15th International Primary Care Diabetes Europe Conference

13 & 14 APRIL

2018 PCDE

Barcelona

The role of Primary Care in the world of Diabetes

FINAL PROGRAMME

ABSTRACTS BOOK

www.pcdeurope.org
www.2018pcdeconference.org

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Published by:

CONGRESOS Y EDICIONES SEMFYC

Carrer del Pi, 11, 2a pl., of. 13
08002 Barcelona

ISBN: 978-84-15037-73-6

Welcome

Dear Participants,

We are delighted to welcome you again to the 15th International Primary Care Diabetes Europe (PCDE) Conference here in Barcelona on 13-14 April 2018.

Ever since 2012, PCDE meetings have been hosted in the Barceló Sants Hotel in Barcelona, following the same format that has been successful in previous editions of the biennial Primary Care Diabetes Europe event.

This success reflects, above all, the sustained interest of our participants, who are working mainly in the primary care field (clinic and/or academic) and have a strong commitment to keep their diabetes knowledge updated.

The theme of this year's conference is "The role of primary care in the world of diabetes". Topics for these two days include Health Care professionals and Type 2 Diabetes Patient guidelines adherence, latest evidence in the field of exercise and diet, new therapeutic targets, an update on the latest compounds available, care models under review and the latest PCDE research project publications.

Because the condition is prevalent and chronic, primary care professionals are inevitably involved in the care for people with Type 2 Diabetes. This brings along the need for CPD in the field of diabetes care for these health care professionals.

PCDE can be your guide and coach. As a leading pan-European platform we see our role in expanding educational activities as increasingly important now that primary care is expected to take increasing responsibility in the global burden of (type 2) diabetes from a multidisciplinary approach.

Due to growing interest we can offer you instructive, state-of-the-art lectures by leading authorities in diabetes. You are invited to present your own research outcomes in the poster presentations and discuss the results with your peers during the Poster Walk on Friday and Saturday.

During this conference, the 7th Paul Cromme award will be presented to Professor Andrew Boulton, Chairman of EURADIA (European Alliance for Diabetes Research), President-Elect of the International Diabetes Federation and until recently President of EASD.

With thanks for the hard work of the entire organising team, it is an honour to announce that the EACCME European Accreditation assigned to this conference is up to 7 CME credits.

With thanks also to our valued sponsors, we can offer you some additional satellite symposia as an extension to the conference, focussing on new therapeutic options such as new Information technology in Type 2 diabetes management, which aims to overcome therapeutic barriers and promote a more integrated approach.

As a primary health care professional involved in the management of people living with diabetes, this conference is an educational programme not to be missed.

We hope you will enjoy it.

On behalf of the scientific and organising committees,

Xavier Cos
Chair PCDE

Committees

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More information is available on our websites

- PCDE Website: **http://www.pcdeurope.org**
- PCDE Conference site: **http://www.2018pcdeconference.org**
- Primary Care Diabetes Journal: **http://www.primary-care-diabetes.com**
- The online manuscript submission site for the journal is live at: **http://ees.elsevier.com/pcd/**

CME Accreditation

European Accreditation

Accreditation Statement

The **15th International Primary Care Diabetes Europe Conference, Barcelona, Spain, 13/04/2018-14/04/2018** has been accredited by the European Accreditation Council for Continuing Medical Education (EACCME®) with **7 European CME credits (ECMEC®s)**. Each medical specialist should only claim those hours of credit that he or she was actually in the educational activity.

By means of an agreement between the *Union Européenne des Médecins Spécialistes* (European Union of Specialist Doctors) and the American Medical Association, physicians may convert EACCME® credits into an equivalent number of *AMA PRA Category 1 Credits™*. Further information on the process to convert EACCME® credit to AMA credit can be found at:
www.ama-assn.org/education/earn-credit-participation-international-activities.

Live educational activities that take place outside of Canada, recognised by the UEMS-EACCME® for ECMEC®s are deemed to be Accredited Group Learning Activities (Section 1) as defined by the Maintenance of Certification Programme of the Royal College of Physicians and Surgeons of Canada.

EACCME credits
Each participant can only receive the number of credits he or she is entitled to according to his or her actual participation at the event once he or she has completed the feedback form.

Please find below the breakdown of ECMEC®s per day:
13.04.2018 – 4.00
14.04.2018 – 3.00

The EACCME® awards ECMEC®s on the basis of 1 ECMEC® for one hour of CME with a maximum of 8 ECMEC®s per day.

Spanish accreditation

The **15th International Primary Care Diabetes Europe Conference** has been accredited by the Catalan Board for the Ongoing Training of Healthcare Professions (CCFCPS) with **1 credit.**

At least 80% attendance at the whole conference will be required to obtain the CFC credits and certificate.

Daily Planner

THURSDAY, 12 APRIL 2018

TIME	SYMPOSIA MEETING ROOM (MR 07 + 08)
17.00 - 19.00 h	PRECONFERENCE WORKSHOP Industry-sponsored (see p. 50)

FRIDAY, 13 APRIL 2018

TIME	PLENARY MEETING ROOM (MR 09)	SYMPOSIA MEETING ROOM (MR 10 + 11)
08.00 - 09.00 h	REGISTRATION	
09.00 - 09.15 h	Opening Ceremony	
09.15 - 10.00 h	SESSION 1 - Does evidence translate into clinical practice? *(Kamlesh Khunti, Gerard Reach)*	
10.00 - 10.40 h	SESSION 2 - Oral presentation of 5 best abstracts	
10.45 - 11.30 h	Coffee Break & Poster Walks 1, 2 and 3 (MR 05 + 06)	
11.30 - 12.20 h	SESSION 3 - Lifestyle management in diabetes. Latest state of evidence *(Tom Yates, Serafín Murillo)*	
12.20 - 13.00 h	SESSION 4 - Keynote lecture – New and upcoming agents of type 2 diabetes *(Cliff Bailey)*	
13.00 - 14.30 h	Lunch	Lunch Industry-sponsored Satellite Symposium (see p. 50)
14.30 - 15.30 h	SESSION 5 - Paul Cromme lecture. The diabetic foot: prevention is possible *(Andrew Boulton)*	
15.30 - 16.30 h	SESSION 6 - EASD PCDE Study Group latest research results *(Samuel Seidu, Clare Hambling, Ana Cebrián)*	
17.00 - 19.00 h		Afternoon Industry-sponsored Satellite Symposium (see p. 51)

SATURDAY, 14 APRIL 2018

TIME	PLENARY MEETING ROOM (MR 09)
09.00 - 09.45 h	**SESSION 7 - Rising star lecture** *(Katrien Benhalima)*
09.45 - 10.30 h	**SESSION 8 - Care Models** *(Domingo Orozco, Martin Hadley-Brown, Guy Rutten)*
10.30 - 11.15 h	**Coffee Break & Poster Walks 4, 5 and 6 (MR 05 + 06)**
11.15 - 12.15 h	**SESSION 9 - Drug therapy** *(Stefano Del Prato, Cliff Bailey)*
12.15 - 12.40 h	**Closing Ceremony**
12.40 h	**Reception (informal drink and "tapas")**

PCDE Scientific Conference Programme

PCDE has been organising conferences, either joint meetings with partner organisations or standalone conferences since 1999 which have established themselves as the largest international conference on diabetes in primary care. The scientific programme, apart from keynote lectures and state-of-the-art sessions from international experts, offers highlights such as the "Paul Cromme Lecture", where an eminent European figure or organisation, active in primary care and diabetes is recognised for his or her achievement and the "Rising Star Lecture", where a junior researcher whose scientific work significantly contributes to evidence-based primary care for diabetes will be given the opportunity to present their research findings and will be acknowledged for his or her work.

One of the highlights of the scientific programme not to be missed is the poster sessions where authors of accepted abstracts will have the opportunity to present and share their experience and research results during interactive poster sessions chaired by leading diabetes experts in the primary care field. Poster walks are lively scientific sessions where junior researchers are given the opportunity to network with colleagues as well as leading researchers and eminent scientists chairing the event. Poster sessions are organised as e-sessions where the posters will be available throughout the conference in the poster hall on display as well as after the event on the conference website's e-poster gallery. The five highest scored posters will be selected for oral presentation during a plenary session.

The abstracts accepted without presentation will also be available as electronic posters on display in the poster hall as well as after the conference on the e-poster gallery on the conference website.

Scientific Programme

FRIDAY, 13 APRIL 2018

08.00 - 09.00 h **REGISTRATION**

09.00 - 09.15 h **OPENING CEREMONY**

09.15 - 10.00 h **SESSION 1. DOES EVIDENCE TRANSLATE INTO CLINICAL PRACTICE?** (p. 10)

Chair: *Xavier Cos*

- Do doctors practice what the guidelines preach?
  Kamlesh Khunti (UK)
- Do patients practice what doctors preach?
  Gerard Reach (France)

10.00 - 10.40 h **SESSION 2. ORAL PRESENTATION OF 5 BEST ABSTRACTS** (p. 11, 21)

Chair: *Xavier Cos*

10.45 - 11.30 h ***Coffee break and Poster walks 1, 2 and 3*** (p. 24)

11.30 - 12.20 h **SESSION 3. LIFESTYLE MANAGEMENT IN DIABETES. LATEST STATE OF EVIDENCE** (p. 11)

Chair: *Samuel Seidu*

- Physical activity
  Tom Yates (UK)
- Medical nutrition therapy
  Serafín Murillo (Spain)

12.20 - 13.00 h **SESSION 4. KEYNOTE LECTURE: NEW AND UPCOMING AGENTS OF TYPE 2 DIABETES** (p. 12)

Chair: *Samuel Seidu*

Speaker: *Cliff Bailey (UK)*

13.00 - 14.30 h ***Lunch***

14.30 - 15.30 h **SESSION 5. PAUL CROMME LECTURE** (p. 13)

Chair: *Guy Rutten*

- The diabetic foot: prevention is possible
  Andrew Boulton (UK)

15.30 - 16.30 h **SESSION 6. EASD PCDE STUDY GROUP LATEST RESEARCH RESULTS** (p. 14)

Chair: *Kamlesh Khunti*

- Renal disease and SGLT2's
  Samuel Seidu (UK)
- Position statement on management of the elderly with diabetes
  Clare Hambling (UK)
- Effect of interventions in primary care to improve diabetes care among patients with severe mental illness
  Ana Cebrián (Spain)

SATURDAY, 14 APRIL 2018

09.00 - 09.45 h **SESSION 7. RISING STAR LECTURE. SCREENING FOR GESTATIONAL DIABETES AND THE RISK FOR GLUCOSE INTOLERANCE POSTPARTUM** (p. 16)
Chair: *Johan Wens*
Speaker: *Katrien Benhalima (Belgium)*

09.45 - 10.30 h **SESSION 8. CARE MODELS** (p. 17)
Chair: *Gerardo Medea*

- Integrated care
  Domingo Orozco (Spain)
- Role of general practice in diabetes management
  Martin Hadley-Brown (UK)
- Person-centred diabetes care: time for a paradigm shift
  Guy Rutten (UK)

10.30 - 11.15 h ***Coffee break and Poster walks 4, 5 and 6*** (p. 25)

11.15 - 12.15 h **SESSION 9. DRUG THERAPY** (p. 19)
Chair: *Gerardo Medea*

- New insulins
  Stefano Del Prato (Italy)
- SGLT-2
  Cliff Bailey (UK)

12.15 - 12.40 h **CLOSING CEREMONY**

12.40 h ***Reception (informal drink and tapas)***

FRIDAY, 13 APRIL 2018

■ SESSION 1. DOES EVIDENCE TRANSLATE INTO CLINICAL PRACTICE?

Time 09.15-10.00 / **Room** MR 09

Do doctors practice what the guidelines preach?

Speaker

Kamlesh Khunti is Professor of Primary Care Diabetes and Vascular Medicine at the University of Leicester, UK. He is Co-Director of the Leicester Diabetes Centre and leads a research group currently working on the early identification of and interventions with people who have diabetes or are at increased risk of developing diabetes. His work has influenced national and international guidelines on screening and management of people with diabetes. Professor Khunti is also Director of the UK National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care East Midlands and Co-Director of a Clinical Trial Unit. He is a NIHR Senior Investigator and Principal Investigator on several major national and international studies.

Professor Khunti is a Fellow of the Academy of Medical Sciences and is currently an advisor to the Department of Health, a Clinical Advisor for the National Institute for Health and Care Excellence (NICE) and Secretary of the Primary Care Study Group of the European Association for the Study of Diabetes. He is Former Chair of the Department of Health–RCGP Committee on Classification of Diabetes and Former Chair of the NICE Guidelines on Prevention of Diabetes. In addition, he is Co-Director of the Diabetes MSc at Leicester University. He has won numerous awards nationally and internationally.

Summary

Achieving early tight glycaemic control has been shown to have beneficial effects on macrovascular and microvascular complications and mortality in people with type 2 diabetes. International guidelines including the ADA/EASD joint statement on the management of hyperglycaemia advocate individualised therapy, with intensification advised when individualised target HbA_{1c} levels are not attained in 3-6 months. In clinical practice most patients who fail to reach HbA_{1c} targets are not intensified appropriately. This session will consider reasons for not achieving these targets such as 'therapeutic inertia', defined as 'failure of healthcare providers to initiate or intensify or de-intensify therapy when appropriate to do so".

Do patients practice what doctors preach?

Speaker

Professor **Gerard Reach**, MD, FRCPEdin, is currently Professor of Endocrinology and Metabolic Diseases (University Paris 13, Sorbonne Paris Cité) and was head of the Endocrine Unit in Hospital Avicenne, Bobigny France until September 2016. He is now responsible for a programme aimed at improving hospitality in hospital. His main research interest is in the optimisation of care: understanding patients' non-adherence and doctors' clinical inertia. Two of his books have been published in English by Springer: The Mental Mechanisms of Patient Adherence to Long-Term Therapies, Mind and Care (2015, Philosophy and Medicine Series), Foreword by Pascal Engel, and Clinical Inertia, a Critique of Medical Reason, Foreword by Jon Elster (2015).

Summary

Patient non-adherence refers to a lack of concurrence between a patient's behaviour and the prescribed treatment. At each step in the doctor-patient encounter—from making an initial appointment, to undergoing screening tests, to taking medications and accepting changes in lifestyle, adherence is an issue: for instance, approximately half of all medication prescriptions are unfilled. Non-adherence has been demonstrated repeatedly to erode the effectiveness of medical care and is linked to an increased mortality rate. It has a major impact on health expenditure. In this lecture, I will show the importance of this phenomenon in terms of frequency, consequence and costs and will address its psychological causes. I will show why non-adherence may be the consequence of patients' character traits, may even be intentional, and that the solution relies on the quality of the patient-HCP relationship.

Learning outcomes

– Non-adherence to long term therapies is a common issue regardless of the disease and has major consequences in terms of efficiency of care and health expenditure.
– It is not surprising that patients are often non-adherent.
– A trust-based patient-HCP relationship is the condition of adherence to long-term therapies.

Learning objectives

– Understand the implications of non-adherence in type 2 diabetes.
– Understand the factors that influence adherence.
– Understand approaches to improving adherence.

■ SESSION 2. ORAL PRESENTATION OF 5 BEST ABSTRACTS

Time 10.00-10.40 / **Room** MR 09

The five best abstracts selected from the abstracts accepted by the Conference's Scientific Committee will be presented orally in this session:

- CVD-Real Study findings in the context of the current SGLT-2I cardiovascular outcome trials
- Effects of empagliflozin on average survival time in the EMPA-REG OUTCOME trial in patients with type 2 diabetes and established cardiovascular disease
- How to improve the understanding of carbohydrates in black asian and minority ethnic communities with type 2 diabetes in a UK clinic
- Insulin vs. other antidiabetic drugs as a third step of treatment: data from real world in a cohort with inadequate glycaemic control in Catalonia
- Smartphone and type 2 diabetes self-management: a golden combination or a no-go? First results of the TRIGGER Study

Please see complete abstracts on page 21.

■ SESSION 3. LIFESTYLE MANAGEMENT IN DIABETES. LATEST STATE OF EVIDENCE

Time 11.30-12.20 / **Room** MR 09

Physical activity

Speaker

Dr **Tom Yates** works within the Diabetes Research Centre, University of Leicester UK, and is a leading physical activity researcher. He works across a broad portfolio of physical activity research from early phase experimental research through to implementing diabetes prevention programmes within routine primary care. Dr Yates is also a core member of the NIHR Leicester Biomedical Research Centre where ongoing research is investigating how physical activity and reduced sedentary behaviour can be used as a therapy in the prevention and treatment of chronic disease. Dr Yates has published widely, including in the Lancet and holds several prestigious research grants.

Summary

Physical activity is a fundamental determinant of health and an important target for diabetes prevention and management pathways. However, physical activity covers a wide range of therapeutic possibilities, from interventions to reduce sitting time to those aimed at promoting high intensity interval training. Therefore, further precision is needed in understanding how physical activity intervention can be tailored to individual needs and preferences. This talk will present the latest evidence for using novel physical activity interventions in the promotion of metabolic health with the aim of giving health care professionals a broader range of options for promoting increased movement.

Medical nutrition therapy

Speaker

Serafín Murillo obtained his degree in Human Nutrition at the University of Barcelona and is associated professor at the same University. He has been a researcher at the Diabetes and Exercise Unit, Endocrinology Department of Hospital Clinic-IDIBAPS in Barcelona since 2008. His studies are focused on the impact of physical activity in patients with type 1 diabetes. In addition, he is currently investigating the effect of different types of carbohydrates on postprandial glucose levels in patients with type 1 diabetes treated with CSII and MDI.

Summary

Balanced nutrition is one of the basic treatments for type 2 diabetes. However, monitoring by patients is difficult. There are many barriers that account for this circumstance. In this lecture, we analyse the current nutritional recommendations and the myths and beliefs about nutrition in individuals with type 2 diabetes. From the traditional Mediterranean diet to other new diets low in carbohydrates or high in healthy fats.

Learning objectives
– To know the benefits that individuals with type 2 diabetes (DM2) obtain by ingesting balanced nutrition.
– To report trends in nutrition applied to the control of type 2 diabetes.
– To know some common myths in the dietary treatment of type 2 diabetes.

■ SESSION 4. KEYNOTE LECTURE: NEW AND UPCOMING AGENTS OF TYPE 2 DIABETES

Time 12.30-13.00 / **Room** MR 09

Speaker

Cliff Bailey is Professor of Clinical Science at Aston University in Birmingham, England. He is a Fellow of the Royal College of Physicians of Edinburgh and a Fellow of the Royal College of Pathologists. He has been a Royal Society visiting scientist at the University of Southern California, Los Angeles, and a visiting scientist at Hanover Medical School in Germany. He has served on medical and scientific committees of Diabetes UK (formerly the British Diabetic Association), Society for Endocrinology, and European Association for the Study of Diabetes. Professor Bailey has held various editorial positions, including endocrine section editor of British Journal of Pharmacology and editorial board member of Diabetes, Obesity and Metabolism, LancetDE and Primary Care Diabetes. Presently he is senior editor of Diabetes and Vascular Disease Research. He has been an expert witness for drug licensing authorities, regulatory agencies and other national and international review bodies. He received the 2013 Lunar Society medal and the 2015 Banting Lecture award. His research is mainly aimed at the pathogenesis and treatment of diabetes, especially the development of new agents to improve insulin action and reduce obesity, and the therapeutic application of surrogate beta-cells. He has published over 400 research papers and reviews, and four books.

