 2018) with a proposal entitled: Improving human islet provision for clinical and research by optimisation of human islet yield, islet function and islet survival. This project seeks to address the availability and longevity of islet transplants. The DRWF islet isolation facility is positioned as one of the leading facilities in Europe. The Oxford team are working to address the current challenges presented in terms of availability of organs; improving islet isolation techniques in order to the number insulin producing islets harvested from donor organs to improve function and survival of cells post-transplant. Reporting during the period 01st May - 31st Oct 2015 demonstrated that 6 transplants had been performed using islets from the Oxford facility with >90% of transplant recipients achieving resolution of hypoglycaemia unawareness. Additionally isolated islets had been provided and transplanted successfully in Edinburgh and Newcastle. It was confirmed within reporting to the major donor that other specific milestones set-out within the initial proposal had been met and surpassed. This major donor award is being managed by New Philanthropy Capital (NPC) and the first wave of reporting was approved by them in late 2015.

Whilst there are clearly many challenges to the wider availability of human-to-human islet cell transplants which are being addressed in the UK and around the world, we have continued to fund work based in the US which is spear-headed by Professor Bernard Herring, a leading expert in the xeno-transplant field, who seeks to find an alternative, sustainable, supply of islet cells for human transplant. This work has gained ground in more recent years following publication of its original success in Nature magazine in 2006 and is currently working towards clinical trial.

2015 Research Grant Awards

We advertised two calls for applications in 2015 - A 3-year Clinical Fellowship and a Pump Priming round with the following awards being allocated -



3-year Sutherland-Earl Clinical Fellowship: 1 award offered from a total of 10 applications

Institution: Imperial College London

Recipient: Mr Nicholas Penney

Project: Mechanisms and prognostication of type-2 diabetes resolution following bariatric surgery

Amount: £209,164

Imperial College
London



Summary: Bariatric (weight loss) surgery is currently the most successful treatment for obesity. Bariatric surgery has also emerged as a highly effective treatment of type-2 diabetes in obese patients, rapidly reducing and often removing the need for patients to take diabetic medications. Interestingly, the improvement in patients' diabetes after bariatric surgery occurs long before any significant weight loss. Through a better understanding of the reasons behind this, bariatric surgery can provide a unique 'looking glass' to identify new, non-surgical ways of treating diabetes and obesity.

Recent studies have shown that bacteria within the gut play an important role in the improvement seen in patients' diabetes. Bariatric surgery fundamentally changes the environment within the gut, which results in changes to the makeup of the trillions of bacteria living within it. These changes in the gut bacteria can affect the body in a number of complex ways, which we are only just beginning to understand. For example, gut bacteria breakdown food we are unable to absorb ourselves, leading to altered sugar levels and can release molecules that act to increase insulin sensitivity or reduce appetite.

In this study I aim to characterise the changes that occur to the gut bacteria after bariatric surgery and gain a better understanding of how these changes lead to an improvement in diabetes. With this understanding I hope to discover potential targets for future treatments, such as identifying beneficial gut bacteria that could be supplemented with probiotics in patients.

Additionally, although bariatric surgery is a highly successful treatment, approximately 30% of obese patients do not undergo a significant improvement in their diabetes after surgery. I aim to identify molecules (metabolites) within the patient's blood or urine that are able to predict the likely chance a patient will undergo improvement in their diabetes after bariatric surgery. This will help doctors and patients assess the likely benefit from bariatric surgery, thus enabling a personalised approach towards patient care.

5 Pump Priming awards from 21 applications received

Institution: UCL Institute of Immunity & Transplantation

Recipient: Professor Lucy Walker

Project: CD4 T cell differentiation markers as predictors of type 1 diabetes development and progression

Amount: £20,000



Summary: Type 1 diabetes is caused by immune cells called T cells, however it has not been clear which type of T cell is involved. We believe that a better understanding of this area will ultimately permit the development of new therapies to target the errant T cells and interrupt disease.

We have recently discovered that a particular type of T cell, the follicular helper T cell (TFH) is overrepresented in people with type 1 diabetes.