Summary

Management of type 2 diabetes is complicated by a diverse and progressive pathogenesis, with limitations imposed by co-morbidities, a need to avoid hypoglycaemia and weight gain, and the challenges of cardiovascular risk and patient empowerment. Even with the present variety of differently acting glucose-lowering agents, many patients do not achieve or maintain adequate glycaemic control, mandating the need for further therapeutic options. Amongst emerging and likely future incretin-based therapies there are fixed-ratio combinations of glucagon-like peptide-1 (GLP-1) receptor agonists with insulin, a tiny subcutaneously implanted osmotic mini-pump to continuously deliver a GLP-1

receptor agonist for 6-12 months and a once-daily oral GLP-1 receptor agonist, all showing commendable efficacy in clinical trials. A dual SGLT1/2 sodium-glucose co-transporter inhibitor and new insulins are also advancing in development. Early proof of principle studies has indicated the potential for mixtures of peptides and chimeric peptides that could target several receptors via a single injection, and there is preclinical evidence for orally active non-peptides molecules to mimic and potentiate insulin action. With emerging evidence that some new agents can improve cardiovascular and renal parameters in type 2 diabetes, there are high expectations for future therapies.

Learning outcomes
– Appreciate the potential future landscape for management of hyperglycaemia in type 2 diabetes.
– Gain an overview of novel blood glucose-lowering therapies in development.

Learning objectives
– Review the advantages and limitations of likely new glucose-lowering therapies.
– Consider how anticipated new therapies can address currently unmet needs.

■ SESSION 5. PAUL CROMME LECTURE. THE DIABETIC FOOT: PREVENTION IS POSSIBLE

Time 14.30-15.30 / **Room** MR 09

Speaker

Professor **Andrew Boulton** is a graduate of Newcastle-upon-Tyne and subsequently trained in Sheffield and Miami prior to accepting an appointment at Manchester University. He has authored more than 500 peer-reviewed manuscripts and book chapters, mainly on diabetic lower limb and renal complications.

Among his many awards, he has received the ADA's Roger Pecoraro Lectureship, the EASD Camillo Golgi prize and was the first recipient of the international award on diabetic foot research. He was the 2008 winner of the ADA's Harold Rifkin award for distinguished international service in diabetes. He received the 2012 Georgetown distinguished achievement award in diabetic limb salvage. In 2015 he visited Nagoya, Japan and gave a prize-winning lecture on diabetic complications at the Japan Society of Diabetes. In 2017 he was the Banting Memorial Lecturer at Diabetes UK and received the International Diabetes Endocrinologist Award of the year from the American Association of Clinical Endocrinologists.

He is a former editor of *Diabetic Medicine* and is currently the senior associate editor of *Diabetes Care*.

He was the founding Chairman of the Diabetic Foot Study Group and was previously Chairman of Postgraduate Education and then Hon. Secretary/programme chair for the EASD. Until recently he was President of the EASD. Currently, he is President of Worldwide Initiative for Diabetes Education, Chairman of EURADIA (European Alliance for Diabetes Research) and President-Elect of the International Diabetes Federation.

Summary

It is the late-onset complications of diabetes that drive the cost of the condition and indeed, the commonest cause of hospital admission amongst diabetic patients in Western countries is diabetic foot disease. Late-onset sequelae of diabetic neuropathy include foot ulceration, Charcot Neuroarthropathy (CN) and amputation. Over 80% of non-traumatic amputations in diabetic patients are preceded by foot ulcers and CN can also have disastrous consequences. The human cost of diabetic foot disease is vast: diabetic neuropathy is often associated with other late complications of diabetes including nephropathy and data from the UK and the USA confirm that the outlook for those patients with foot complications on dialysis is very poor with very high mortality. Indeed, data from my group confirms that those diabetic patients on dialysis who have previously had an amputation have a 75% two-year mortality. Such data are worse than most malignant diseases with the exception perhaps of lung and pancreas. Hence the need for preventive care to reduce the incidence of foot complications amongst those known to have diabetic complications, especially neuropathy or vascular disease.

The importance of routine diabetes foot care in very high-risk patients is emphasised by a recent observational study from Arizona where the State decided, as a cost-saving measure, to remove routine podiatry from high risk diabetic patients. This led to an annual saving of $351,000 but the cost of this action as measured by increased hospitalisation, length of stay and amputations was $16.7 million in one year.

For those with neuropathy, there is a seven-fold increase in the annual risk of developing a foot ulcer. If they also have peripheral vascular disease, the risk is even higher. Simple screening tests can be used to identify those patients at high risk: as Paul Brand who worked in the field of leprosy said many years ago, "No expensive equipment is re-

quired to identify the high-risk foot in diabetes". It is most important to remove the shoes and socks and look at the feet. A simple screening test will be discussed during the lecture.

Although there is no direct proof from controlled studies that education reduces the risk of developing initial or recurrent ulcers, inherently we all strongly believe in the importance of patients' understanding of the condition and how simple daily practices of foot care can reduce the risk of developing ulcers. All diabetes patients undergo an annual screen for the risk of complications and one of the most important areas of screening is of course to look for evidence of risk factors for foot ulceration.

For those who develop ulcers, appropriate referral and care is essential. A diabetic foot ulcer should heal if there is adequate arterial inflow to the foot, any infection is treated appropriately and aggressively and lastly, if pressure is removed from the foot to enable healing. It is the last of these three that is frequently neglected because it is difficult for physicians to comprehend that a patient will walk on a foot ulcer because they have "lost the gift of pain".

Finally, the lecture will cover areas of diabetic foot care that do have an evidence base from randomised controlled trials.

Most important in the prevention of foot ulcers is to remember that every time you see a patient with diabetes, remove the shoes and socks and carefully examine the feet.

■ SESSION 6. EASD PCDE STUDY GROUP LATEST RESEARCH RESULTS

Time 15.30-16.30 / **Room** MR 09

Renal disease and SGLT2's

Speaker

Dr **Samuel Seidu** is a practicing Leicester City General Practitioner. He is a Partner, lead undergraduate tutor and GP trainer at the Hockley Farm Medical Practice.

He is a primary care research fellow in diabetes at the University of Leicester and an Honorary Primary Care Lecturer at the Leicester Diabetes Centre. His area of interest centres around quality improvement in diabetes care. He is a regular reviewer of related articles submitted to peer-reviewed journals such as Diabetes Research and Clinical Practice, Diabetic Medicine, Primary Care Diabetes Europe Journal, the European Journal of Medical Informatics and the BMJ. He also reviews abstracts related to diabetes submitted to national and international conferences.

He sits on the editorial boards for Primary Care Diabetes Journal and the Australian Family Practice journal. He is currently head of Research for Primary Care Diabetes Europe (PCDE) and is also the Chair of the PCDE study group of European Association for the Study of Diabetes (EASD).

He is currently a Clinical Lead and mentor for diabetes in Leicester city and is involved in the design and re-configuration of diabetes care in Leicester alongside other clinical leads in primary and secondary care.

He is a member of the Primary Care Academy of Diabetes Specialists in the UK and liaises with other leading GPs with interest in diabetes all over the country to foster understanding on the key elements essential for delivering a diabetes service and the potential challenges involved.

Summary

Sodium–glucose co-transporter 2 (SGLT2) inhibitors may have renal protective effects in people with impaired kidney function; however, the evidence is uncertain. We assessed use of SGLT2 inhibitors in people with type 2 diabetes with or without renal impairment by conducting a systematic review and meta-analysis of available studies.

Learning outcomes

– Understand the mechanism of action of renal protection by SGLT2-Is.
– Explore data from RCTs.
– Are there any differences between the various SGLT2-Is in renal protection?

Learning objectives

– Discuss the potential mechanism of action in renal protection.
– Discuss the synthesis of available data.
– Discuss the possible benefits of SGLT2-Is as class.

Position statement on management of the elderly with diabetes

Speaker

Dr **Clare Hambling** is a General Practitioner in Norfolk, UK, where she is the primary care lead for diabetes and locality lead for long-term conditions and frailty. She has a long-standing interest in diabetes and has been actively involved in diabetes-related projects in Norfolk and across the East of England, including as a member of the Eastern Academic Health Science Network Diabetes Projects Group. She is Chair of the West Norfolk Diabetes Network and a committee member of the Primary Care Diabetes Society.

Summary

Type 2 diabetes is most prevalent amongst older people, who represent a diverse population, with widely varying health and social care needs. With ageing, diabetes presents a spectrum of challenges not always evident in younger people. Management requires a holistic approach that considers all elements pertinent to the care of an individual, determines priorities for caregiving and facilitates individualisation of treatment goals that balance any intended benefits of treatment against potential risks of harm from adverse medication effects and aims to optimise health and wellbeing above all else. We discuss the elements that add complexity to the management of older people living with diabetes.

Learning objectives

– To present an overview of the PCDE Position Statement: a holistic approach to the target setting for older people with type 2 diabetes.
– To consider the complex issues that primary care practitioners must address when providing safe, effective glycaemic reduction for older people with type 2 diabetes.
– To present a consensus view of primary care clinicians with an interest in diabetes on determining glycaemic targets for older people.

Effect of interventions in primary care to improve diabetes care among patients with severe mental illness

Speaker

Ana Cebrián, MD, PhD has been a Family Physician at the San Antón Health Centre in Cartagena, Murcia (Spain) since March 2013. She is also currently professor of Family Medicine in Universidad Católica San Antonio in Murcia. She is a member of numerous professional societies, including the Spanish Society of Family Medicine (semFYC), where she is a member of the Diabetes Research Group, Spanish Diabetes Association, where she is secretary of the Primary Care and Prediabetes Group, Group for Diabetes in Primary Care in Spain "red GDPS" and "Primary Care Diabetes Europe". She has submitted more than 50 communications to national and international congresses, three of them prize winners. Ana Cebrián has published numerous papers in national and international journals and she is an active reviewer of manuscripts for a number of scientific journals.)

Summary

As the population lives longer, we are faced with an epidemic of multi-morbidity and rising complexity of health needs. Two of the most common long-term conditions which, when they co-exist in any individual, can lead to very poor outcomes are diabetes and severe mental illness. Persons with severe mental illness (SMI), comprising persons with schizophrenia and bipolar affective disorder, form a significant percentage of multi-morbid patients.

Learning outcomes

– Understand the causes of poor outcomes in people with diabetes and SMI.
– Explore the various interventions in this patient population.
– Explore the various outcomes.

Learning objectives

– Discuss the synthesis of available data on the topic.
– Review possible reasons for poor outcomes.
– Review possible reasons for ineffective interventions.

SESSION 7. RISING STAR LECTURE

Time 09.00-09.45 / **Room** MR 09

In the "Rising Star session", an independent jury selected a promising junior researcher in the field of primary care diabetes who will have the opportunity to present his/her work in a lecture.
The criteria for nomination of candidates for the rising star in the 2018 call were:

- Nomination by a senior academic or organisation (sponsor)
- Age: 45 years and below
- At least 5 years' experience in (a combination of both criteria would strengthen the application):
  - Primary care oriented clinical research
  - Clinical work as a primary care professional (e.g. physician, nurse, dietitian, psychologist, pharmacist)
- To have finished (or going to finish within one year) a PhD or similar dissertation
- At least two publications in peer reviewed journals

The rising star jury is composed of a panel of three, two independent members and a PCDE member. This year the Rising Star jury members are:

- Dr Gianlui Passerini (EQUIP)
- Dr. Carlos Brotons (EUROPREV)
- Dr. Pinar Topsever (PCDE) - *Jury Chair*

The Rising Star elected by the jury is **Katrien Benhalima** (Belgium). The decision on the rising star awardee was reached by unanimous consent of the jury members. She will have the opportunity to present her work on a lecture titled:

Screening for gestational diabetes and the risk for glucose intolerance postpartum

Speaker

Katrien Benhalima, 23-01-1978, followed her training in internal medicine and endocrinology at the University hospital of Leuven, Belgium. After her graduation in 2009, she performed epidemiological research on the characteristics of young adults with type 2 diabetes at the diabetes department of Prof. Melanie Davies and Prof Kamlesh Khunti, University Hospitals of Leicester, UK. She is now a staff-member at the department of Endocrinology at the University Hospital Gasthuisberg Leuven. Her clinical areas of interest include new technologies for type 1 diabetes, type 2 diabetes in young adults, gestational diabetes and pre-gestational diabetes & pregnancy. Her research is focused on evaluation of different screening strategies for gestational diabetes, pregnancy outcomes in type 1 diabetes and complications in young adults with type 2 diabetes. She was the chair of the Flemish consensus meeting on screening for gestational diabetes in 2012 and she is also a member of the steering comity of the Flemish project 'Zoet Zwanger' ('Sweet pregnant'), which promotes postpartum follow-up in primary care of women with previous gestational diabetes. She was co-author of the most recent Flemish guidelines on the treatment of type 2 diabetes for general physicians. She is a member of the steering committee appointed by the 'European Board and College of Obstetrics & Gynaecology' (EBCOG) to develop a consensus on screening for gestational diabetes in Europe and she is an associated member of the Diabetic Pregnancy Study Group (DPSG).

She is the principal investigator of a large multi-centric Belgian cohort study on screening for gestational diabetes. She defended her PhD on 30-3-2018 on 'gestational diabetes: Towards a uniform screening strategy'. In this lecture, she will give an overview of her research on screening for gestational diabetes, the risk for glucose intolerance in early postpartum and on the long-term follow-up in primary care of women with a history of gestational diabetes.

■ SESSION 8. CARE MODELS

Time 09.45-10.30 / **Room** MR 09

Integrated care

Speaker

Domingo Orozco is a general Practitioner, he currently works at the Health Centre in Alicante-Cabo Huertas and Research and Teaching Unit in the Department of San Juan de Alicante. His duties involve full-time teaching and research work. He is associated Professor, Chair of Family Medicine in University Miguel Hernandez, Elche (Alicante).

He holds a PhD Degree and PhD Extraordinary Award. His Doctoral thesis was on the epidemiology of diabetes in the province of Alicante and he has supervised more than 40 doctoral theses. He has published more than 75 articles in scientific journals. He is a Member of the Editorial Board of the journal Diabetes Primary Care and Member of the European organisation WONCA family medicine. He is a member of the REDIAP network for investigation into preventive and health promotion in primary care.

He is a Member of the Diabetes Group from the Spanish Society of Family and Community Medicine and coordinator, Committee on the Spanish Care Strategy for Chronic Conditions (Spanish Ministry of Health and Social Policy) created in 2011. He is Chair of the Non-Communicable Diseases Special Interest Group in Wonca World and he was manager of the FISABIO Research Foundation for health and biomedical research in Valencia from October 2012 to April 2013. He was President of National Commission on Family Medicine, Ministry of Health in Spain from October 2014 to 2017.

Summary

Many patients with chronic illness do not receive the medical care appropriate for their condition. A growing body of literature argues that an effective approach to meeting the needs of chronically ill patients is to improve the delivery of primary health care (PHC).

Integrated management of chronic non-communicable diseases (CNCDs) makes sense for at least three important reasons: a) most people have more than one risk factor and/or CNCD (e.g. diabetes and obesity or diabetes and hypertension and/or asthma). Therefore, it makes sense to treat their conditions within an integrated framework of care; b) most CNCDs place similar demands on health workers and health systems and comparable ways of organising care and managing these conditions are similarly effective regardless of aetiology; and c) most CNCDs have common primary and secondary risk factors. For example, obesity is a major risk factor for diabetes, hypertension, heart disease and certain types of cancers. Heart disease may be a long-term complication of more than one chronic condition such as diabetes and hypertension. To achieve the maximum impact, care for chronic conditions should be delivered at PHC level.

A major barrier to optimal care is a delivery system that is often fragmented, lacks clinical information capabilities, duplicates services and is poorly designed for the coordinated delivery of chronic care. The Chronic Care Model (CCM) takes these factors into consideration and is an effective framework for improving the quality of diabetes care.

The Threefold Aim—enhancing patient experience, improving population health, and reducing costs—is widely accepted as a compass to optimise health system performance. And yet, physicians and other members of the health care workforce report widespread burnout and dissatisfaction; the Triple Aim must be expanded to a Quadruple Aim, adding the goal of improving the working life of health care providers, including clinicians and staff.

One way of approaching stratification based on health care needs is the Kaiser Permanent risk pyramid. According to the pyramid, most chronically ill individuals require routine care that is generally uncomplicated and can be provided by clinic management support staff. This group's needs are limited to regular monitoring by the health team and self-management support and it accounts for 70% to 80% of chronic care patients. A group of patients classified as level 2 is high-risk and requires assisted care or care management. A third, even smaller group classified as highly complex requires intensive and highly specialised management.

Role of general practice in diabetes management

Speaker

After qualifying at St. Thomas' Hospital Medical School, London, in 1983, **Martin Hadley-Brown** trained in general medicine in and around London before moving from the Renal Unit at St. Thomas's to Dorset to complete GP training. He moved from there to take up a partnership in Thetford, Norfolk in 1989 and became Senior Partner in the town's 8 doctor School Lane Practice in 1998.

His major clinical interest in diabetes has led to membership of the Professional Advisory Council of Diabetes UK from 2001 to 2006 and to his being a founder member of the Primary Care Diabetes Society in 2003. He was elected Chairman of the Society in November 2005, completing his term at the end of 2012. He remains a member of the PCDS Executive Committee. He was a member of the UK NICE Guideline Development Groups for the Type 2 Diabetes Guidelines CG66 and CG87 published in 2008 and 2009, and continues to advise both NICE and the Royal College of GPs on Diabetes issues.

Hadley-Brown is also an experienced medical teacher, being a GP trainer and a Specialist Clinical Tutor in the University of Cambridge Clinical School, and at Hughes Hall, Cambridge. He was elected a Fellow of the Royal College of General Practitioners in 2012.

Summary

Diabetes is causing a significant burden on current services in place. Complications and management create a strain on the health service in terms of both time and cost. It is only by management of diabetes within the general practice environment that we are likely to improve our patients' safe journey.

The role of general practice is varied but relies heavily on a holistic approach. It is not unusual that specialist clinics focus more on glycaemic control and complication management. Prevention is a key element in the care of the person with diabetes; especially assessing and managing the cardiovascular burden that is a legacy of poor control.

This short presentation will highlight the importance of General Practice in the management of diabetes and demonstrate how General Practice has and can further improve attaining more positive outcomes.

Learning outcomes
- Demonstrate how Primary Care has developed an essential role in diabetes management.
- Reveal the importance of General Practice as an essential part of the Diabetes team with adoption of the 'Super Six' model.
- Emphasise the continual need for improvement.

Learning objectives
- Value General Practice and the work performed.
- Encourage team working.
- Ensure improvement together with encouragement in investment, education and audit.

Person-centred diabetes care: time for a paradigm shift

Speaker

Guy Rutten is professor of Diabetology in Primary Care and Director of the training-course for executives in Diabetology in primary care. His research focuses on type 2 diabetes (T2DM) and cardiovascular complications and diabetes primary care. He is (co-)author of more than 325 original articles in peer-reviewed journals. He supervised 20 PhD students.

He was Editor-in-chief of Primary Care Diabetes. From 2005-2011 he chaired the European Primary Care Diabetes Study Group and from 1996 to 2017 the Dutch Diabetes Primary Care Expert Group. He was involved in the global LEADER and NAVIGATOR trials and is one of the PIs of the ADDITION study.

He also worked as a GP from 1982 until 2014 for at least two days/week.

Summary

Both EASD and ADA recommend the adoption of a patient-centred approach, defined as 'providing care that is respectful of and responsive to individual patient preferences, needs and values and ensuring that patient values guide all clinical decisions'. Any HbA1c target should reflect consensus between patient and physician. Such shared decision-making encourages patients to have a direct say in the control and progress of their health. Care providers

should understand that success of self-care behaviour is dependent on a patient's illness perception, wishes and preferences, self-efficacy, proactive coping, financial resources, family support and everyday events. We assessed, both from a patient and provider perspective, the usefulness and added value of a consultation model that facilitates such person-focused diabetes care. The model consists of 1. Inventory of disease and patient-related factors; 2. Setting personal goals; 3. Choosing treatment; 4. Determination of required care. In 2017, it was implemented in 47 general practices and six hospital outpatient clinics with 74 physicians and 31 nurses reporting on 1366 consultations with type 2 diabetes patients.

I will discuss the results of this nationwide study.

Learning outcomes
- Without due consideration to person and context-related factors, it would be short sighted if not futile to expect diabetes management to proceed effectively.
- The consultation model to facilitate person-focused care seems well applicable, results in more patient involvement including shared decision-making and is appreciated by a substantial number of patients.
- Physicians often feel inadequately trained to address diabetes patients' psychosocial issues, which may hinder self-care communication. We feel our training of only four hours facilitates implementation of the consultation model on a large scale.

Learning objectives
- To facilitate person-focused diabetes care, that respects and responds to individual patient preferences, needs and values and ensures that patient values guide all clinical decisions.
- To assess, both from a patient and provider perspective, the usefulness and added value of a consultation model that facilitates such person-focused diabetes care.
- To increase patient involvement in diabetes care in a real-life setting.

■ SESSION 9. DRUG THERAPY

Time 11.15-12.15 / **Room** MR 09

New insulins

Speaker

Professor **Stefano Del Prato** is Professor of Endocrinology and Metabolism at the School of Medicine, University of Pisa and Head of the Diabetes Section, University Hospital of Pisa, Italy. He graduated MD cum laude from the University of Padova and undertook postgraduate specialisation in both Endocrinology and Internal Medicine. Professor Del Prato's research interests have always been concerned with diabetes and in particular the physiopathology and therapy of type 2 diabetes and insulin resistance syndrome.

He is a member of many societies and associations including the European Association for the Study of Diabetes, the American Diabetes Association and the International Diabetes Federation. He acts as referee for numerous major journals. Furthermore, Professor Del Prato currently served on several Editorial Boards including the *Journal of Clinical Endocrinology and Metabolism*, *Diabetes Care* and the *Journal of Diabetes and Its Complications* and he is currently Associate Editor of the *Journal of Endocrinological Investigation* and Assistant Editor of *Diabetes & Vascular Disease Research*.

Professor Del Prato is former Vice President of the EASD, past President of the Italian Society

of Diabetology, and current Chairman of the Scientific Committee of the European Foundation for the Study of Diabetes. He also served as Chairman of the Scientific Committee of the World Diabetes Congress in Dubai, UAE in 2011. He has published over 400 articles in peer-reviewed international journals and has been awarded several honours, including the Prize of the Italian Society of Diabetology for outstanding scientific activity and the Honorary Professorship at the Universidad Peruana Cayetano Heredya in Lima, Peru.

Summary

Insulin is still a common treatment option for many patients with type 2 diabetes and is generally used late in the natural history of the disease. Its injectable delivery mode, propensity for weight gain and hypoglycaemia, and paucity of trials that assess the risk-to-safety ratio of early insulin use are major shortcomings associated with its use in patients with type 2 diabetes. Development of new insulins—such as insulin analogues, including long-acting and short-acting insulins—now provides alternative treatment options to human insulin. These novel insulin formulations and innovative insulin delivery methods, such as oral or inhaled insulin, have been developed with the aim of reducing insulin-associated hypoglycaemia, lowering intra-individual pharmacokinetic and pharmacodynamic vari-

ability and improving imitation of physiological insulin release. Availability of newer glucose-lowering drugs (such as glucagon-like peptide-1 receptor agonists, dipeptidyl peptidase-4 inhibitors and sodium-glucose co-transporter-2 inhibitors) also offers the opportunity for combined treatment. Results from initial trials in this research area suggest that such treatment might lead to use of reduced insulin doses, less weight gain and fewer hypoglycaemic episodes than insulin treatment alone. These and future developments will hopefully offer better opportunities for individualisation of insulin treatment for patients with type 2 diabetes.

SGLT-2

Speaker

Cliff Bailey (see previously, p. 12)

Summary

Inhibitors of sodium-glucose co-transporter (SGLT) activities in the kidney, and possibly also the intestine, are providing a new therapeutic opportunity to improve glycaemic control. Partial inhibition of SGLT-2 in the proximal renal tubules reduces glucose reabsorption and eliminates 50-100g/day of glucose in the urine. Caloric loss assists weight control and osmotic diuresis may assist blood pressure control. Since these effects are independent of insulin secretion or insulin resistance and provided the patient has adequate renal function, SGLT-2 inhibitors should be effective at any stage in the natural course of type 2 diabetes and are being considered as potential adjuncts to insulin in type 1 diabetes. Emerging evidence of reduced cardiovascular risk and a possible renal protective effect has attracted significant interest. Since partial inhibition of SGLT-1 in the intestine can delay the absorption of glucose the opportunity for dual SGLT-1/2 inhibition is now under investigation.

Learning outcomes
– Appreciate the mechanisms and potential opportunities for SGLT-2 inhibitors in type 2 diabetes.
– Assess the position of SGLT-2 inhibitors in treatment algorithms for type 2 diabetes.

Learning objectives
– Review the advantages and limitations of SGLT-2 inhibitors in the management of type 2 diabetes.
– Evaluate the evidence for cardiovascular and renal benefits of SGLT-2 inhibitors.

ORAL PRESENTATIONS

SESSION 2: ORAL PRESENTATIONS OF 5 BEST ABSTRACTS
Friday, 13 April • 10.00-10.40 h
Meeting Room MR 09

CVD-Real Study findings in the context of the current SGLT-2I cardiovascular outcome trials

Saldaña S[1], Norhammar A[2], Kosiborod M[3], Khunti K[4], Wilding JP[5], Holl RW[6]
[1] AstraZeneca, Madrid (Spain); [2] Karolinska Institute, Stockholm (Sweden); [3] Saint Luke's Mid America Heart Institute and University of Missouri-Kansas City (USA); [4] University of Leicester (UK); [5] University of Liverpool (UK); [6] University of Ulm (Germany)

Aim(s) or purpose: Randomised, placebo-controlled, cardiovascular outcome trials (CVOTs) of SGLT-2i have reported consistent cardiovascular (CV) and renal benefits in patients with T2D and elevated CV disease risk, suggesting a class effect.

Design and method: CVD-REAL is the first large, multinational, observational, comparative effectiveness study assessing CV outcomes, including all-cause mortality (ACM), CV mortality (CVM), major adverse CV events (MACE), and hospitalisation for heart failure (HF) in a broad population of patients with T2D initiating SGLT-2i or other glucose-lowering drugs (oGLDs). We review the baseline characteristics and main findings of CVD-REAL in the context of the SGLT-2i CVOTs.

Results: Results from CVD-REAL were consistent with the SGLT2-i CVOTs (Table). Baseline characteristics differed, with lower prevalence of established CV disease in CVD-REAL studies (13%–25%) than EMPA-REG OUTCOME (>99%) or CANVAS (66%). Furthermore, in CVD-REAL the comparison was to an active comparator group, compared to placebo plus standard of care in the CVOTs

HR (95% CI)	CVD-REAL (N=309,056)	CVD-REAL Nordic (vs. oGLD) (N=91,320)	CVD-REAL Nordic (vs. DPP-4i) (N=34,328)	EMPA-REG OUTCOME (N=7,020)	CANVAS (N=10,142)
HF	0.61 (0.51–0.73)	0.70 (0.61–0.81)	0.63 (0.50–0.81)	0.65 (0.50–0.85)	0.67 (0.52–0.87)
ACM	0.49 (0.41–0.57)	0.51 (0.45–0.58)	0.73 (0.59–0.90)	0.68 (0.57–0.82)	0.87 (0.74–1.01)
MACE	–	0.78 (0.56–0.90)	0.71 (0.56–0.90)	0.86 (0.74–0.99)	0.86 (0.75–0.97)
CVM	–	0.53 (0.40–0.71)	0.74 (0.44–1.23)	0.62 (0.49–0.77)	0.87 (0.72–1.06)

Conclusions: The findings from CVD-REAL suggest that the benefits reported in the SGLT-2i CVOTs may be applicable to a broader T2D population in the real-world. CVD-REAL illustrates that correctly designed and powered observational studies can effectively complement evidence from RCTs.

Effects of empagliflozin on average survival time in the EMPA-REG Outcome trial in patients with type 2 diabetes and established cardiovascular disease

Hobbs R[1], Claggett B[2], Inzucchi S[3], Kaspers S[4], Hantel S[4], George JT[4]
[1]Nuffield Department of Primary Care Health Sciences, University of Oxford (UK); [2]Division of Cardiovascular Medicine, Brigham and Women's Hospital, Boston (USA); [3]Section of Endocrinology, Yale University School of Medicine, New Haven (USA); [4]Boehringer Ingelheim International GmbH, Ingelheim (Germany)

Aim(s) or purpose: In the EMPA-REG outcome trial, empagliflozin given in addition to standard of care reduced the risk of cardiovascular death by 38% (HR 0.62 [95% CI 0.49, 0.77]) and all-cause mortality by 32% (HR 0.68 [0.57, 0.82]) vs. placebo in patients with type 2 diabetes and established cardiovascular disease. Incidence rates for all-cause mortality translated into a number needed to treat of 39 to prevent one death over 3 years. We assessed the effect of empagliflozin on average survival time during the trial reflected by the area between survival curves for empagliflozin and placebo.

Design and method: Patients were randomised to receive empagliflozin 10 mg, empagliflozin 25 mg or placebo. We analysed mean survival time at day 1440 (approximately 4 years) of the trial ("restricted mean survival time") and the mean number of days lost to mortality at day 1440 ("restricted mean time lost") in all patients in the pooled empagliflozin and placebo groups, including patients who were alive at day 1440.

Results: In total, 7020 patients were treated (2333 with placebo, 4687 with empagliflozin). At day 1440, the restricted mean survival time was 1367 days for patients in the placebo group and 1389 days in the empagliflozin group (ratio: 1.016; *P*=0.0003). At day 1440, the restricted mean time lost was 73 days for patients in the placebo group and 51 days in the empagliflozin group (ratio: 0.693; *P*=0.0001). Thus, empagliflozin prolonged restricted mean survival during this 4-year trial by 22 days per patient. If all patients took one tablet of study drug per day over 4 years of the trial, empagliflozin increased restricted mean survival during the trial by approximately 22 minutes per tablet.

Conclusions: In analyses of restricted mean survival times over approximately 4 years in the EMPA-REG OUTCOME trial, empagliflozin prolonged restricted mean survival during the trial by 22 days per patient.

How to improve the understanding of carbohydrates in black asian and minority ethnic communities with type 2 diabetes in a UK clinic

St John J[1], Mehar S[1], Pillar A[2], Crawford J[2], Power B[3], Wittekind A[2]

[1]Brent Integrated Diabetes Service, London (UK); [2]London Metropolitan University, London (UK); [3]University of Hertfordshire, Hatfield (UK)

Aim(s) or purpose: This pilot study aimed to demonstrate that using a picture-based, culturally relevant, dietary booklet to provide dietary advice for BAME people with Type 2 Diabetes, could enable healthcare professionals to improve the knowledge and understanding of Carbohydrates in BAME communities with Type 2 Diabetes.

Design and method: Asian, Black and minority ethnic adults with Type 2 Diabetes attending an intermediary, integrated, diabetes, primary care Clinic in North West London between February and March 2017, were invited to participate in the pilot study. A questionnaire was administered by researchers before and after the participant's appointment with a dietician. The dietician used a picture-based, culturally relevant, newly designed booklet depicting foods commonly eaten by BAME communities. The carbohydrate content of the foods in the booklet was represented as sugar spoon equivalents to enable the participants to have a visual representation of the carbohydrate content of commonly eaten foods and to enable a better understanding of the carbohydrate content and facilitate improved self-management of their Type 2 Diabetes. Results were analysed using SPSS and McNemar tests.

Results: The participant's ability to estimate the carbohydrate content of foods, snacks and drinks pre and post intervention showed consistently statistically significant improvement e.g. ability to correctly estimate the carbohydrate content in a small plate of rice, 1 slice of bed, or 1 chapati rose from 4% to 83% (*P*=0.000), for snacks the correct responses rose from 4% to 63% (*P*=0.000), and for drinks those correct responses rose from 13% to 65% (*P*=0.000).

Conclusions: This pilot study demonstrates that if healthcare professionals use a culturally relevant, pictorial booklet to provide dietary information for BAME communities, they can assist BAME communities with Type 2 Diabetes to improve their understanding of carbohydrates and improve their understanding of the impact of carbohydrates on the food they commonly eat or on their blood glucose control.

Insulin vs. other antidiabetic drugs as a third step of treatment: real world data in a cohort with inadequate glycaemic control in Catalonia

Mata M[1], Franch J[2], Canivell S[1], Real J[2], Vlacho B[1], Mauricio D[3]

[1]DAP-Cat group. Barcelona Ciutat Research Support Unit of the Jordi Gol Primary Healthcare Research Institute (IDIAP Jordi Gol), Barcelona (Spain); [2]CIBER of Diabetes and Associated Metabolic Diseases (CIBERDEM), Carlos III Health Institute (ISCIII), Madrid (Spain); [3]Department of Endocrinology & Nutrition, Health Sciences Research Institute & Germans Trias i Pujol University Hospital, Barcelona (Spain)

Aim(s) or purpose: To assess the reductions of HbA1c and the percentage of patients that attain the general target of HbA1c <7% and the pay-for-performance goal of the Catalan Health Institute (HbA1c <8%) in type 2 diabetes patients (T2DM) treated with two or more non-insulin antidiabetic drugs (NIADs) and inadequate glycaemic control in which treatment was intensified.

Design and method: Retrospective study in a cohort of patients with T2DM treated with two or more NIADs registered in the SIDIAP database on 1 January 2010 and with at least one HbA1c value > 7% during this year that were followed until 31 December 2014.

Results: A total of 23,678 patients were included; most of them treated with metformin+sulfonylurea (72.4%) or metformin+dipeptidyl peptidase-4 inhibitor (DPP4i) (6.4%). During follow-up, treatment was intensified in 73.8% of cases, with the addition of insulin (56%), a NIAD (41%) or both (20%). Insulin resulted in the largest reduction in HbA1c (1.1%), followed by glucagon-like peptide-1 receptor agonists (GLP1ra) (0.9%), pioglitazone and metformin (both 0.7%), sulfonylureas/repaglinide (0.6%) and DPP4i (0.5%). Baseline levels of HbA1c were 9.4% for insulin, 9.1% for GLP1ra, 9% for pioglitazone and 8.7% for the rest. The greatest reductions were observed in patients with HbA1c>10%: 2.3% for insulin, 2.0% for GLP1ra, 1.9% for sulfonylureas/repaglinide, 1.8% for metformin, 1.7% for DPP4i, and 1.6% for pioglitazone. HbA1c <7% was achieved in very few patients: from 13.9% with insulin to 21.8% with metformin, while HbA1c <8% was reached in approximately half: from 45.1% with insulin to 54.4% with metformin.

Conclusions: Although insulin is the most potent drug, the magnitude of the reduction in HbA1c and achievement of the target is closely associated with baseline HbA1c for all drugs. Only half of patients achieved HbA1c <8% probably because intensification was performed with very high HbA1c values.

Smartphone and type 2 diabetes self-management: a golden combination or a no-go? First results of the TRIGGER Study

Boels AM[1], Vos R[1], Dijkhorst-Oei LT[2], Rutten G[1]

[1]Julius Centre, University Medical Centre Utrecht (Netherlands); [2]Department of Internal Medicine, Meander Hospital, Utrecht (Netherlands)

Aim(s) or purpose: To investigate which individuals with type 2 diabetes mellitus (T2DM) participate in a trial to study the effectiveness of a smartphone app that supports diabetes self-management regarding hypoglycaemia, glucose regulation, food choices and physical activity, and to investigate differences between those included from primary care and from secondary care.

Design and method: We used the baseline data from the TRIGGER study, a randomised controlled trial investigating a smartphone intervention that delivers diabetes self-management education, conducted in 66 general practices and five hospitals throughout the Netherlands with a follow-up of 6-9 months. Individuals with T2DM were considered eligible when they had used insulin for at least three months, had an HbA1c >53 mmol/mol and were aged 40-70 years. For statistical analysis Student t-test and chi-square tests were performed.

Results: Participation rates in both primary and secondary care were approximately 17%, leading to a total of 230 participants, of whom 39.1% were treated in primary care. In primary care the reasons for not participating were recorded; the most common reasons were: not interested/no time (38.5%) and not owning a smartphone (30.3%). Individuals treated in primary care were older (60.4±7.3 versus 58.4±7.7, P=0.45), had less microvascular complications (32.9% versus 73.1%, P<0.001), a lower BMI (29.9±4.8 versus 32.8±6.0, P<0.001) and better glycaemic control (HbA1c 63±10 versus 67±14, P=0.017). They also reported a better health status (EQ-5D 0.81±0.19 versus 0.74±0.23) but less days on which foot care was performed (1.5±2.1 versus 2.2±2.3 P=0.020).

Conclusions: A selected group of individuals with T2DM was interested in participating in an mHealth trial. Willingness to participate did not differ between people with and without a more complex diabetes treatment (care setting). Health care innovations with eHealth or mHealth are likely to interest subgroups of patients, but not the majority of people with T2DM. In this regard the disease stage is not important. Our findings underpin the statement that for self-management support one size does not fit all.