We think that measuring these cells could represent a new way to gauge the autoimmune response in people with this condition. This would have important implications for our ability to assess whether particular therapies are working and perhaps even help us to determine how likely a person is to develop diabetes in the first place. The current application builds on our recent findings and will shed light on how the number of these TFH cells changes in individual patients over time both before and after T1D development.

Institution: Ulster University

Recipient: Dr Richard Metcalfe

Project: A comparison of the acute impact of high-intensity interval training (HIT), reduced-exertion high-intensity interval training (REHIT) and moderate-intensity continuous aerobic exercise (MICE) on free-living glycaemic control in type 2 diabetes

Amount: £12,260



Summary: This research aims to determine whether a genuinely time-efficient exercise intervention is effective at improving the control of blood glucose in people with T2D. The exercise is based on high-intensity interval training (HIT), which utilises short bursts of vigorous exercise interspersed with periods of rest, but we have substantially reduced the number and length of the exercise intervals. Our protocol consists of 10-min of low intensity cycling with just two 20-second sprints in each session. Based on our previous work, this exercise mode is associated with low levels of exertion and fatigue, but is still effective at improving insulin function in sedentary men. However, it is not known if this type of exercise could improve blood glucose control in patients with T2D. We will: 1) investigate the effectiveness of this exercise to improve 24-hour glucose control; 2) compare the effects of this exercise mode with current exercise recommendations and another form of HIT; and 3) ask participants their perceptions of exertion, fatigue and enjoyment with each exercise mode.

Institution: Newcastle University

Recipient: Dr Catherine Arden

Project: The mechanisms linking glucose sensing to autophagic flux in pancreatic beta-cells

Amount: £19,715



Summary: Type 2 diabetes (T2DM) occurs when the insulin-releasing beta-cells of the pancreas fail to secrete sufficient insulin, a consequence of decreased insulin release and decreased cell number. The purpose of the proposed work is to explore a role for autophagy in the regulation of beta-cell number. Autophagy is a recycling system that uses damaged cell components to provide energy in response to changes in fuel availability, and can either act to promote cell survival or cell death. The aim of the proposed study is to explore how beta-cells regulate autophagy in response to changes in glucose concentration. We will explore how beta-cells alter their cell recycling mechanism in response to both acute and chronic changes in glucose levels and investigate the cellular mechanisms involved. The data generated by this pilot study will provide the basis for future large scale grant applications investigating the molecular links between glucose-sensing and autophagy in beta-cells and how these pathways impact on beta-cell number in T2DM.

5 Pump Priming awards from 21 applications received

Institution: OCDEM, University of Oxford

Recipient: Professor Leanne Hodson

Project: Understanding the relationship between lipid droplet pattern and mitochondrial function and morphology in human primary hepatocytes

Amount: £19,382



Summary: More people with type 2 diabetes have fatty liver disease than people without diabetes. Liver fat accumulation (steatosis) consists of either a large number of small (microsteatosis) or one large (macrosteatosis) fat (lipid) droplet within liver cells (hepatocytes). Large lipid droplets are thought to interfere with the part of the cell that produces energy (mitochondria) so that they don't work efficiently. We will investigate the relationship between lipid droplets and mitochondrial function in human liver cells. Liver tissue will be obtained from patients undergoing surgery and from this hepatocytes will be isolated. We will then measure the size and number of the lipid droplets and their localisation to mitochondria, using a state-of-the-art automated imaging machine. We will also assess the health and function of the mitochondria by determining their ability to produce energy. This work will help us to understand the relationship between fat in the liver and mitochondrial function and also provide information about pathways that new drugs could be developed for to help to keep the liver healthy.

Institution: Northumbria University

Recipient: Dr Daniel West

Project: Can residual beta-cell function predict glycaemic variability, inflammation and vascular repair at rest and after exercise in people with established Type 1 diabetes?