POSTER PRESENTATIONS

Friday, 13 April • 10.45 - 11.30 h
Meeting Room MR 05 + 06

POSTER SESSION 1: Treatment

Chair: *Kamlesh Khunti*

- Empagliflozin reduces mortality and hospitalisation for heart failure in patients with or without a history of myocardial infarction or stroke at baseline
- Reduction in cardiovascular death with empagliflozin is consistent across categories of baseline HbA1c and change in HbA1c: Results from EMPA-REG OUTCOME
- Effects of integrated Personalized Diabetes Management: Results of the PDM-ProValue study program
- Study design and methods of the CVD-REAL study a multinational study in patients with type 2 diabetes who are new users of an SGLT-2 inhibitor or other glucose-lowering drug
- The physicians' choice: single pill or fixed dose combination?

POSTER SESSION 2: Quality of care

Chair: *Guy Rutten*

- Continuous glucose monitoring in type 2 diabetes mellitus patients without insulin therapy
- Prevalence of co morbidities in diabetic patients in Spain. OBINDIAB-Semfyc study
- Poor glycemic control in Spain and associated factors. OBINDIAB-semfyc study.
- Poor glycaemic control: identifying variables associated with therapeutic inertia and lack of therapeutic adherence
- Predictors of poor health related quality of life in patients with type 2 diabetes in Jordan

POSTER SESSION 3: Lifestyle

Chair: *Andrew Boulton*

- High impact of a 28-week supervised walking program in people with type 2 diabetes and people at risk for it: a prospective study in the Netherlands
- The improved understanding of carbohydrates in black and asian minority ethnic communities with type 2 diabetes in a UK clinic
- Lifestyle interventions in primary health care for weight control in patients with type 2 diabetes: physical activity versus physical activity plus food education programs - a RCT
- Effectiveness of an adapted diet in metabolic control of diabetic pakistanese patients. The SWEET PAKIs study
- A descriptive study of the diet of diabetic patients from Pakistan during Ramadan

Saturday, 14 April • 10.30 - 11.15 h
Meeting room MR 05 + 06

POSTER SESSION 4: Treatment

Chair: *Andrew Boulton*

- Clinical practice and outcomes versus clinical guidelines: a real-world perspective on the updated NICE guidelines
- Network meta-analysis of responses to DPP-4 and SGLT2 inhibitors: What next after metformin with a baseline HbA1c ≤8%?
- The baseline characteristics of the drug naïve patients with HbA1c
- Nasal glucagon for the treatment of moderate-to-severe hypoglycemic episodes in real-world settings in adults with type 1 diabetes
- Effectiveness of a comprehensive care protocol in type 2 diabetes mellitus and associated comorbidities in primary care

POSTER SESSION 5: Quality of Care

Chair: *Kamlesh Khunti*

- Prevalence of severe mental disorders in diabetic patients in urban areas of Netherlands and Barcelona.
- Allergic rhinitis is associated with obstructive sleep apnoea in type 2 diabetes
- Type 2 diabetes non mydriatic fundus photography program: Population based approach in 2 urban Primary Health Care centres
- Twitter as a tool for the dissemination of scientific messages on diabetes. Experience of the redGDPS Foundation in 2017
- Evolution of the use of the redGDPS Foundations website as a portal for information on diabetes from 2010 to 2017

POSTER SESSION 6: Prevention Screening

Chair: *Guy Rutten*

- How do patients with type 2 diabetes mellitus evolve during four years of follow-up in primary care
- Degree of control and micro vascular complications in patients with type 2 diabetes mellitus in primary care.
- Role of depression and/or anxiety on the presentation of cardiovascular events in a large cohort with metabolic syndrome
- Integrating diabetes evidence into practice: challenges and opportunities to bridge the gaps
- Incidence and follow up of foot ulcers in type 2 diabetic patients in primary care. Multicentre study

Abstracts accepted without presentation will also be available as electronic posters on display in the poster hall as well as after the conference on the e-poster gallery on the conference website.

(Listed in alphabetical order)

A descriptive study of the diet of diabetic patients from Pakistan during Ramadan

Plaza I[1], Calpe A[1], Fructuoso E[1], Ochando M[1], Hidalgo M[1], Rodero M[1]
[1] Catalan Health Institute, Barcelona (Spain)

Aim(s) or purpose: Main objective: analyse the food habits of the Pakistani population with diabetes during Ramadan. Secondary objective: assess patient adherence during Ramadan.

Design and method: Phenomenological, qualitative study because of the patients recruited in the previous study, a one-to-one interview was carried out during Ramadan. Inclusion criteria: Pakistani origin, Diabetes and HbA1c >8%.

Results: All participants fast during daylight hours with water deprivation and drug treatment. There is poor compliance with drug therapy at smaller dosages with intake separated between 1 to 12 hours (9.30 pm/3.30 pm). The characteristics of eating times: increased water intake as well as fruit and vegetables. Fall in the intake of chapati and, therefore, carbohydrates in general. Large meals based mainly on dhal, rice, vegetables and chicken.

Conclusions: Poorly controlled diabetes is observed during Ramadan with low adherence to medication and poor nutrition while fasting. Ramadan fasting implied difficulties for diabetic patients. Compliance with diet at drug treatment is difficult and primary healthcare nurses must know and adapt this situation to improve metabolic control of the disease.

Adjusted morbidity groups and glycaemic control in older adults in the real world

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[1]Peralada Primary Health Care Centre (Albera Salut S.L.), Girona (Spain); [2]Sarrià de Ter Primary Health Care Centre, Girona (Spain); [3]Salt Primary Health Care Centre, Girona (Spain)

Aim(s) or purpose: Report and cross data between *The Adjusted Morbidity Groups* and metabolic control in T2DM patients aged ≥ 75 years the end of 2017 in the Primary Care setting in Girona. The Adjusted Morbidity Groups (GMA) is a new morbidity measurement that classifies morbidity into 6 groups. Each group is also divided into 5 levels of complexity. We stratified our data by gender, metabolic control, pharmacological treatment, chronic illnesses and morbidity (n= 4728).

Design and method: Cross-sectional study, at the primary care level, based on a population register (SIDIAP database of the Catalan Health Institute, Girona) that included all patients ≥ 75 years with T2DM in December 2017.

Results: A total of 4728 subjects aged ≥ 75 years with a diagnosis of T2DM were included in the study; 54.4 % of them were female. Mean age of populations was 82.4 years (SD;5.2); women 83.0 ± 5.3 years vs. men 81.7 ± 4.9 years. Mean glycaemic control values (HbA1c) was 6.9%. There was a gradual improvement in HbA1c with age in both genders. The percentage of subjects with HbA1c < 7% was 59% and HbA1c < 6.5% was 36.5%. There were no differences in GMA or complexity by gender. The degree of control depends on complexity of glucose-lowering drugs but is similar by GMA groups or complexity.

Conclusions: Tight glycaemic control in older adults with multiple medical conditions is associated with increased risk of hypoglycaemia and considered overtreatment. However, unfortunately, this is common in clinical practice. Glycaemic targets for some older adults might reasonably be relaxed as part of personalised care.

Allergic rhinitis is associated with obstructive sleep apnoea in type 2 diabetes

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Aim(s) or purpose: The relationship between obstructive sleep apnoea (OSA) and allergic rhinitis has not been reported in diabetes. We investigated the relationship between OSA and allergic rhinitis in people with type 2 diabetes mellitus (T2DM).

Design and method: Adults with T2DM were identified from the Royal College of General Practitioners Research and Surveillance Centre database (N=1,595,445). Retrospective analyses compared the prevalence of OSA in those

with and without allergic rhinitis. The association between allergic rhinitis and OSA was further investigated using logistic regression, adjusted for age, gender, ethnicity, body mass index (BMI), smoking and alcohol status and glycaemic control.

Results: Of the 84,394 people with T2DM, 2.8% (95% CI 2.66-2.88) had OSA (n=2,333). OSA was more common in those with allergic rhinitis (3.8%; 95% CI 3.40-4.16) than those without (2.6%; 95% CI 2.52-2.75). After adjustment, OSA remained positively associated with allergic rhinitis (OR 1.52; 95% CI 1.36-1.71). OSA was more common in males (OR 2.47; 95% CI 2.23-2.72); in overweight (OR 2.20; 95% CI 1.67-2.88) and obese groups (OR 8.54; 95% CI 6.60-11.03) compared to normal BMI; and in current (OR 1.27; 95% CI 1.10-1.46) and former smokers (OR 1.30; 95% CI 1.16-1.45) compared to non-smokers. People of Asian (OR 0.80; 95% CI 0.67-0.97) or black ethnicity (OR 0.69; 95% CI 0.55-0.89) were less likely than people with white ethnicity to have OSA. No association was found between glycaemic control and OSA.

Conclusions: In people with T2DM, OSA was positively associated with allergic rhinitis, male gender, white ethnicity, being overweight or obese and being a current or former smoker. Inflammatory changes from allergic rhinitis may contribute to the prevalence of OSA in people with T2DM. Clinicians should be mindful of this association in people with T2DM presenting symptoms of OSA.

Analysis of family satisfaction with the delivery of paediatric diabetes care

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Aim(s) or purpose: Delivery of diabetes care cannot be quickly evaluated without analysis of the role of the third party payer. We postulated that insurance policies still have a major role in the establishment of diabetes care starting from contracting healthcare systems, providing insulin, medication and diabetes supplies and enabling prompt referrals to other ancillary healthcare providers.

The objective of the study is to obtain feedback evaluation from families about their insurance companies regarding diabetes care.

Design and method: We surveyed 100 families with children with diabetes (T1DM and T2DM) in our University practice and sought their opinions about the delivery of diabetes care.

In a confidential questionnaire, we asked about family experiences relating to accessibility of care, freedom to choose facility, funding and satisfaction with their insurance companies in providing diabetes supplies, medications and health provider coverages.

Results: A total of 75% of families had commercial insurance while 25% had a government supported one; 90% of families felt that they had a choice in finding the right physician to seek diabetes care, 50% of families were not satisfied with their insurance provider coverage, 48% were satisfied and 2% were neutral. Areas of dissatisfactions were related to high co-payments and limited choices of medications and supplies.

Conclusions: The morbidity and mortality associated with diabetes remains a global challenge. Efficient delivery of primary diabetes care can significantly improve diabetes outcome. Unless patients with diabetes have access to this treatment and resources to utilise it, outcomes will not meet goals. Insurance companies still play a major role in affecting the quality of diabetes care.

Chronic hepatitis B and C in the city of Barcelona. Descriptive study of patients seen by primary care teams: Hepcron-BCN

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[1]Catalan Health Institute, Barcelona (Spain); [2]Cotxeres Integral Health Centre, Barcelona (Spain)

Aim(s) or purpose: Primary: To report the sociodemographic characteristics of patients diagnosed with chronic viral hepatitis B and C seen by Primary Care Teams (PCTs) in Barcelona and part of the metropolitan area and their association with T2DM. Secondary: To estimate the prevalence of chronic viral hepatitis in the population seen by PCTs in Barcelona. To report differences with respect to patient characteristics between the various districts of the city. To determine substance abuse and STI history. To report the clinical course of liver disease: steatosis, cirrhosis and hepatocellular carcinoma.

Design and method: Descriptive, longitudinal ambispective study. Study scope: PCTs of the Catalan Health Institute in the city of Barcelona, Sant Adria del Besos and Montcada i Reixach. A total of 53 teams with 1,053,027 patients assigned (source: SISAP-Khalix, Jan 2016). Population: Patients with electronic health record (e-CAP) Chronic Viral Hepatitis B and/or C codes recorded until June 2017. Anonymised data exported from the e-CAP then processed and analysed statistically. Qualitative and quantitative variables are expressed as percentages and means and medians, respectively. Comparisons among patient history features and associations between qualitative variables will be made using a chi-squared test. SPSS 10 and Epidat 3.1 statistical programmes will be used.

Results: Applicability of results. The HEPCRON-BCN project responds to the need to improve detection of chronic viral hepatitis in our population. The objective is to provide useful data to improve the diagnosis of viral hepatitis, early prevention and detection of associated hepatic and extrahepatic complications. Determining the prevalence in the population seen by the PCTs provides an estimate of disease prevalence in the population. Determining patient characteristics, differences among districts, associations with other infectious diseases or metabolic and cardiovascular diseases and the clinical course of liver disease will improve global medical care of each patient and the prevention of complications.

Conclusions: Study in process. We do not have any results yet.

Chronic viral hepatitis and diabetes mellitus, an emerging association. HEPCRON cohort study

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Aim(s) or purpose: To analyse the association between CH B and C, prediabetes and T2DM. To report the association between CH and metabolic syndrome, cardiovascular risk factors and events.

Design and method: Retrospective cohort study (7 years follow-up): electronic health record search for cardiovascular risk factors as well as diagnostic and follow-up parameters for metabolic syndrome, cardiovascular events, prediabetes, T2DM and CH B and C, recorded since 2005. Exposed cohort: random sample of 85 patients with CH B and/or C. Unexposed cohort: sample of 170 patients without CH (individually matched for age and sex with exposed cohort). Study commenced in 2012 and prospective follow-up of patients for 3 years.

Results: Project currently underway. Required sample size not yet attained. To date we have recruited 34 patients: 25 patients with CH C, 2 with CH B, 1 with both and 6 patients without CH (2 being intention-to-treat). GRAPH: Relative risk = 2.06 (95% CI, 0.32-13.26; *P*=0.37). Preliminary results support the hypothesis of our study. However, statistically significant results have not yet been obtained because the required sample size has not yet been attained. Average length of time between the development of CH and T2DM: 13.33 years.

Conclusions: The progression of the waist to height ratio (WhtR) in patients with CH C who also have T2DM could correlate with a higher diabetic and cardiovascular risk. Preliminary results appear to support our study's hypothesis that there is an association between CH and the development of T2DM-prediabetes. Biometric parameters demonstrate a tendency towards the onset of diabetes and cardiovascular risk in patients with CH.

Clinical practice and outcomes versus clinical guidelines: a real-world perspective on the updated NICE guidelines

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Aim(s) or purpose: To explore the impact of guideline-implied vs. real-world observed estimates of baseline-adjusted changes in HbA1c on the clinical and cost-effectiveness of T2DM treatments.

Design and method: Using patient-level data (PLD) from the EDGE study and the published NICE clinical guidelines for the management of T2DM, we contrasted guideline vs real-world (EDGE) derived estimates of HbA1c change at 1-year for metformin+sulphonylurea (Met+SU) compared with metformin+vildagliptin (Met+Vilda) in patients inadequately controlled on metformin. Multivariate analysis of EDGE PLD provided baseline HbA1c adjusted 1-year changes in HbA1c; these were contrasted with guideline-developed equations for adjusted HbA1c treatment changes. The two approaches were assessed with respect to expected lifetime incidence of T2DM-related vascular complications, expressed as changes in patient life expectancy (LE) and quality-adjusted life expectancy (QALE) using the CORE diabetes model.

Results: Based on the EDGE data, estimated change in HbA1c at 1-year for Met+Vilda and Met+SU was –1.33% and –1.05%, respectively (delta: –0.28%). Applying guideline equations, estimates for Met+Vilda and Met+SU were –0.95% and –0.99%, respectively (delta: 0.04%). These alternative predictions of change in HbA1c translated to a difference in predicted change in QALE of 0.10 years between the arms (Met+Vilda vs. Met+SU: 0.41 vs. 0.31 years) based on EDGE data, compared with 0.01 years (Met+Vilda vs. Met+SU: 0.31 vs. 0.30 years) for the guidelines-based analysis. A similar relationship was observed for LE (Met+Vilda vs. Met+SU: 0.07 based on EDGE data and –0.01 for guidelines-based analysis). Gains in LE and QALE favouring Met+Vilda were driven by lower cumulative incidence of major microvascular and cardiovascular complications.

Conclusions: Analysis of real-world data suggests that current NICE guidelines for the management of T2DM might underestimate the HbA1c lowering potential and health gains of Met+Vilda compared with Met+SU in routine clinical practice.

Continuous glucose monitoring in type 2 diabetes mellitus patients without insulin therapy

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Aim(s) or purpose: In cases of unrecognised hypoglycaemia, confusing nighttime events or large variations in blood glucose, HbA1c cannot detect specific movement of blood glucose. Our aim is to analyse the benefit of tracking patterns of glucose values by using continuous glucose monitoring (CGM) in patients with type 2 diabetes mellitus (T2DM) in primary care.

Design and method: A total of 20 family physicians recruited five T2DM patients diagnosed at least one year prior to study entry, aged ≥40 years, without insulin therapy and with clinical suspicion of hypoglycaemia or with disproportion in actual glycemia and HbA1c findings. While wearing a CGM device, each patient kept a six-day diary with four daily standard home blood glucose measurements. Sociodemographic and clinical data were collected, and descriptive statistical analysis was employed.

Results: Mean age of participants was 64 years (range 40-86); 59% were female. A total of 30% were included because of clinical suspicion of hypoglycaemia. Mean duration of T2DM was 8 years (range 1-36; SD 5) and mean HbA1c was 7.2 (range 5.7-11.5; SD 1). A total of 90% of participants were on metformin, 51% sulfonylurea, 13% pioglitazone, 35% DDP4 inhibitor and 7% had a SGLT2 inhibitor prescribed. For six participants devices did not record any data. Mean percentage of time within glycaemia range 3.9-10.0 mmol/L was 81 (range 1-100; SD 23). A total of 38 participants had at least 1% of time and/or AUC glycaemia <3.9 mmol/L; in 32 participants these events were between 23:00 and 06:00 h (percentage of time range 2-100). A total of 18 participants had glycemia >8.3 mmol/L between 23:00 and 06:00 h for more than 50% of the time. Mean SD of all measured glycaemia was 1.9 (range 0.9-3.5; SD 0.6).

Conclusions: More hypoglycaemia than we suspected was detected. Fluctuations of glucose and night hypoglycaemia that would otherwise go unnoticed were identified. A CGM device can facilitate therapy adjustments.

Decoding Study. Feasibility and effectiveness of dermal electrochemical conductance as a screening tool for diabetic neuropathy in primary care

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Aim(s) or purpose: Type 2 Diabetes mellitus (T2D) is the leading cause of polyneuropathy in the Western world. Diabetic neuropathy (DNP) is the most common complication of diabetes and can achieve major clinical significance because of fundamentally, pain and the possibility of ulceration in the lower limbs. In the medical management of neuropathy, early detection is the most remarkable aspect since glucose regulation and use of certain drugs can improve their gradual clinical course but more so before they are applicable. Among typical findings of diabetic neuropathy are earlier dysfunction of unmyelinated C-fibres, whose initial clinical manifestation reflects impaired sudomotor eccrine glands. This abnormality is currently shown first using a new technology; the measurement of dermal electrochemical conductance (DEC). Aims: to assess the feasibility and effectiveness of DEC (quantitative expression of sudomotor reflex) as a screening test for diabetic neuropathy in patients using public primary health care.

Design and method: Sample people with T2D and similar samples without carbohydrates metabolism abnormalities-controls, aged older than 40 years. Sociodemographic, clinic and physical data were compiled. People completed DN4 and DNS questionnaires. Finally, we performed DEC and electromyography (EMG).

Results: N=147, 100 with DM2 and 47 controls. Prevalence of DNP was 21% for EMG and 14.4% for DEC. DEC sensitivity and specificity regarding EMG were 19% and 96% respectively. Mono-filament is the best test associated with EMG for DNP detection (area under the curve 0.60)

Conclusions: In usual clinical practice, DEC is a test with moderate sensitivity but high specificity.

Degree of control and micro vascular complications in patients with type 2 diabetes mellitus in primary care

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Aim(s) or purpose: To report the degree of control and the presence of micro vascular complications in patients with type 2 Diabetes Mellitus.

Design and method: A descriptive cross-sectional study that has been developed in primary care on a 192 patient cohort with a previous diagnosis of type 2 Diabetes Mellitus. Variables included were gender, age, value of glycated haemoglobin, LDL cholesterol and microalbumin levels, diabetes foot examination, retinal eye examination (values referred to 2016 with 2 annual measurements); 95% confidence interval for qualitative variables, means and standard deviation shown for quantitative variables.

Results: A total of 192 patients were included, with an average age of 69.98 years old ± 0.6; 57.3% and 42.7% were men and women, respectively. Average HbA1c was 6.85 ± 0.088 (70.8% <7) in the first 2016 measurement performed in 92.71% of patients (range 89.03-96.39) and 6.65 ± 0.075 in the second (80.3% <7), performed in 63.54% (range 56.73 to 70.35).

Average LDL level was 102.63 ± 2.33 (57.4%<100) in the first test (91.19% [88.39-95.98] evaluated) and 91.38 ± 2.36 (71.8%<100) in the second test (performed on 64.78% [57.82-71.35]).

Microalbuminuria was positive in 16.7% of the patients evaluated in 87.5% (range 82.82-92.18%) in the first measurement and 11.4% (measured to 59.38% [52.43-66.32]) in the second one.

Retinal eye examination was performed on 40.63% of patients (range 33.68-47.57%) where 10.3% of them presented diabetic retinopathy (7.7% mild, 2.6% proliferative).

Foot evaluation was performed on 86.46% of patients (range 81.62-91.3%); this was normal in 31.9%, at risk in 66.9% and with a diabetic foot in 1.2%.

Conclusions: We found that HbA1C levels were in acceptable ranges. There was a low presence of micro vascular complications.

Diabetes em Movimento Rio Maior: a community-based physical activity intervention in Portuguese Primary Health Care

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Aim(s) or purpose: Portugal is one of the European countries with the highest prevalence of Diabetes - 13.3% of the population. Although physical activity is one of the cornerstones of diabetes treatment and control, most people present alarming levels of physical inactivity. This work aims to present the process of implementation and development of *Diabetes em Movimento* in the city of Rio Maior (Portugal).

Design and method: *Diabetes em Movimento* is a community-based exercise programme for patients with type 2 diabetes developed in Portugal using low-cost materials and high applicability exercise strategies. It was imple-

mented in the city of Rio Maior in 2017 through an institutional partnership between the University of Trás-os-Montes e Alto Douro, the Polytechnic Institute of Santarém (Sport Sciences School of Rio Maior and Health School of Santarém), the Community Health Centres of Lezíria (Regional Health Administration of Lisboa e Vale do Tejo), Santarém Hospital, and Rio Maior City Hall. Participants were recruited at the Health Units USF Salinas de Rio Maior and UCSP Rio Maior by their family doctors (type 2 diabetes diagnosed at least 6 months ago, 50–80 years old, non-smokers, independent living in the community, etc.).

Results: Exercise sessions (combined aerobic, resistance, agility/balance and flexibility exercise; 75 min duration) were held in the sports pavilion of the Sports Sciences School of Rio Maior three times a week (Monday, Wednesday and Friday), in the morning period. Forty patients with type 2 diabetes took part (23 women; 67.54±5.95 years old). Sessions were monitored and supervised by Exercise Professionals (1:20 participants) and Nurses (1:20 participants). Exercise intensity was controlled by the Borg scale of perceived exertion (6–20 points).

Conclusions: Institutional and community partnerships are critical to successful implementation of effective and sustainable lifestyle intervention programmes in Primary Health Care.

Differences in type 2 diabetes patients' care at primary care level among four Southeast European countries

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Aim(s) or purpose: There are differences in type 2 diabetes mellitus (T2DM) patients' care at primary care level. Our aim is to analyse those differences among Association of general practice/family medicine of Southeast European members.

Design and method: A cross-sectional study was performed using the printed version of a validated questionnaire.

Out of nine invited member countries we received answers from four countries (Croatia, Macedonia, Serbia and Albania). There was a total of 60 participants. Descriptive statistical analysis was employed.

Results: Mean age of participants was 49 years (range 29-63), 80% female, 80% specialist. Mean working experience years was 22.3 (range 3-36) and most were health care centre employees (54%). Mean total number of patients in care was 1977 (range 1090-4100) with an average of 52 daily visits (range 30-140). Mean average number of T2DM in care was 160 (range 3-50). Most participants (76%) followed national guidelines for managing T2DM. All participants from Croatia prescribed oral antidiabetic drugs independently, 70% from Macedonia, 63% from Serbia, 0% from Albania. Only participants from Croatia prescribed insulin independently. A total of 30% (all from Macedonia and Serbia) did not show any T2DM complication, 58% thought that their cooperation with district nurse could be improved (evenly distributed in all countries). The best cooperation with the diabetologist was in Macedonia, the worst in Serbia. When deciding on the best second line oral drug 90% of participants from Croatia and Serbia were confident or mostly confident whereas participants (70%) from Macedonia and Albania were slightly confident or confident. The best confidence in managing insulin therapy was among Croatian participants. In all countries most participants were mostly or very confident when advising over lifestyle modification or healthy eating recommendations.

Conclusions: Most differences noted are to do with prescription of oral antidiabetic drugs and insulin independently of diabetologist advice. Evidence of T2DM complications, cooperation with district nurse and diabetologist could be improved.

Effectiveness of a comprehensive care protocol in type 2 diabetes mellitus and associated comorbidities in primary care

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Aim(s) or purpose: To evaluate the effectiveness of a systematic protocol with integrated care in people with newly diagnosed type 2 diabetes (DM2) and associated comorbidities in terms of health-related quality of life, development of biological parameters and compliance with the therapeutic plan. To demonstrate that by intensifying hygienic-dietetic measures in the initial stage of DM2 diagnosis, better control of the disease and associated co-morbidities is achieved. To decrease the variability in the care offered by primary care nurses to people in this group.

Design and method: Quasi-experimental design, comparing a group of individuals taking part in the intervention (IG) with a similar group receiving usual care (CG). Data will be collected at the beginning, at the end of the intervention and after 6 and 12 months. A total of 10 primary care centres in Barcelona will be randomised to IG and CG groups. It was deemed necessary to include 123 patients in both the IG and CG groups, aged between 18 and 80 years. Intervention: 5 visits post-diagnosis in the nurse's office. A health education manual will be delivered and discussed with the patient and his/her family. This support material was validated with a group of patients and primary care nurses in a previous work.

Results: Currently, we have started the community trial of clusters with people with newly diagnosed DM2 and who have another chronic pathology. Since the recruitment started, 62 patients have been included by primary care nurses in the 10 centres taking part.

Conclusions: This protocol would highlight the impact of the health education task of Primary Care nurses when a patient is diagnosed with DM2. It would facilitate unification of criteria among nurses during the educational process of patients with DM2 and associated comorbidities. The support material could be a useful tool to be used in PC if its effectiveness is revealed.

Effectiveness of an adapted diet in metabolic control of diabetic Pakistani patients. The SWEET PAKI's study

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Aim(s) or purpose: To ascertain the diet of the Pakistani population with type 2 Diabetes Mellitus (type 2 DM) in health centres from Barcelona metropolitan area. Secondary objectives: To measure the amount of carbohydrates eaten daily; to assess compliance with recommendations of carb choices according to the type 2 DM clinical guidelines.

Design and method: Longitudinal descriptive study. Study population: Pakistani adult patients with type 2 DM and glycated haemoglobin (HbA1c)> 8. Consecutive random sampling of 22 patients in the control group and intervention. Questionnaires: sociocultural factors and food habits. To measure the daily intake of carbohydrates different measurements of chapati (main source of carbs) were taken as reference. Various clinical guidelines suggest 20-21 carb choices in a 1500 calorie diet and 24 carb choices in an 1800 calorie diet.

Results: 70.3% men; average age 48.8 years old; average HbA1c at the beginning 10.5; 27% and 24.3% had overweight and obesity, respectively. High intake of carbohydrates in the form of chapati and Dhal. Over the course of the study, a decreased intake of average carb choices can be observed (from 31.3% at the first visit to 23.1% at the second visit). Diet compliance was correct in 60% of the intervention group versus 15.4% in the control group. Average decrease in HbA1c in the intervention group of 2.26% versus 1.4% the control group (student *t* test=4.33, *P*=0.144).

Conclusions: At the early stage a high carbohydrate intake was observed (over and above the recommendations). However, during follow-up visits the carbs intake decreases, complying with the recommendations for the 1800 calorie diet. Consequently, we can postulate that the suggested diets tailored to Pakistani specificities improves dietary compliance and carbohydrates intake according to the clinical guidelines for type 2 diabetes.

Effects of integrated Personalised Diabetes Management: Results of the PDM-ProValue study programme

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Aim(s) or purpose: Many people with Type-2 diabetes mellitus (T2D) on insulin therapy do not achieve their treatment goals. The PDM-ProValue study programme assessed whether a structured intervention programme ("integrated Personalised Diabetes Management", iPDM) improves glycaemic control and other parameters in persons with T2D by bringing together physicians and patients in a collaborative therapeutic decision-making process.

Design and method: 101 medical practices throughout Germany were randomised to the iPDM group (n=53) or the control group (CNL) (n=48). Visits for the iPDM group included the iPDM process with visualisation of self-measured blood glucose (SMBG) values to support treatment adaptions and shared decision-making. HbA1c levels, patient reported outcomes (PROs), and physician satisfaction were assessed. Therapy changes were analysed to understand which adaptations were preferred by physicians to achieve improved outcomes.

Results: Persons recruited to iPDM (n=440) or CNL (n=467) were highly comparable (gender: male iPDM 60.5% vs. CNL 55.9%; age: 65±11 (mean±SD) vs. 65±10 y; diabetes duration diabetes: 14±9 vs. 14±8 y; BMI: 33.8±6.1 vs. 34.0±6.1 kg/m^2; baseline HbA1c: 8.5±1.1 vs. 8.4±1.0). After 12 months, HbA1c reduction vs. baseline was higher in iPDM (0.5%, *P*<0.0001) compared to CNL group (0.3%, *P*<0.0001; intergroup difference=0.2%, *P*<0.05). Most reduction in HbA1c occurred after 3 months and remained stable. Patients with a basal insulin supported oral therapy regimen (BOT) benefited most from iPDM. At the same time, basal insulin was the most commonly adapted type of insulin.

Conclusions: The PDM-ProValue study programme documents the considerable potential of iPDM. Structured guidance for physicians and persons with T2D based on a low-threshold digital solution represents a diagnostic measure which resulted in significant improvements in glycaemic control. The iPDM process mediated effect appears to be based in part on easily implemented measures such as adaptation of basal insulin, which emphasises the utility of the iPDM process in everyday diabetes management.

Efficacy and safety of SGLT2 inhibitors as add-on therapy to metformin in actual clinical practice

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Aim(s) or purpose: SGLT2 inhibitors (SGLT2i) are suggested as metformin add-on therapy. This observational, retrospective multicentre study aims to study the effect of SGLT2i in combination with metformin in 200 uncontrolled T2DM patients.

Design and method: This randomised, five-arm, parallel group, was conducted at 10 centres between September 2015 and September 2017.

Patients were categorised based on a combination of metformin plus SGLT2i into five groups (40 in each). Metabolic parameters were evaluated at baseline and after 24 months of follow up. Primary endpoint was glycated haemoglobin (HbA1c) reduction. Secondary endpoints: reductions in systolic and diastolic blood pressure (SBP, DBP), weight loss.

Results: Over a 24-month period, all the SGLT2i significantly reduced HbA1c, weight, SBP and DBP (*P*<0.05):
- Canagliflozin 100 mg plus metformin: mean Hba1c reduction was 1.92±0.45%, weight reduction 1.89±1.87 kg, SBP decreased 3.6±0.7 and DBP 2.8±0.09 mmHg.
- Canagliflozin 300 mg plus metformin: mean Hba1c reduction was 2.99±0.12%, weight reduction 2.8±1.01 kg, SBP decreased 4.0±2.3 and DBP 3.1±1.4 mmHg.
- Dapagliflozin 10 mg plus metformin: mean Hba1c reduction was 1.96±0.24%, weight reduction 1.79±1.07 kg, SBP decreased 3.9±1.4 and DBP 2.9±0.1 mmHg.
- Empagliflozin 10 mg plus metformin: mean Hba1c and weight reduction observed were 1.98±0.30% and 1.90±0.27 kg, SBP decreased 3.6±0.2 and DBP 2.7±1.1 mmHg.
- Empagliflozin 25 mg plus metformin: mean Hba1c reduction was 2.92±0.24%, weight reduction 2.64±1.4 kg, SBP decreased 3.8±1.3 and DBP 3.0±0.9 mmHg.

Adverse events: urinary tract infections (9.6%), genital infections (3.9%), hypotension (1.2%). There was no statistically significant difference between the groups.

Conclusions: In dual therapy with metformin, all SGLT-2 inhibitors were effective for achieving HbA1c <7% and reducing weight, SBP and DBP with minimal side effects. Improvement in the change from baseline in %HbA1c was significantly more in dual therapy Canagliflozin 300 mg and Empagliflozin 25 mg than in other combinations (−1.05 [−1.18, −0.94]; *P*<.00001) and weight (−0.90 [−0.94, −0.78]; *P*<.00001) There were no statistically significant differences in BP reduction.

Empagliflozin reduces mortality and hospitalisation for heart failure in patients with or without a history of myocardial infarction or stroke at baseline

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Aim(s) or purpose: In the EMPA-REG OUTCOME trial, empagliflozin added to standard of care reduced cardiovascular (CV) death by 38% (HR 0.62 [95% CI 0.49, 0.77]), all-cause mortality by 32% (HR 0.68 [95% CI 0.57, 0.82])

and hospitalisation for heart failure (HHF) by 35% (HR 0.65 [95% CI 0.50, 0.85]) vs. placebo in patients with type 2 diabetes and established CV disease. We investigated whether a history of myocardial infarction (MI) or stroke at baseline influenced the effect of empagliflozin on these outcomes.

Design and method: Patients were randomised to empagliflozin 10 mg, empagliflozin 25 mg or placebo. Median observation time was 3.1 years. CV death, all-cause mortality, HHF and the composite of HHF or CV death were assessed for empagliflozin pooled vs. placebo in subgroups by history MI or stroke (yes/no) at baseline using Cox regression analyses. *P*-values for treatment by subgroup interaction were obtained from homogeneity tests of treatment group differences among subgroups with no adjustment for multiple testing.

Results: Of 7020 patients treated, 65% in both treatment groups had a history of MI or stroke at baseline. Effects of empagliflozin on CV death, all-cause mortality, HHF and HHF or CV death were consistent in patients with and without MI or stroke (*P*>0.05 for treatment by subgroup interactions).

Conclusions: Reductions in mortality and HHF with empagliflozin in patients with type 2 diabetes and established CV disease in the EMPA-REG OUTCOME trial were consistent in patients with or without a history of MI or stroke at baseline.

Evolution of the use of the redGDPS Foundation's website as a portal for information on diabetes from 2010 to 2017

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Aim(s) or purpose: The redGDPS Foundation is a non-profit body whose mission is to promote study, continuous training and research in the field of diabetes. We conducted a study of the metrics data for its online portal, with a view to obtaining conclusive information on the evolution during the 2010-2017 period of:
– number of portal users, their geographic origin and the type of device used.
– portal use parameters by means of open sessions and total visits to pages.

Design and method: Descriptive study of the metrics data provided by Google Analytics during the period 2010-2017.

Results:
– Evolution of the number of users (who began at least one session):

2010	2017	Increase
28,828	169,298	487%

– Evolution by geographic areas (top 3):

	2010	2017
Spain	26,813	52,945
Mexico	407	44,820
(Third country)	Ecuador: 337	Colombia 12,098

In 2010, 92.72% of users were in Spain, while the second country, Mexico, accounted for only 1.41% of total users. In 2017, 30.99% of users connected from Spain, while Mexico accounted for 26.23% of the total.

– Portal use parameters:

	2010	2017	Increase
New sessions started	35,948	229,218	538%
Total visits to pages	138,245	450,062	226%

– Visits according to device:

	2010	2017
Computer	28,790 (99.58%)	91,795 (54.22%)
Tablet	-	66,734 (39.46%)
Mobile	122 (0.42%)	10,692 (6.32%)

Conclusions: The redGDPS portal can be considered a consolidated informative tool for Spanish and Latin-American audiences, especially in Mexico, with the number of users and visits having increased steadily since 2010. The evolution of the data analysed would suggest focusing on mobility and tailoring the digital content strategy towards the SMAC (Social, Mobile, Analytics and Cloud) model.

Exploring the factors, which affect quality of life in patients with type 2 diabetes mellitus

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Aim(s) or purpose: The study aimed to investigate the impact of different factors on health-related quality of life of patients with type 2 diabetes mellitus (T2DM) in primary care.

Design and method: A cross-sectional multicentre study was conducted in a random sample of 540 adults with type 2 diabetes mellitus. Social and demographic data, habits, cardiovascular disease and risk factors, DM complications and data for use drugs were collected. Clinical parameters and biological measures were collected from medical records. Patients' reported outcome measurements (PROMs) were recorded via the Audit of Diabetes-Dependent Quality-of-Life (ADDQoL-19). Bivariant analysis with Fisher's exact test or a Mann-Whitney U test was performed, $P<0.05$ or 95% IC were considered as statistically significant.

Results: After excluding patients with missing data, the cohort consisted of 411 eligible patients. Mean age 59.9 ± 11.6 years; 52.6% men; 66% married; 71% living in cities. Mean years of clinical course 8.7± 5.7. Prevalence of CVD 45.7%; current smokers 24% and 15.6% insulin treated. We found a statistically significant relationship between lower quality of life and gender (female, $P< 0.05$), marital status (single, $P< 0.05$), education level (primary, $P< 0.05$), working situation (unemployed, $P< 0.01$), duration of diabetes (> 5 years, $P<0.001$), complications ($P<0.001$) and insulin treatment ($P< 0.001$).

Conclusions: The quality of life of patients with type 2 diabetes mellitus can be improved by early prevention and diagnosis of the disease, prevention of its complications and effective treatment of chronic underlying conditions by primary care physician and specialists. Appropriate disease management could help to improve quality and patient-centred care in this specific group of subjects.