Amount: £19,470



Summary: When people with Type 1 diabetes exercise, some experience hypoglycaemia, while others do not; in some HbA1c gets worse while in others it improves. Exercise is known to increase glucose variability leading to more time with high and low levels. It is now known that many people with long-standing type 1 diabetes can produce small amounts of insulin. It is unknown if this is important for limiting blood glucose variability at rest and around exercise. It is also unknown whether this low level of insulin impacts on important health markers such as how well blood vessels expand and shrink and how well the body can repair these vessels. We will examine the relationships between residual insulin production, glucose variability, blood vessel function and repair, inflammation and hypoglycaemia fear and incidence, at rest and after exercise. This will provide a foundation for larger studies which will look at how amount of residual insulin production could be used to predict the level of support people wishing to exercise may need.



We are a member of the Association of Medical Research Charities (AMRC) and as such support the use of a rigorous peer review procedure in the allocation of our research funding. Our Research Advisory Board (RAB) is a multi-disciplinary panel of clinicians and scientists who assess applications for funding. In 2015 we underwent an AMRC peer review audit and successfully passed this independent evaluation.



'Very proud to support DRWF in their engagement with the AMRC and congratulations on passing the 2015 peer review audit. This further demonstrates the high standards of quality and scientific rigour adopted by DRWF both as an organisation and reflected in the dedication and commitment of every single team member. Long may it continue!'

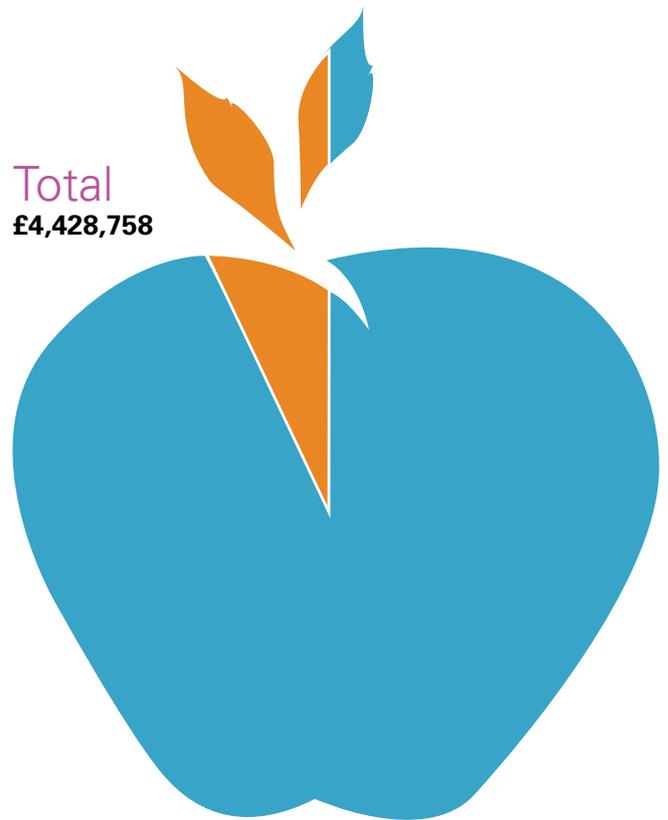
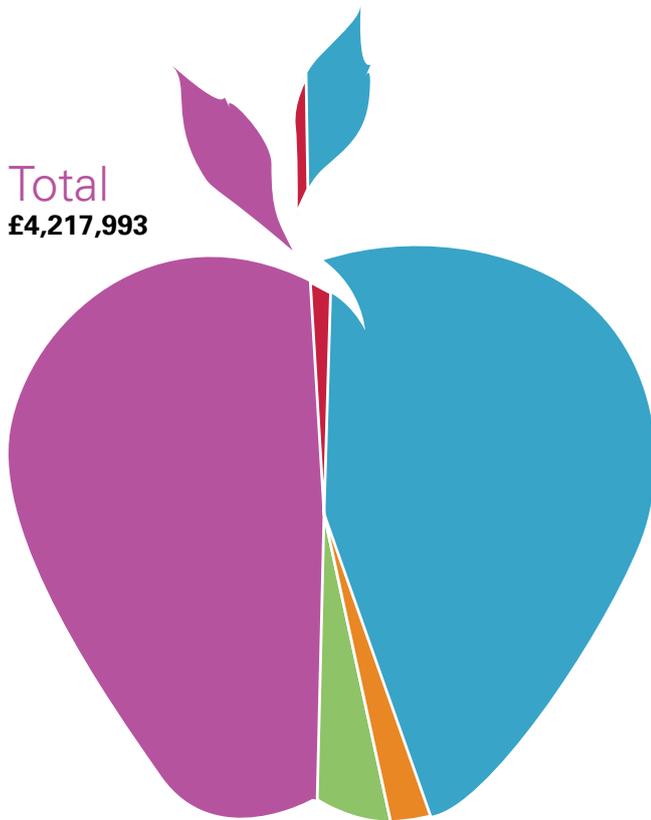
Professor Katharine Barnard, a former DRWF Research Advisory Board member