High impact of a 28-week supervised walking programme in people with type 2 diabetes and people at risk: a prospective study in the Netherlands

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Aim(s) or purpose: To evaluate the impact of a 28-week supervised walking programme in individuals with T2DM and those at risk.

Design and method: A prospective cohort study in two primary healthcare centres in the Netherlands included 56 individuals of whom 30 had T2DM and 26 were considered at risk by their GP. Participants had a mean age of 60.6 (10.0) years, BMI of 30.9 (4.3) kg/m^2 and SBP 146.9 (19.1) mmHg. Those with T2DM had glycaemia well controlled at baseline (median HbA1c 50 mmol/mol). During the 28-week programme participants walked in groups, once weekly under the supervision of different healthcare workers. Changes in participants' health parameters and self-reported well-being (WHO-5), health status (EQ-VAS) and patient activation (PAM-13) were analysed using the paired t-test and the Wilcoxon signed rank test.

Results: The overall group showed statistically significant improvements in body composition; median body weight decreased from 88 to 84 kg ($P=0.001$), median BMI from 30.7 to 29.7 kg/m^2 ($P=0.002$), and a mean difference in waist circumference of 3.4 cm (95% CI: 2.1; 4.8, $P<0.001$) was found. Both SBP and DBP decreased significantly (mean difference 6.5 mmHg (95% CI: 1.6; 11.3, $P=0.01$) and 3.5 mmHg (95% CI: 1.0; 6.0, $P=0.007$), respectively). Participants with T2DM with an HbA1c above target at baseline (>53 mmol/mol) (n=8), but not those already on target, had a significant decrease in median HbA1c (median difference 6.5 mmol/mol; $P=0.025$). Furthermore, participants experienced more well-being ($P=0.01$) and a higher but non-significant health status ($P=0.073$). No statistically significant changes in patient activation were found.

Conclusions: This study demonstrates the highly favourable effect of a 28-week supervised walking programme on body composition, blood pressure, glycaemic control and well-being, and its potential to improve health status in individuals with T2DM and those at risk for it. Therefore, these findings might be relevant for prevention strategies.

How do patients with type 2 diabetes mellitus evolve during four years of follow-up in primary care

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Aim(s) or purpose: To evaluate the evolution of the degree of control and the presence of microvascular complications in type 2 Diabetes Mellitus patients.

Design and method: A longitudinal descriptive study between 2012 and 2016 performed in primary care on a 192 patient cohort with a previous diagnosis of type 2 Diabetes Mellitus. Categories included are gender, age, value of glycated haemoglobin, LDL cholesterol and microalbumin levels, diabetes foot examination, retinal eye examination, Body Mass Index (BMI) and cardiovascular risk index (2012-2016). Percentage of qualitative variables, 95% CI average and standard deviation in quantitative variable were presented. Student *t* and Chi square tests were used for related samples, respectively. Chi-Square test was used for qualitative variables. Statistical significance level was set as 0.05.

Results: 133 patients were analysed. There was a statistical average decrease in Hba1c of 0.19±0.08 between 2012 and 2016 (P=0.035). The LDL level value fell by an average of 5.06±3.34, which was not statistically significant. Among all patients with negative microalbumin during 2012, 12% were positive after 4 years of follow-up and of those who were positive initially, 42.9% were normalised and 57.1% remained (P<0.0001). No statistically significant changes were detected upon retinal eye examination or foot examination during the four years of follow-up.

Conclusions: There was a significant improvement in the degree of control, measured by glycosylated haemoglobin and a significant reduction in diabetic nephropathy detected by microalbumin. LDL cholesterol values, retinal eye examination and foot exploration did not show any relevant changes.

Hydroxychloroquine in type 2 diabetes mellitus unresponsive to more than two oral antidiabetic agents

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Aim(s) or purpose: To evaluate the effectiveness of Hydroxychloroquine as a metformin add-on and Glimepiride in reducing HbA1c to attain therapeutic goals

Design and method: 200 uncontrolled T2DM patients on triple drug combinations, were divided equally into two groups. One group receiving Metformin (2000 mg), Glimepiride (2 mg) and Teneligliptin (20 mg) and the other group received Metformin (200 mg), Glimepiride (2 mg) and Hydroxychloroquine (400 mg). In each group efficacy was assessed by FBG, PPBG and HbA1c reduction. Subjects with proliferative retinopathy were excluded from the study. Study duration was 24 weeks.

Results: Patients on Hydroxychloroquine+Met+SU show a statistically significant reduction of FBS (-46±25), PPBS (-78±37) and HbA1c (-1.8±1.1) compared to patients on Teneligliptin+Met+Glimipride.

Conclusions: Hydroxychloroquine significantly improves glycaemic control in patients with T2DM when prescribed as add-on therapy to two antidiabetic drugs such as Glimipirde and metformin. Its efficacy to reduce blood sugar is comparable to a DPP4i agent such as Teneligliptin. Hydroxychloroquine may be considered an ideal add-on third drug for the treatment of uncontrolled T2 DM patients.

Improving cardiovascular outcome. Novel diabetes drugs. Real-world vs. guidelines recommendations

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Aim(s) or purpose: Most recent guidelines recommend in patients with type 2 diabetes (T2DM) and established atherosclerotic cardiovascular disease, antihyperglycemic therapy proven to reduce major adverse cardiovascular events and cardiovascular mortality (currently empagliflozin and liraglutide). Our aim is to report and compare clinical char-

acteristics of T2DM patients in Primary Care of Catalonia stratified by age, sex, cardiovascular disease and antihyperglycaemic treatment.

Design and method: Descriptive cross-sectional study, in primary care, based on a population register (SIDIAP database of the Catalan Health Institute) of T2DM patients at 31/12/2017 (n= 13.835). Cardiovascular Disease (CVD) was defined as having Stroke or/and Coronary Heart Disease (CHD). New drugs are defined as SGLT2 inhibitors and GLP-1 receptor agonist.

Results: From the 13.835 T2DM patient data analysed, we found established cardiovascular disease in 14.8% (n 2046) vs 85.2% (n 11789) without CVD. Prevalence of CVD was: CHD (n 1523) 11.0%, stroke (n 423) 3.1% and CHD and stroke (n 100) 0.7%. Mean age was 67.5 years vs. 73.2 years in CVD. Gender was 54.2% male vs. 68.2% male in CVD, respectively. The trend of use of these new drugs was similar in both groups (no differences between patients with established CVD vs. patients without CVD).

Conclusions: There are now three randomised controlled trials reporting statistically significant reductions in cardiovascular events for two SGLT2 inhibitors (empagliflozin and canagliflozin) and one GLP-1 receptor agonist (liraglutide). These findings are not consistent with the latest recommendations for using new diabetes drugs.

Incidence and follow up of foot ulcers in type 2 diabetic patients in primary care. Multicentre study

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Aim(s) or purpose: To assess the incidence, evolution, prognosis and risk factors of foot ulcers in type 2 diabetic patients from different Primary Care centres in Catalonia.

Design and method: Design and setting: This is a Prospective Multicentre observational study performed in 44 Primary Health Care centres all around Catalonia.

Patients: Type 2 diabetic people > 18 years old, treated in primary care who either contacted the Primary Health Care Team because of a new Diabetic Foot Ulcer (DFU) or the DFU was detected by the team during the physical examination. The patients with a new Diabetes diagnosis originated from a DFU will also be included.

Variables: Age, gender, cardiovascular risk factors, Tobacco or alcohol consumption, type 2 diabetes' duration and evolution, macro and microvascular complications, foot ulcer (size, depth, location, precipitating factor, treatment and evolution).

Techniques: Regular diabetic foot physical examination: protective sensitivity 5.07 monofilament and 128 Hz tuning fork assessment, peripheral pulse palpation and ankle/brachial index, cardiovascular risk factors (Blood pressure and lipid determination).

Statistical analysis: General descriptive statistics including measures of central tendency and dispersion. Standard inferential statistics for the study of bivariate relationships. Estimation of incidence rates.

Results: Expected results: We expect to find a Type 2 diabetes ulcer's incidence between 1% and 4%. Most of these lesions will be resolved in Primary care without referral requirement.

Conclusions: Applicability: The study results will enable better knowledge and understanding of Diabetic foot and to build new roadmaps to improve diabetes foot prevention, early detection and referral.

Relevance: a prospective study with a voluntary participation of 44 primary care centres in Catalonia, will give useful information about precipitating factors, incidence and prognosis of the ulcers in the feet of type 2 diabetics to lower the incidence and to avoid further amputations.

Integrating diabetes evidence into practice: challenges and opportunities to bridge the gaps

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Aim(s) or purpose: To determine current practice in relation to diabetes prevention, treatment and management across Europe; to identify barriers to implementing diabetes evidence into practice across Europe; to identify ways in which implementation of diabetes evidence into practice can be improved.

Design and method: The report draws on data from: the published literature; a survey of International Diabetes Federation Europe (IDF Europe) member organisations across 38 countries; and social media. Evidence from the literature was summarised by conducting a focused narrative review of published review articles (i.e. 'review of reviews') to identify and map scientific evidence on non-adherence patterns in the implementation of diabetes-related evidence into practice. A survey of IDF Europe member organisations was conducted between June and August 2017. Member organisations comprise professional organisations (doctors, nurses and educators), patient organisations (people with diabetes and their relatives), and mixed organisations (both healthcare professionals and people with diabetes). With the technical support of IBM, we conducted an analysis of 28,970 sites/posts from a variety of social media sources addressing diabetes-related topics and themes.

Results: The report demonstrates that there are substantial European-wide challenges in the implementation of evidence-based practice for healthcare systems, healthcare professionals and persons living with diabetes.

Conclusions: To improve the present situation, interventions should be considered at three levels; health systems, healthcare professionals and people with diabetes, addressing: locally tailored solutions, effective resource management strategies, constant use of all stakeholders, appropriate prevention and education activities and making sure that people with diabetes are at the forefront of all these efforts.

Lifestyle interventions in primary health care for weight control in patients with type 2 diabetes: physical activity versus physical activity plus food education programmes – a RCT

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Aim(s) or purpose: To compare the effects of two different lifestyle intervention programmes (physical activity vs. physical activity plus food education) on weight control in middle-aged and older patients with type 2 diabetes (T2D).

Design and method: Forty-two individuals between 50 and 80 years old with T2D were recruited in primary health care institutions to participate in a randomised controlled trial (NCT02631902) for 9 months, in addition to usual care. Subjects were randomised into two groups: an exercise programme (EP; n = 19) and an exercise plus food education programme (EFE; n = 23). The EP consisted of three exercise sessions per week; 75 minutes per session, combining aerobic, resistance, agility/balance and flexibility exercise. Patients in the EFE group received the same exercise intervention plus food education activities (two sessions per week; 16 weeks). Each week, a different nutrition-related theme was addressed through a theoretical session (15 minutes) and dual-task exercise strategies integrated in an exercise session. Before and after the 9-month intervention weight (kg), body mass index (BMI, kg/m^2), fat mass (kg), body fat percentage (BF, %), and waist circumference (WC, cm) were assessed by standard body composition methods.

Results: Thirty-three participants completed the study (EP, n = 15; EFE, n = 18). A significant time*group interaction effect was identified (two-way ANOVA with repeated measures) for weight ($P = 0.028$; $\eta^2_p = 0.147$), BMI ($P = 0.026$; $\eta^2_p = 0.150$) and fat mass ($P = 0.039$; $\eta^2_p = 0.130$). No statistically significant effect was observed for BF ($P = 0.059$; $\eta^2_p = 0.110$) and WC ($P = 0.689$; $\eta^2_p = 0.005$) although clinical benefits of the reductions were observed.

Conclusions: Adding food education activities to physical activity programmes appears to induce significant benefits on weight control in middle-aged and older patients with T2D.

Nasal glucagon for the treatment of moderate-to-severe hypoglycaemic episodes in real-world settings in adults with type 1 diabetes

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Aim(s) or purpose: This study evaluated nasal glucagon (NG) for efficacy and ease-of-use in moderate or severe hypoglycaemic episodes (HEs) in real-world settings in adult patients (pts) with type 1 diabetes (T1D).

Design and method: Pts and caregivers (CGs) were taught to administer NG 3 mg for symptomatic HE and to assess for return to normal status over time. Pt/CG-reported HE symptoms, blood glucose (BG), adverse events (AEs), and ease-of-use were evaluated by means of questionnaire.

Results: In efficacy population (EP) 69 pts experienced 157 HEs (mean [SD], 2.3 [1.77] events/pt). In 96.2% of HEs, pts met the primary objective, return to normal status within 30 min. Recovery for 6 HEs did not occur within 30 min. In 5 of these 6 events, pts recovered within 30-45 min and in 4 events, BG was ≥70 mg/dL at 30 min. Mean BG at HE onset was 47.9 (range 21.6-73.9) mg/dL and rose to 112.8 (range: 43.0-266.7) mg/dL by 30 min and continued to rise with time. No emergency service calls were made. Twelve severe HEs in 7 pts were observed in EP. All severe HEs resolved and pts awoke or returned to normal status within 15 min. NG administration time was <30 seconds for most HEs (70.4%) and was <2 min in nearly all (97.7%) HEs. Safety population included 74 pts with 179 HEs in total. At least 1 AE was experienced by 87.8% of pts, the most common being nasal irritation (82.4%) and headache (54.1%). Most AEs during HEs lasted ≤1 hour (59.5%) and were of mild or moderate severity. There were no serious drug-related AEs, and CGs were satisfied or very satisfied with NG after most HEs (82.7%).

Conclusions: NG showed real-world effectiveness when administered to treat moderate or severe HE in pts with T1D. For most HEs (96.2%), pts recovered within 30 min with no emergency calls. The majority of CGs were satisfied with NG. NG is a potential alternative to currently available injectable recombinant glucagon.

Network meta-analysis of responses to DPP-4 and SGLT2 inhibitors: What next after metformin with a baseline HbA1c ≤8%?

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Aim(s) or purpose: Treatment decisions for optimised management of T2DM should be tailored to patient preferences, supported by evidence-based data and guidelines. We explored the relative benefits of DPP-4 inhibitor (DPP-4i) and SGLT2 inhibitor (SGLT2i) in patients with T2DM inadequately controlled with monotherapy at HbA1c level indicated for therapy escalation by most guidelines.

Design and method: Network meta-analyses based on a systematic literature review was performed to identify all studies reporting comparative efficacy of DPP-4i and SGLT2i in patients with T2DM, as a metformin or metformin and sulphonylurea (SU) add-on, exploring HbA1c reduction from baseline ≤8.0%. A base-case analysis of 12–26 weeks and sensitivity analysis of 12–52 weeks were performed using a fixed and random effects model. Mean difference in change from baseline (ΔHbA1c) between intervention and control groups was used as model inputs.

Results: Outcome data on patients with baseline HbA1c ≤8.0% were found in 19 phase III/IV RCTs, 13 of which reported data on patients receiving only metformin as background therapy. The only DPP-4i with information reviewed was vildagliptin. For background metformin monotherapy network, fixed effect model indicated vildagliptin 100 mg/day and SGLT2i were more effective than placebo and (additional) metformin. For background metformin and SU network, fixed effect model indicated vildagliptin 100 mg is more effective than placebo (ΔHbA1c=−0.90; 95% CI −1.25, −0.55), dapagliflozin 10 mg (ΔHbA1c=−0.54; −0.96, −0.12), canagliflozin 100 mg (ΔHbA1c=−0.45; −0.88, −0.03) and comparable to canagliflozin 300 mg (ΔHbA1c=−0.26; −0.69, 0.16). There were no reports using empagliflozin 10 or 25 mg), nor reports of weight change.

Conclusions: In patients with HbA1c ≤8.0%, SGLT2i may be less effective for glucose lowering than DPP-4i. For delivery of individualised care, decisions must, therefore, be made balancing the optimisation of glucose control versus potential benefits of SGLT2i in patients with pre-existing cardiovascular disease.

Obesity and diabetes type 2-related complications

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Aim(s) or purpose: To explore the impact of obesity and overweight on complications among type 2 diabetics.

Design and method: A total of 111 (39 males and 72 females) type 2 Saudi diabetics attending Diabetics Clinics, were included in this study. Data collected included patient demographic characteristics, blood pressure, waist and hip circumference as well as microvascular and macrovascular complications of diabetes. Obesity was defined as a waist-to-hip ratio above the acceptable range (i.e., <0.8 among females and <0.9 among females).

Results: Mean age of participants (SD) was 55.4 (12.6) years. According to the waist-to-hip ratio, 98 patients (98.2%) were obese. Two-thirds of patients were hypertensive (66.7%), 21.6% had retinopathy, 17.1% had nephropathy, 14.4% had neuropathy, 17.1% had diabetic foot, while 19.8% had coronary artery disease. Prevalence rates for all complications among type 2 diabetics were higher among obese than non-obese patients, with statistically significant differences regarding hypertension (P=0.004), retinopathy (P=0.030) diabetic foot (P=0.017); nephropathy (P=0.015) and coronary artery disease (P=0.045).

Conclusions: Prevalence of obesity is high among type 2 Saudi diabetics. Diabetes-related complications are more common among obese diabetics. Weight reduction is an important step toward prevention of diabetes-related microvascular and macrovascular complications.

Poor Glycaemic control: identifying variables associated with therapeutic inertia and lack of therapeutic adherence

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Aim(s) or purpose: To analyse variables associated with therapeutic inertia or lack of adherence in diabetic patients with poor glycaemic control in Spanish primary care.

Design and method: Observational cross sectional nationwide study. A total of 48 primary care physicians (PCP) belonging to the Diabetes Working Group of the Spanish Society of Family and Community Medicine (semFYC) took part. A total of 408 patients were randomly selected from each surgery. Individualised glycaemic targets were calculated according to the algorithm from Cahn A et al (Diabetes Care 2016). Therapeutic inertia (TI) was defined as a patient with good adherence, according to primary care physicians (PCP) opinion, but with poor individualised glycaemic control (GC).

Results: 60.5% and 39.5% of patients had good and poor GC (group A), respectively; 22.1% due to TI (group B) and 17.4% due to poor therapeutic adherence (PTA) (Group C). The three groups of patients are different among them according to the following variables, respectively: age (69.5 vs. 70.5 vs. 63.8 years; P=0.000); HbA1c (6.27 vs. 7.75 vs. 8.46 %; P=0.000); number of antidiabetic drugs (1.3 vs. 2.0 vs. 2,1; P=0.000); prevalence of osteoarthritis (50.5 vs. 44.4 vs. 29.7%; P=0.013); risk of hypoglycaemia (66.7 vs. 64.3 vs. 37.5%; P=0.000); physician time (years) in the practice (12.5 vs. 15.3 vs. 11.5 years; P=0.000). No differences were found in the number of comorbidities, patient gender, cognitive impairment, micro or macro vascular complications, cancer, thyroid dysfunction, dyslipidaemia, arterial hypertension, COPD, anxiety or depression, PCP age or number of patients on the PCP list.

Conclusions: 39.5% of diabetic patients have poor glycaemic control according to individualised targets; 22.1% due to therapeutic inertia and 17.4% due to poor therapeutic adherence. Patients with TI compared to patients with PTA were older, with lower A1c, higher risk of hypos, higher prevalence of osteoarthritis and with a PCP with more years in the practice.

Poor glycaemic control in Spain and associated factors. OBINDIAB-semFYC study

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Aim(s) or purpose: According to previous studies, there is a need to improve glycaemic control in diabetic patients in Spain. Otherwise, factors associated with poor glycaemic control, differ between studies.

Aim: To analyse the level of control in diabetic patients in Spain and to identify factors associated with poor control. Logistic regression for statistical analysis was applied.

Design and method: Observational cross sectional nationwide study. A total of 48 primary care physicians (PCP) belonging to the Diabetes working Group from the Spanish Society of Family and Community Medicine (semFyC) took part. A total of 408 patients were randomly selected from each surgery. HbA1c <7% was defined as a correct glycaemic control target. Several variables were analysed, both from the patient side (age, sex, therapeutic adherence, comorbidities, diabetic treatment, diabetes duration, HbA1c, complications, life expectancy) and from the PCP (age, sex, number of patients on the list, years in the same surgery).

Results: Patient´s age 68.9 ± 11.3 years, number of males 52.1%. A total of 43.7% of patients had poor glycaemic

control. After multivariate analysis, the factors associated with poor glycaemic control were diabetes duration (OR 1.8 IC95% 1.1-3.1; *P*=0.01); number of drugs for diabetes treatment (OR 2.6 95%CI 1.9-3.6; *P*=0.00) and poor therapeutic adherence (OR 2.6 IC95% 1.7-4.1; *P*=0.00).

Conclusions: Poor therapeutic adherence appears to be the most important modifiable factor to improve glycaemic control in diabetic patients in Spain after adjusting for several variables.

Predictors of poor health-related quality of life in patients with type 2 diabetes in Jordan

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Aim(s) or purpose: To evaluate health-related quality of life and to explore factors associated with poor health-related quality of life in patients with type 2 diabetes in Jordan.

Design and method: A cross-sectional study was conducted whereby patients were randomly selected from three outpatient clinics in Jordan. Patients were included in the study if they were aged 18 years or older, diagnosed with type 2 diabetes for at least 6 months and taking at least one diabetic medication. Patients were excluded if they had cognitive impairment, if they suffered from chronic disease that did not clearly relate to diabetes or if they were not willing to participate in the study. The EQ-5D questionnaire was used to assess health-related quality of life in addition to sociodemographic and medical data collected from patient interviews and medical records. Stepwise linear regression was performed to build a model with predictors of HRQoL.

Results: The mean score of the total EQ-5D index was 0.724 with subscale scores which ranged from -0.594 to 1.0. Most patients reported "some problems" through the 5 dimensions, with the highest percentage (40%) related to the mobility domain, followed by usual activities (32.8%), pain/discomfort (32.1%), depression/anxiety (26.9%) and lastly, self-care domain (14.2%). Multiple regression identified female gender (β = -0.252; $P < 0.01$), number of medications (β = -0.423; $P < 0.01$), duration of diabetes (β = -0.344; $P < 0.01$) and insulin therapy (β = -0.205; $P < 0.05$) were statistically significantly associated with poor HRQoL.

Conclusions: The current study reveals that the quality of life for patients with type 2 diabetes in Jordan needs improvement. Future diabetes management programmes should focus on improving HRQoL with specific attention to be given to female patients, those who have long duration of diabetes, patients receiving insulin therapy or multiple medications.

Prevalence of comorbidities in diabetic patients in Spain. OBINDIAB-Semfyc study

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Aim(s) or purpose: Diabetes mellitus as a chronic condition is usually associated with other chronic conditions, but there is a lack of information of how these comorbidities are associated in diabetic patients and few guidelines include comorbidities management in diabetes.

Aim: To analyse the prevalence of different comorbidities in patients with type 2 Diabetes in Spanish primary care.

Design and method: Observational cross sectional nationwide study. A total of 48 primary care physicians (PCP) from the Spanish Society of Family and Community Medicine (semFYC) Diabetes Working Group took part. A total of 408 patients were randomly selected from each surgery.

Results: Age 68.9 $\pm$ 11.3 years; proportion of men 52.1%. Number of comorbidities 3.6$\pm$3.1; range (0-14); 46.3% of patients have 4 or more. Only 24% of patients have no comorbidities. The prevalence of comorbidities were: dyslipidaemia (71.5%), arterial hypertension (69.7%), osteoarthritis (45.2%), anxiety (28.5%), dyspepsia (22.8%), depression (18.4%), albuminuria (14.4%), thyroid dysfunction (14.2%), COPD (12.7%), ischaemic heart disease (11.7%), cognitive impairment (11.4%), liver disease (10.4%), ictus (8.7%), neuropathy (8.2%), cancer (8%), retinopathy (7.7%), atrial fibrillation (7.4%), peripheral arterial disease (7.4%) and heart failure (6.9%).

Conclusions: Three out of four diabetic patients have comorbidities and almost half of patients have 4 or more. Cardiovascular risk factors, osteoarthritis, digestive and mental health are the most common. There is a need for guidelines including comorbidities management for diabetic patients.

Prevalence of severe mental disorders in diabetic patients in urban areas of The Netherlands and Barcelona

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Aim(s) or purpose: Psychiatric comorbidity in diabetic patients is associated with lower quality of life and difficulties with self-care. Several studies involving the relationship between diabetes, depression and anxiety have been performed. It is not the case for studies involving schizophrenia and bipolar disorders. To compare the prevalence of severe mental disorders (SMD) between diabetic and non-diabetic patients incoming from two groups attended by health care teams in urban areas in The Netherlands and Barcelona.

Design and method: A cross-sectional study using data from computerised medical records was designed. The study population came from Barcelona's 52 primary care centres and from practices of 84 Dutch urban areas during 2014. Two study groups (diabetics/non-diabetics) and a subgroup of SMD (schizophrenia, bipolar disorders) were created. Two control cases per diabetes case were included and matched by sex, age groups and the assigned health centre. SMD's prevalence was calculated with 95% confidence intervals, separated by sex. A logistic regression model was used to calculate the odds ratio (95%), adjusted by age.

Results: Schizophrenia prevalence is higher in diabetic male patients in both territories. We observed greater statistical power in the Dutch findings (OR:2.18; CI:1.67-2.87) than in Barcelona (OR:1.21; CI:1.04-1.41). The prevalence of SMD in diabetic women was higher, but territorial differences were less: Dutch (OR:2.03; CI:1.50–2.78) and Barcelona (OR:1.78; CI:1.49-2.13). Greater prevalence in both was founded in diabetic patients between 15 and 44 years of age. Regarding bipolar disorder, in both locations we observed a higher prevalence in diabetic patients, but statistical significance was only detected in women; Dutch population (OR:1.68; CI:1.46–1.93) and Barcelona (OR:1.47; CI:1.23-1.77). There was a slight difference in men between the prevalence of bipolar disorder in diabetics than non-diabetics. Statistical significance was not detected in the latter, in both countries.

Conclusions: Prevalence of schizophrenia and bipolar disorder is higher in diabetic patients than non-diabetics in urban areas of Netherlands and Barcelona.

Reduction in cardiovascular death with empagliflozin is consistent across categories of baseline HbA1c and change in HbA1c: Results from EMPA-REG OUTCOME

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Aim(s) or purpose: In the EMPA-REG OUTCOME trial, empagliflozin administered in addition to standard of care significantly reduced cardiovascular (CV) death vs. placebo (HR 0.62; 95% CI 0.49, 0.77) in patients with type 2 diabetes (T2DM) and established CV disease. We investigated whether baseline HbA1c or change in HbA1c altered the effect of empagliflozin on CV death.

Design and method: Patients were randomised to empagliflozin 10 mg, empagliflozin 25 mg or placebo. Background glucose-lowering therapy was to remain unchanged for 12 weeks, then adjusted to achieve glycaemic control according to local guidelines. CV death was analysed in the pooled empagliflozin group vs. placebo by categories of (1) baseline HbA1c (<7.0%; 7.0 to <8.0%; 8.0 to <9.0%; ≥9.0%) and (2) change in HbA1c from baseline to the last value in the trial (reduction of ≥0.3%; reduction of <0.3%). Differences in risk between treatment groups were assessed using a Cox proportional hazards model.

Results: A total of 7020 patients were treated. Median observation time was 3.1 years. In patients with baseline HbA1c <7%, 7.0 to <8.0%, 8.0 to <9.0% and ≥9.0%, HRs for CV death were 0.30 (95% CI 0.12, 0.80), 0.59 (0.42, 0.83), 0.67 (0.45, 0.99) and 0.76 (0.44, 1.31), respectively (P=0.4104 for treatment by subgroup interaction). In patients with a reduction in HbA1c from baseline of ≥0.3% and <0.3%, HRs for CV death were 0.58 (95% CI 0.42, 0.79) and 0.65 (0.47, 0.90) respectively (P=0.5996 for interaction).

Conclusions: In patients with T2DM and established CV disease, the reduction in the risk of CV death with empagliflozin vs. placebo was not affected by baseline HbA1c or the change in HbA1c from baseline to the last value in the trial.

Role of depression and/or anxiety on the presentation of cardiovascular events in a large cohort with metabolic syndrome

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Aim(s) or purpose: Metabolic syndrome (MetS) is a common condition in all developed countries. The effect of anxiety and/or depression as manifestations of stress on the adrenal axis, gluconeogenesis, cardiovascular disease or glucose tolerance has been widely demonstrated. However, the association of stress with poor prognosis is still unclear.

Aims and purposes: To determine the role of anxiety and depression on the incidence of cardiovascular events (CVE) in a Catalonian population with MetS over five-year follow-up according to the number/type of MetS criteria.

Design and method: Prospective study to determine the incidence of CVE according to the presence of anxiety and/or depression disorders among individuals with different combinations of clinical traits of MetS. *Setting*: Primary Care, Catalonia (Spain). *Subjects*: 35-75 years old fulfilling MetS criteria without CVE at the initiation of follow-up (2009), registered in SIDIAP database (big data). We studied 16 MetS phenotypes [NCEP-ATPIII criteria] based on the presence of depression/anxiety. Primary endpoint was the incidence of CVE at five years.

Results: We analysed 401,743 people with MetS (17.2% of the population); 8.7% had depression, 16.0% anxiety and 3.8% both. A total of 14.5% and 20.8% consumed antidepressants and tranquilizers, respectively. At 5-year follow-up, the incidence of CVE was 5.5%, being 6.4% in men and 4.4% in women. On comparing individuals with and without depression the incidence of CVE was 6.7% vs. 5.3%, respectively ($P<0.01$), being 5.5% in both groups in relation to anxiety.

Conclusions: Depression and anxiety may play a role in poor prognosis of patients with MetS. Unlike other European cohorts, the two predominant MetS phenotypes in Catalonia do not include waist circumference as a criterion.

Study design and methods of the CVD-REAL study – a multinational study in patients with type 2 diabetes who are new users of an SGLT-2 inhibitor or other glucose-lowering drug

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Aim(s) or purpose: The aim of this work will be to report the CVD-REAL study design and methods with an emphasis on the challenges of analysing data from multiple countries and data sources in a standardised manner. The study was performed in two-phases with an initial descriptive phase including assessment of comparability and statistical power, followed by a comparative phase addressing heart failure and all cause death. In general, the study used a new-user design with a non-parsimonious propensity score matching in the comparative phase. Examples of topics include types of real-world evidence (RWE), definitions of study groups (inclusion and exclusion criteria), selection of study participants, assessment of comparability of study groups, propensity score derivation and matching, specifications on treatment follow-up times and events, and finally, inter-group comparisons and meta-analyses.

Design and method: CVD-REAL is a multinational, real-world, comparative effectiveness study on cardiovascular outcomes including MACE, CV death, ACM, heart failure and CKD in patients with type 2 diabetes who are new users of SGLT-2 inhibitors versus other glucose-lowering drugs. In total, more than 1.3 million patients were included and results from the primary and secondary analyses, including by subregion, were recently presented at international congresses and published as manuscripts. Questions raised about the CVD-REAL methodology, and the reliability and generalisability of results have highlighted the need for a more detailed description of how the data were extracted and analysed.

Results: NA

Conclusions: The study is an example of how real-world, comparative effectiveness data can effectively complement information from cardiovascular outcome trials (CVOT) in the understanding of the benefits associated with treatment with different glucose-lowering drugs.

The baseline characteristics of drug naïve patients with HbA1c

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Aim(s) or purpose: Vildagliptin Efficacy in combination with metfoRmIn For earlY treatment of T2DM (VERIFY) is a 5-year ongoing trial exploring whether an initial combination OAD therapy of metformin+vildagliptin would provide more durable glycaemic control than standard-of-care metformin monotherapy followed by addition of vildagliptin when metformin monotherapy fails; HbA1c ≥7%.

Design and method: VERIFY is a multi-national, multi-ethnic randomised, double blind, two-arm, parallel group study conducted in drug-naïve patients with T2DM (≤24 months), and HbA1c 6.5%–7.5%. In a subset of patients standardised and locally adapted meal tests are performed to assess plasma glucose (PG), insulin secretion rate relative to glucose levels over 2 hours (ISR/G_{0-2h}) and oral glucose insulin sensitivity index (OGIS).

Results: Of the 4524 patients screened, 1416 were excluded due to screening HbA1c <6.5%, 702 due to HbA1c >7.5% and 66 were run-in failures (≥ 1000 mg/day metformin dose not tolerated). Overall, 2001 patients (47% men, 52.4% from Europe) were included. Patient population had mean T2DM duration 6.5±7.7 months, mean age 54.3±9.4 years, >25% were <50 years; age was ~5 years lower in India vs. other regions. Population was obese (BMI 31.1±4.7 kg/m^2, weight 85.5±17.5 kg); mean weight and BMI were lower in Asians. History of smoking was higher in the European region (18%) vs. others (14%). Mean HbA1c levels (6.9±0.3%) were uniform across regions, FPG levels (7.5±1.5 mmol/L) were higher in Europeans (~7.9 mmol/L) vs. other regions (7.1 mmol/L). Patients were normotensive, had normal renal function (87.4±18.5 mL/min/1.73m^2). Only ~8% patients reported microvascular complications. Meal test data (n=462) revealed 2-hour PG 9.3±2.8 mmol/L, ISR/G 27.8±12.3 pmol/min/m^2/mmol/L and OGIS 353±57 ml/min/m^2.

Conclusions: VERIFY study population represents real-world newly diagnosed, ethnically diverse patients with T2DM, evenly distributed by gender, age and display a classic profile of inadequate insulin secretion in the face of insulin resistance.

The difference in health care patterns between male and female in elderly with diabetes mellitus

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Aim(s) or purpose: The recently elderly are more active in managing health than before. Efforts made to control diabetes is now more strengthened. There is a difference in managing diabetes between males and females. The purpose of the study was to investigate the differences in diabetic management methods between males and females.

Design and method: This study was conducted using the 6th Korea National Health and Nutrition Examination Survey 2014. The study investigated the different management pattern of diabetes, health promotion activities, general health status between elderly males and females. Statistical data were analysed using t-test and Chi square tests with the SPSS complex samples method.

Results: The total number of subjects was 245 (male 123, female 122). Mean age was 71.7 years for males, 73.9 for females. The rate of metabolic syndrome was difference between male (39.8%) and female (60.1%) (P<0.05). The rate of insulin treatment was different between males (10.2%) and females (4.2%) (P<0.05). Health promotion activities about smoking and alcohol drink were difference. The smoking rate is 28.8% for males and 3.1% for females (P<0.01). Rate of drinking once a month was 49.7% and 17.9% for males and females, respectively (P<0.01). There is no statistically significant difference between males and females in terms of rate of periodical health examination, exercise more than 4 times a week and influenza vaccination. The percentage of males who think they are healthy was 25.5%, compared to 10.7% for females.

Conclusions: Health management patterns about drinking, smoking, health check-up, were different between elderly males and females with diabetes. When managing diabetic elderly patients, sex differences should be considered.

The effectiveness of prevention of type 2 diabetes complications after new clinical protocol implementation in primary care in Ukraine

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Aim(s) or purpose: According to the new national unified clinical protocol approved in Ukraine in 2012 (revised in 2015) healthcare for diabetes patients was transferred to the practice of general practitioners for the first time. The aim of our study is to determine the effectiveness of prevention of complications of type 2 diabetes after implementation of a new clinical protocol for 5 years.

Design and method: The reports from healthcare establishments in the Kiev region of Ukraine for 2012-2017 were analysed. Statistical analysis was performed with Excel 2007, SPSS, Statistica 6.0.

Results: The results of data analysed revealed that the incidence of certain types of complications show a tendency towards stabilisation. For instance, diabetic kidney damage. However, the reliable decrease was based on the incidence of diabetic angiopathy ($P<0.01$), diabetic neuropathy and diabetic gangrene ($P<0.01$), as well as a decrease in the number of amputations by 10.2%, that indicates a positive effect of implementation of the protocol. Despite the preventive measures and treatment, average blood glucose level, HbA1c levels and lipidogram indices did not attain the target levels in patients with type 2 diabetes that require stronger control and can be caused by insufficient compliance of patients. Moderate (44.51%) or high (26.01%) risk of developing diabetic foot syndrome was detected in 70.52% of patients.

Conclusions: The frequency of diabetic complications and the number of amputations have decreased, which indicates the positive role of general practitioners. However, clinical control of type 2 diabetes in patients remains insufficient and must be optimised.

The efficacy of therapeutic education in patients with diabetes in general practice

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Aim(s) or purpose: Therapeutic patient education is one of the components of good quality of diabetes care in general practice. It focuses on combination of patient teaching with pharmacological treatment that improves outcomes. The aim was to compare the effectiveness of methods of patient education in diabetes.

Design and method: We compared 2 methods of self-control teaching of patients with type 2 diabetes: traditional method with structured programme among 536 patients (age 50±2.8 years), and a new interactive method with 4 game-maps, developed by European IDF (2008) among 255 patients (age 52±3.1 years). The effectiveness of methods was assessed by survey and medical indexes. Statistical analysis was performed using Excel 2007.

Results: The experience of teaching using traditional methods showed that passive perception of knowledge makes leads to average efficiency of patient compliance with recommendations Survival of knowledge was rather low – 10%-15 % and medical indices had no significant changes. The use of interactive game cards by the "ping-pong" system under supervisor management enabled involving all patients in the learning process, sharing their experience of self-control of diabetes. The survey also showed that patients were more interested and motivated to participate in diabetes self-control, which resulted in better understanding treatment goals and level of knowledge. It was followed by further improving their medical indices (significant reduction in levels of glucose, glycated haemoglobin, lipids and blood pressure), improving control of the lower limbs, kidney and eyes.

Conclusions: Therapeutic diabetes education with interactive game cards developed by the European IDF (2008) is more effective compared to the traditional method proven by better level of knowledge, compliance and medical indices of patients.