Income: Expenditure Profile 2015

The information presented here is not the full statutory accounts but a summary of the information which appears in the full accounts for financial year ending 2015. This summary information may not contain sufficient information to allow for a full understanding of the financial affairs of the Diabetes Research & Wellness Foundation (DRWF). The full statutory accounts can be supplied on request or accessed via the Charity Commission website by entering the charity registration number 1070607 in the search box.

Income

Expenditure



Highlights from 2015



Mark Hoskins Marathon Des Sables

Mark Hoskins challenged himself to complete the Marathon Des Sables and raised **£7,188.40**. Diabetes has been part of his family for many years as his dad has type 1 diabetes, mum has type 2 and Mark has some close friends who are also living with the conditions.

The Marathon des Sables, (www.marthondessables.co.uk) fondly known as “the toughest footrace on Earth”. This entails running 6 marathons in 6 days across the Sahara Desert.

10,000 ft Skydive

Carole-Claire Gilbey took on a 10,000 ft skydive for DRWF and raised **£1611.25**, she was celebrating a major weight loss and a huge reduction in diabetes medication. She is now a role model at her local GP surgery.



Team Skydive

Our first team skydive took place with 13 people taking part including staff members Claire Levy and Lee Calladine. A total of **£8975.55** was raised.

Cycle 'The Wight'

DRWF supporter Steve Tamblyn boosted funds for the charity by **£1,225** with a fundraising cycle ride around the Isle of Wight. Steve took part in the 70 mile 'Cycle 'The Wight' ride in September 2015 with the aim of improving his fitness - and decided to raise funds for DRWF in the process.

Highlights from 2015

Furzeley Golf Club

Jacquie Bowles from Furzeley Golf Club in Denmead adopted DRWF as their charity of the year 2015 and raised a magnificent **£1093.04** through a variety of events, including a Christmas party, collection pots and a Texas Scramble team golf competition



Collaboration with Solent Diabetes Association

DRWF's continuing relationship with the Solent Diabetes Association where the two shops, one in Fareham and the other in Gosport, stock all the Free DRWF patient information leaflets and visitors make a donation in the collection pots resulted in the charity receiving **£1824.46** in total for 2015.



Christine's 70th Birthday Celebration

Christine and John Gallagher came into the office to give us a cheque for **£150** it was in lieu of presents from family and friends from Christine's 70th Birthday celebrations. Christine has been living with type 1 for many years.



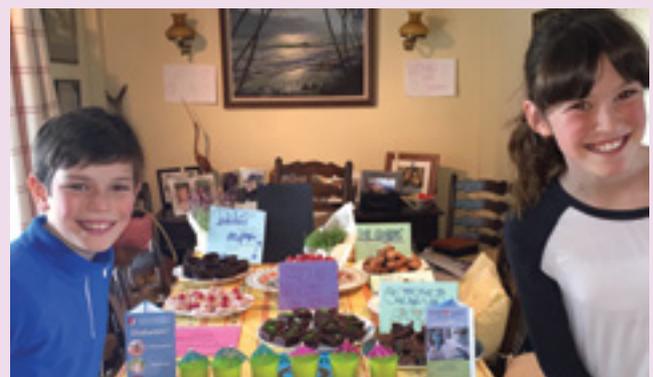
Great Manchester Cycle

David Taylor raised **£115.50** in 2015. He said: "I will be taking part in the Great Manchester cycle (the 26 mile ride), as I am a type 2, I thought it would be appropriate for me to ride and raise money for diabetes."



Nicola's 50th birthday celebration

Nicola Joliffe chose DRWF to benefit from her 50th birthday celebration by organising a wine tasting for friends and family. They raised a wonderful **£330**.



Healthy Bake Sale

Rose and Harry Spurling organised and cooked a healthy bake sale of sugar and wheat free cakes and treats while staying with their grandparents in North Yorkshire, to raise money for diabetes, they raised **£170.00** Their grandfather has type 2 diabetes and a friend had just been diagnosed with type 1 diabetes.

World Diabetes Day



The Chocolate Lounge

Mick Collins from The Chocolate Lounge in Copnor Road Portsmouth marked World Diabetes Day with a coffee and cake morning with musical entertainment from Michelle Lewis raising £50.



The Pyramids Centre

The team from the gym at The Pyramids Centre in Southsea also marked World Diabetes by holding a static cycle challenge.



Blue Bake Sale

Heather Kersey and friends Jade Roberts, Marija Radisic and Abbie Sullivan organised a blue bake sale a presentation about diabetes to younger years at school with fundraising buckets, plus a bake sale in St Albans town centre for World Diabetes Day 2015 and raised £202.23



Ride London Surrey 100

Three of our Ride London Surrey 100 riders had to pull out of starting the ride and deferred their place until 2016. Our remaining riders raised £1355.00

Dragon Boat Race

Due to environmental problems the 2015 Dragon Boat race was postponed until October. DRWF had three boats in the race which meant some people rowed many times. However we had a fun time reaching the final with one of the teams and raised £ 655.00 in total.

London 10K

London 10K saw 8 runners at the start for DRWF and they raised a total of £1117.50.

Emine Muharrem and Friends

Emine Muharrem and her friends and family organised a Great Big Party and raised £1000. Emine said: *"The Great South Run was a huge challenge for me personally, the furthest I'd run before this race was 10km so the 10 mile route was considerably longer! Running for the DRWF was an honour as they are a charity close to my heart! Without the incentive of raising money for their cause I might not have finished at all! Thanks for letting me wear the vest, guys!"*

Business Builders Networking Group

Business Builders Networking Group organised a second charity golf day in support of DRWF and the group also held a music fundraiser at Gunwharf Casino and raised a total of £3122.69



2015 Charitable Trusts Received

We are very grateful to the charitable trusts who have so generously invested in the DRWF, facilitating the expansion and continued development of our education and research programmes.

The Thomas C Maconochie Trust

Miss Joan Wyatt Charitable Trust

The Coulthurst Trust



Legacies received in 2015

Legacies are vital to every charity as they provide the bedrock financial support we rely upon to look ahead and progress effectively. We are grateful to those who have left a 'legacy of hope' for future generations. Giving to DRWF through a Will enables continued diabetes research whilst ensuring dependants are provided for. We hope more people will consider leaving a legacy to diabetes research and leave their mark on the world.

Valerie Abel	Gerald Downs	Roberta Heason	Muriel Quested
Geoffrey Ball	Ludlow Dunbar	Elsie Horton	Margery Sanders
Ronald Edwin	Alfred Dyke	Thomas Howarth	Muriel Sellick
Carole Blacklaws	John Dymond	Helena Lear	Sheila Shewry
Catherine Brydges	Roy Edmondson	Dorothy McIntosh	William Smith
Margaret Bull	Joyce Goddard	Jean Megginson	Iris Thakur
Judith Cocks	James Gray	Jacqueline Naylor	Edgar Thamootheram
George Coleman	George Hall	Niall O'Loughlen	Reginald Thirlway
Alistair Collins	Sheila Hamblin	Miss J C Parker	Alice Thomas
Pearl Cottington	John Hearn	William Prentice	Violet Voller

Gifts given in memory of a loved one

Donations given in memoriam are a valuable and positive way of celebrating the life of someone special and helps DRWF continue with our long-term mission - **to find a cure for diabetes**. Giving 'in memory' is a distinctive way to remember and honour family and friends. In 2015, we would like to remember -

Baby Ryan	Roy Drage	Barrie Lawrence	Jean Rogers
Lori Anastasiu	Tony Eades	Ron Lloyd	John Ross
Steve Baldwin	Dorothy Edwards	Geoffrey Love	Patricia Selway
Barbara Beeson	Leigh Ellison	Mary Martin	Alan Shaw
Roy Benjamin	Dawn Farmer	Dorothy McKnight	Alison Simons
David Bird	Jean Gavin	Hilda Noonan	Kathleen Sloan
Catherine Birrell	Frank Greaves	Bill O'Grady	Etta Smith
George Bonthron	William Green	Rosemary O'Leary	Patricia Spells
Denise Booth	Thelma Guiney	Janet Palmer	Maisie Spiers
Ian Bowley	John Guy	Peggy Palmer	Eric Tinsley
Geoffrey Brooke	Winifred Hanham	Olive Parsons	Michael Tollerfield
Brenda Brown	Anita Harvey	Barbara Partt	Constance Trudgon
John Buck	Colin Hasson	Kevin Patton	John Turner
Margaret Bull	Marjorie Henshall	Evelyn Peverett	Jean Ward
Nana Angela	Brian Hobbs	Elizabeth Plain	Kara Ward
Leslie Coombes	Frederick Hoose	Keith Prendergast	Herbie and Barbara White
Ronald Cooper	Rosemary James	Anastasia Pryde	Jeanne Whitelaw
Alfred Cory	Mary Johnston	Margaret Ratnaike	Phyllis Williams
Mum and Dad	Walter Jones	Barbara Richards	Rosina Wrubel
Elizabeth di Ponio	Colin Kennedy	Nana Richardson	

Our work is made possible only through our supporters' commitment and generosity for which we say a heartfelt **THANK YOU!**

Our work and its development

DRWF was established to support people living with, and at risk of, type 1 and type 2 diabetes. We do this by funding research which helps to establish the causes; provides improved and new treatment and management strategies; explores related complications and ways in which to mitigate or best manage them; and ultimately will lead to our finding a cure.

Focus

Diabetes is a chronic, progressive condition that can have a debilitating impact on almost every aspect of life. There are reportedly more than 3.5 million adults diagnosed with diabetes in U.K and it is thought that a further 500,000 adults have undiagnosed Type 2.

Diabetes is associated with an increased risk of cardiovascular disease, blindness, kidney disease and limb amputation. It is also considered to be one of the leading causes of blindness in the working age in the UK. It is reported that around 10 per cent of NHS annual expenditure is spent on diabetes and related complications, approximately £10 billion. Of which, it is estimated that around 80% is attributed to treating associated complications, many of which could be avoided.

Studies have shown that good self-management skills can substantially reduce the risk of the complications associated with diabetes – improving quality of life for those with the condition and ultimately reducing the burden on healthcare providers.

The incidence of diabetes in the UK and around the world continues to grow at an alarming rate. We aim to be both proactive and reactive in our approach to supporting people living with diabetes and in order to ensure that funds for research are spent wisely and in the most appropriate areas. In the coming years, we will work collaboratively with like-minded organisations which will help us extend our reach of a wider audience. We will –

- **Raise Awareness** – increase the profile of both Type 1 and Type 2 diabetes, their differences and effects; encourage those who may be considered ‘at risk’ to take action to prevent or delay onset (Type 2); encourage those who may be at risk and displaying symptoms to seek advice/appropriate screening from their healthcare professional; carry identification to ensure healthcare professionals are alerted to the person’s medical condition in an emergency.
- **Inform & Support** – to provide quality and relevant information and support to people with diabetes; provide resources to support healthcare professionals with their delivery of care; support carers, family and friends; provide opportunities for people with diabetes to attend educational events where they can directly engage with diabetes and related healthcare professionals in order to improve understanding and learn effective approaches to self-care; evaluate our support services using qualitative and quantitative methods to ensure we best meet our beneficiary needs; seek and secure charitable donations of diabetes and related health medicines/ items which are distributed to appropriate beneficiaries in need of such items, in countries where these items may not otherwise be accessible.
- **Fund Research** – to support vital diabetes research projects with a view to discovering the causes, new and improved treatments and effective management strategies, whilst working towards our ultimate goal of finding a cure.





Get Involved

Your generosity can help our dreams become a reality

Diabetes Research & Wellness Foundation continues to fund vital research into finding a cure for diabetes, while supporting growing numbers of people living with Type 1 and Type 2 diabetes in the UK. We ensure that only the highest standard of research receives DRWF funding and endeavour to reach as many people as possible living with the condition and in need of our support.

We rely on individual donations to enable our work to continue. We know that researchers are getting ever closer to finding a viable cure but now, more than ever, we need to inject time and money to accomplish the break-through. We hope that the lives of millions of people in the future will be dramatically improved thanks to our work today - and they will have YOU, the supporters of DRWF to thank!

Making a donation

Your generosity can help the dreams of many become a reality. Please consider making a donation today either online or by cheque or credit card by calling 02392 637808, or by becoming a 'Partner for the Cure' with a regular direct debit contribution.

Please take the time to consider how best you would like to show your support - perhaps you would like to consider the longer-term option of 'leaving a legacy of hope'.

However you choose to contribute, you should be assured that your gift will be put to the best use and that your philanthropy is hugely appreciated, not just by DRWF, but by those people that we aim to ensure are 'Staying well until a cure is found...'



How to Donate

We don't receive any government funding and rely almost entirely on voluntary income. If you would like to make a donation to support our work you can do so in a variety of ways.

Cheque or credit card

Payable to DRWF and sent to DRWF 010-012 Northney Marina, Hayling Island, Hants. PO11 0NH or call 023 92 636136 to give over the phone.

Direct debit

Become a 'Partner for the Cure' by setting up a regular monthly/quarterly/annual donation direct from your bank account. Please call for further details on 023 92 636136 or set up a 'regular donation' www.drwf.org.uk/donate

Online

You can also donate online via the DRWF payment gateway - by following the on-screen instructions you can make a secure one-off donation. www.drwf.org.uk/donate

Donate through Charities Aid Foundation (CAF) or Charity Choice

Please visit the Charity Choice website www.charitychoice.co.uk/ charities for further details.

However you choose to support our work, we are extremely grateful. Every penny really does count! Thank you.

Volunteering

We are always pleased to hear from people who would like to volunteer with DRWF. If you are interested, please do contact us on **023 92 637808** or email claire.levy@drwf.org.uk

Thank You

Through our awareness raising, information provision and educational support programmes, we enable people with Type 1 and Type 2 diabetes to learn more about their condition. We provide the tools to motivate, empower and engage people to take a positive approach to their self-care. Through supported self-management they can reduce the risk of associated complications, improve quality of life and control their diabetes effectively.

Don't let diabetes control you!

We fund some of the best and brightest diabetes researchers in the UK and around the world. We support Fellowships, Open Funding Projects, Institutional grants and Studentships. We fund peer-reviewed work that we believe will help us to understand the causes; find new treatments; provide insight into effective therapies and management strategies and ultimately, find a cure for diabetes.

You help us to achieve these objectives –

THANK YOU!

to find out more...

Diabetes Research & Wellness Foundation,
The Roundhouse, 010-012 Northney Marina,
Hayling Island, Hampshire, PO11 0NH



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Statistics/ Figures stated correct at FYE 2015

Staying well until a cure is found



Diabetes Research & Wellness Foundation