The impact of obesity on the risk of developing type 2 diabetes and the relationship of diet and gut microbiota in a prediabetic and elderly population

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Aim(s) or purpose: To investigate the role of obesity in the risk of developing type 2 diabetes (T2D) in the elderly population, its link with current dietary habits and the modification and implication of gut microbiota.

Design and method: Cross-sectional study where 183 prediabetic and old age participants were recruited from Primary Care Centres. Clinical histories, anthropometric data, body composition and biochemical measurements, physical activity and dietary records and stool samples were obtained.

Results: Subjects were divided into two groups according to whether they were obese (OB) or not (NOB); 45.6% of them presented BMI ≥30 kg/m^2. The OB group showed a higher percentage of people at risk of developing T2D (P <0.001) according to FINDRISK. Moreover, biochemical measures in OB were associated with significantly higher glucose, HbA1c and insulin, HOMA-IR and HOMA-β. OB were also more sedentary (P =0.01) and the difference between energy spent and energy intake was higher (P =0.01). Nutrient intake for OB was different with increased consumption of cholesterol and decreased consumption of polyunsaturated fatty acids, specifically omega-3 (P <0.05). Two different dietary patterns were observed in each group. For this microbiota were studied between each of both groups. The OB group showed 3 times less *Prevotella* (P =0.04). Differences in *Prevotella, Faecalibacterium prausnitzii* and lactic acid bacteria were observed which are related to the nutrient consumption of both groups' dietary pattern (P ≤0.05).

Conclusions: Obesity is a strong risk factor to develop T2D even in the elderly. Moreover, this study reveals that older people with obesity continue to show worse dietary habits and that these in turn play a more important role in the composition of the microbiota than the inflammatory state due to obesity itself. At the same time, these microbiota differences entail more risk of developing T2D according to studies previously reported. Therefore, a more personalised nutritional education that considers the metabolic situation of everyone would be a good way to avoid clinical course to T2D.

The impact on health professionals of the redGDPS network blog at the time of reaching 1,000,000 queries

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Aim(s) or purpose: The GDPS network is made up of primary care doctors in Spain who treat patients with type 2 diabetes and belong to a network (redGDPS) to improve the care received by this type of person.

The blog publishes comments related to the current diabetes situation. This ranges from medical articles, clinical practice guides to medical warnings. Our aim was to evaluate the blog activity of the GDPS network.

Design and method: To explore the activity produced by the blog of the GDPS network from the outset until August of 2017 and the changes that occurred last year. For this the Blogger statistical engine was used.

Results: Since publication of the initial comment (post) on 01-24-2009 (8 years ago), 800 posts have been published up until 30 December 2017. More than this amount of medical articles have been commented (100 each year) with a frequency of at least two per week except in the summer (July and August). In 2017, a total of 94 posts were published. Up until August (14-08-2017) there were over 1,000,000 entries, ranging from 7000 to 20,000 entries per month. Of the 1,079,792 entries at the end of this year (30/12/2017), 362,327 (33.5%) came from Spain, 299,849 (27.7%) from the US, 78,168 (7.2%) from Russia, 65,685 (6%) from Mexico, 32,042 (2.9%) from Colombia, 23,345 (2.1%) from Germany, 19,545 (1.8%) from Argentina and 15,873 (1.4%) from Peru.

The most commonly consulted topics are those related to clinical practice guidelines, ADA Standards of Medical Care and the most recently published clinical trials.

Conclusions: Results in the audience of the GDPS network blog since its inception 8 years ago demonstrate its impact on the health professionals that serve patients with diabetes. It could be considered the most important health care blog for DM care in Spanish.

The improved understanding of carbohydrates in black and asian minority ethnic communities with type 2 diabetes in a UK clinic

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Aim(s) or purpose: This pilot study aimed to demonstrate an improved understanding of carbohydrates in newly diagnosed BAME people with Type 2 Diabetes, with the use of a picture based on culturally relevant dietary booklet to provide dietary advice.

Design and method: Recently diagnosed Asian or Black Adult Patients with Type 2 Diabetes attending an intermediary, integrated care Clinic in North West London between February and March 2017, were invited to participate in the pilot study. A questionnaire was administered to examine the knowledge and understanding of carbohydrates in these two ethnic groups. The responses to the questionnaire before and after education with a novel dietary resource were compared and analysed to further understanding of the current situation in BAME communities. Three culturally specific dietary booklets designed and based on Gujarati, Caribbean and Pakistani foods, formed the basis of the dietary education and intervention. The booklet uses tablespoons of sugar alongside a picture of food or a meal to represent the carbohydrate content. Separate investigators were used to provide education or administer the questionnaires. Data were analysed using IBS SPSS statistics version 24. We used McNemar statistical test to test for differences in responses pre- and post-intervention.

Results: A total of 80.6% of people had not received culturally relevant dietary advice prior to the intervention. Following the intervention, 93.5% of participants (51.6% beforehand) were able to correctly identify that carbohydrates, rather than fats or protein, had the most impact on their blood glucose, and participants were able to better recognise carbohydrates in the food they commonly eat.

Conclusions: This pilot study demonstrates that using a culturally focussed, pictorial booklet to provide dietary education to BAME communities with Type 2 Diabetes, can significantly improve the knowledge of these communities with regard to carbohydrates in the food they commonly eat. This improved knowledge could empower communities to make informed food choices, aimed at improved self-management.

The physicians' choice: single pill or fixed dose combination?

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Aim(s) or purpose: Real-life glycaemic outcomes or determinants for clinical decision-making between fixed-dose combinations (FDC) and single pill combination (SPC) regimens are seldom reported. We explored the effectiveness of FDC vs. SPC regimens in T2DM patients treated with metformin and vildagliptin (M+V), and clinical determinants for choice of regimen, based on data from an observational EDGE study, in which intensification of failing monotherapy with either an SPC or FDC regimen occurred based on clinical judgement.

Design and method: Descriptive demographics, including existence of vascular complications, for determinants of choice were assessed; HbA1c change (ANCOVA), a Wald-type categorical logistic regression analysis adjusted for baseline characteristics were used for assessment of treatment success (HbA1c <7.0% without hypoglycaemia or weight gain >3% at 1 year).

Results: Among 28,442 M+V treated patients, FDC was more commonly used in Europe (73%) and Latin America (62%). There was no statistically significant difference in baseline characteristics between the groups. However, mean age was 3 years higher among those on FDC vs. SPC, driven by higher overall mean age in the European population receiving mostly FDC. Neither within-region nor HbA1c change at 1 year were significantly different between FDC and SPC (LS mean change –1.3% from baseline of 8.0% vs. 8.3%, respectively, inter-group difference P=0.804). In a regional analysis, FDC treatment increased the likelihood of treatment success vs. SPC in the Middle East (OR 1.43; 95% CI 1.17, 1.74), Latin America (1.59; 1.35, 1.86), and Europe (1.2; 1.11, 1.29) but not in East Asia or India (0.83; 0.58, 1.18 and 1.12; 0.99, 1.25, respectively).

Conclusions: Physician preference for an SPC vs. FDC regimen appears mostly dependent on local or personal practice rather than driven by patient characteristics or disease severity. Nevertheless, comparable real-life glycaemic effectiveness of the two regimens was confirmed, with a marginally better treatment success rate with FDC.

The relationship between oral anti diabetic drugs with HbA1c, obesity and complications in type 2 diabetic patients

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[1]Health Sciences University Okmeydanı Training and Research Hospital, Family Medicine Department, Istanbul (Turkey); [2]Trakya University Public Health Department, Edirne (Turkey)

Aim(s) or purpose: To investigate the relationship of oral anti diabetic treatments used by patients with type 2 DM to glycaemic control, BMI and complication rates and to investigate their effects on these parameters.

Design and method: A total of 270 patients who applied to the Family Medicine Clinics of Health Sciences University Okmeydanı Training and Research Hospital who used OAD medication alone or in combination for the last 6 months from patients diagnosed with type 2 diabetes aged 18 years old or older and with mental well-being and volunteers were studied. Patients using insulin with type 2 diabetes, patients with only impaired fasting glucose and/or impaired glucose tolerance were not included in the study. Relationships between OAD usage, HBA1c, BMI, complications and age of diabetes were evaluated.

Results: 46.7% of the participants were male, 53.3% were female and average age of the group was 53.9 (± 0.7). In the study group of 270 subjects, 82 participants (30.4%) were found to have regular blood sugar and 188 participants (69.6%) were not regulated. The lower the age of participants, the lower the age of diagnosis of diabetes, the better the level of diabetes regulation as BMI and waist circumference ratios approach normal levels. Microvascular complications were detected in one of three individuals in the regulated blood glucose group; this rate was higher in the unregulated group. Further macrovascular complications were observed in the non-regulated group. Regarding drug use, it was observed that those who had regulated blood sugar mainly used single and/or dual drugs, whilst those who had unregulated blood sugar used more than twice the number of drugs.

Conclusions: Despite the large number of OAD treatment options, a significant number of diabetic patients are found to have insufficient blood glucose regulation, resulting in increased complications and reduced quality of life.

Twitter as a tool for the dissemination of scientific messages on diabetes. Experience of the redGDPS Foundation in 2017

Vidal A[1], Carramiñana F[1], Mora G[1], Benito B[1], Artola S[1], RedGPDS Group[1]
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Aim(s) or purpose: Twitter is an essential social network in any digital communication strategy. Its main feature is its succinctness, and it enables a tweet's impact to be easily measured. We conducted a study of the data metrics of the redGDPS Foundation's official account in 2017 to obtain a snapshot of use in quantitative terms as well as information on the topic of greatest impact.

Design and method: Descriptive study of the metrics data provided by Twitter Statistics for the account @redGDPS during 2017.

Results: redGDPS began 2017 with 3050 followers and ended the year with 4733 (1683 new users: an increase of 55%). From 1 January to 31 December, the account published 1791 tweets (an average of 149 a month). A total of 1,681,700 impressions were obtained throughout the year (an average of 140,142 a month). A total of 1717 mentions of @redGDPS were made, with 12,631 retweets and 12,709 likes. The year's most important tweet was **#Findrisc** score which is important to recognise the risk of suffering **#diabetes** at the age of 10, to be able to work on **#cardiovascular** risk factors pic.twitter.com/7LwKp2nf4V *(11,700 impressions in January 2017, 65,205 to 23 January 2018)*.

Conclusions: The impact of articles of this type shows that this is an important knowledge communication channel called for by healthcare professionals. Twitter also enables redGDPS to build loyalty among its followers, providing them with reference tools for use in their clinical practice. Evidence shows that Twitter is a key tool in redGDPS's communication with its audience, which, as reflected by the metrics, is growing exponentially thanks to the value of its publications. Hence, redGDPS will continue to focus on this social network (among others) to train and foster loyalty among healthcare professionals, and as a result, improve diabetes patients' quality of life as much as possible.

Type 2 Diabetes nonmydriatic fundus photography programme: Population-based approach in 2 urban primary health care centres

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[1]Sant Marti de Provençals Health Centre, Barcelona (Spain); [2]Ophthalmology. Parc de Salut Mar, Barcelona (Spain); [3]Catalan Health Institute, Barcelona (Spain)

Aim(s) or purpose: Eye assessment is part of chronic complication screening in diabetes follow up. Primary Care is responsible for referring and reading type 2 diabetic patients (T2DM) nonmydriatic fundus photography. In 2012, our centre decided to switch from opportunistic (visited patients) to a population-based approach (all T2DM registered patients). The aim was to assess a population based on a nonmydriatic fundus photography programme in 2 urban areas.

Design and method: Cross-sectional study of all T2DM registered in our centres from 1 Jan 2016 to 31 Dec 2017. Exclusion criteria: T2DM 1) with diabetic retinopathy followed at the eye clinic 2) visited in a private sector 3) with limited mobility and low life expectancy. Variables: age, gender, diabetes duration, degree of retinopathy, cardiovascular disease (IHD, PAD, TIA and stroke), monofilament assessment. Laboratory tests: HbA1c, eGFR. Statistics: quantitative and qualitative data were analysed with student *t* and Chi^2 tests respectively.

Results: Total T2DM=3403. A total of 178 (5.2%) were excluded (EC1); 3225 were invited to take part in this programme (n=2764). A total of 85.7% were screened during the study period and 461 (14.3%) did not reply to the invitation. We observed 2084 (75.4%) with normal report and 680 (24.6%) with DR.

	No retinopathy (n=2084)	Retinopathy (n=680)	*P* value
Age (years)	71.1	72.6	0.002
Gender (m)%	54.4	56.2	0.4
Diabetes duration (years)	9.35	13.56	<0.001
CVD			
Stroke/TIA	2.6	4.6	0.01
CHD	10.5	15.4	<0.001
PAD	8.4	14.4	<0.001
CKD	11.7	20.6	<0.001
Monofilament altered (%)	14.3	18.2	0.02
A1c value (CI)	6.41(6.36-6.46)	7.0(6.89-7.1)	<0.001
eGFR (mg/min)	76.58	72.88	<0.001

% of DR degree observed (n=680): normal (27%), mild nonproliferative DR(npDR) (29%), Moderate npDR (38.4%), severe npDR (3.1), proliferative DR (0.1), macular oedema (0.3). Unreported 14 (2%).

Conclusions: The population-based screening programme reveals better coverage of this eye assessment in T2DM patients. Those patients with DR were older with longer diabetes duration, higher prevalence of chronic complications and worse metabolic control.

Industry-sponsored Satellite Symposia

ROCHE DIAGNOSTICS - PRECONFERENCE WORKSHOP

Integrated personalised diabetes management: jointly rethinking current routines in daily clinical practice

Date Thursday, 12 April • **Time** 17.00-19.00 h • **Room** MR 07 + 08

Speaker

Prof. Dr. Bernhard Kulzer. *Head of Psychosocial Department, Diabetes Clinic. Mergentheim, Germany.*

Summary

How can the potential of personalised diabetes management and digital tools be mobilised to serve patients, health care professionals and the care process and facilitate improved outcomes? How can we address clinical inertia - the failure to attain individualised therapeutic goals in a timely manner -for people with type 2 diabetes? We believe we have found a clue to these issues in the results of our PDM-ProValue study programme, which investigated the potential benefit of integrated personalised diabetes management (iPDM) for the treatment of patients with insulin-treated type 2 diabetes.

iPDM is an interventional approach consisting of a structured, 6-step process which integrates digital tools and, by its set up, intends to bring together physicians and patients for collaborative, therapeutic decision-making. Basically, the process enables agreeing upon personalised diagnostics and treatment schemes which are closely documented, assessed and monitored in an iterative way.

In this co-creation session we want to mutually explore new approaches that could leverage personalised diabetes management in daily clinical routines.

Agenda

17.00-17.30 h LECTURE (speaker: Prof. Dr. Bernhard Kulzer)
17.30-19.00 h CO-CREATION SESSION (Participants form groups of 6 in round tables. Role-play)

BOEHRINGER INGELHEIM AND ELI LILLY DIABETES ALLIANCE - LUNCH INDUSTRY-SPONSORED SYMPOSIUM

Supporting patients facing barriers to insulin therapy in everyday clinical practice

Date Friday, 13 April • **Time** 13.00-14.30 h • **Room** MR 10 + 11

This symposium is partially sponsored by the Boehringer Ingelheim and Eli Lilly Diabetes Alliance.

Speakers

Prof. Frank J. Snoeck, PhD
Prof. Pinar Topsever, MD

Summary

Through attending this type 2 diabetes case-based session, you should be able to:
– Understand the emotional barriers to initiating insulin therapy.
– Address patient concerns to help overcome emotional barriers and encourage insulin acceptance and adherence.
– Optimise discussions around hypoglycaemia, particularly with individuals who are reluctant to start insulin.
– Understand key steps that ensure a positive start on insulin therapy.

Agenda

13:00 h Introduction: Opening remarks
13:15 h Clinical Case Discussion: Clinical perspective from a primary care physician and psychologist
14:05 h Panel discussion
14:20 h Closing remarks

WORLDWIDE DIABETES - AFTERNOON INDUSTRY-SPONSORED SYMPOSIUM

Optimizing treatment for type 2 diabetes patients: understanding hypoglycaemia, cardiovascular outcomes trials, and combination therapies to improve better patient care

Date Friday, 13 April • **Time** 17.10-19.00 h • **Room** MR 10+11

Chair

Andrew JM Boulton, MD. *President, Board of Directors. Worldwide Initiative for Diabetes Education. Professor of Medicine. University of Manchester. Manchester (UK)*

Speakers

Xavier Cos, MD. *Head of Innovation and Health in Primary Care of Barcelona. Catalonian National Health Service. Barcelona (Spain)*

Brian Frier, MD, FECP, BS. *Honorary Professor of Diabetes. The Queen's Medical Research Institute. University of Edinburgh. Edinburgh (UK)*

Kamlesh Khunti, PhD, MD, FRCGP, FRCP. *Professor of Primary Care Diabetes and Vascular Medicine. Senior Investigator, National Institute of Health Research. Diabetes Research Centre. Leicester (UK)*

Summary

This aim of this educational initiative is to educate primary care physicians about the risks of hypoglycaemia to the type 2 diabetes patient as well as present how the results of recent clinical trials demonstrate the cardiovascular benefits of long-acting insulin therapy. Recent studies clearly show a significant relationship between day-to-day fasting glucose excursions and glycaemic variability, severe hypoglycaemia, and all-cause mortality. With this information, primary care physicians will be better able to identify at-risk patients and provide appropriate, evidence-based treatment upon conclusion of this educational activity.

The following key topics will be covered in the symposium presentations:
- Hypoglycaemia aetiology and risk in type 2 diabetes
- The impact of hypoglycaemia on patient outcomes and functioning
- Evidence for decreased cardiovascular risk with newer diabetes therapies
- Insulin therapy and glycaemic variability
- Combined insulin and GLP-1 RA therapy

Specifically, the symposium will strive to address the following learning objectives:
- Discuss the CV benefits associated with new type 2 diabetes (T2D) drugs and insulin formulations, including new injectable therapy options (insulin + glucagon-like peptide 1 receptor agonists [GLP-1 RAs])
- Understand current evidence on the association between glycaemic variability, hypoglycaemia and CV risk
- Identify patients at risk and ensure that appropriate treatment plan changes are put in place

Agenda

17:00 h Registration and Snack Service
17:15 h Welcome, introductions and objectives (*Andrew Boulton*)
17:30 h Insights from recent cardiovascular outcomes trials in diabetes (*Xavier Cos*)
17:55 h The association between glycaemic variability, hypoglycaemia and outcomes (*Brian Frier*)
18:20 h Fixed ratio combination therapies of insulin and GLP-1 receptor agonists: for whom and when (*Kamlesh Khunti*)
18:45 h Panel discussion: question and answer session
19:00 h Close (*Andrew Boulton*)

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(Listed in alphabetical order)

ACD – Catalan Association of Diabetes

DAP_Cat – Epidemiological research group in Diabetes from Primary Care

EASD – European Association for the Study of Diabetes

ECD – European Coalition for Diabetes

EGPRN – European General Practice Research Network

EPCCS – European Primary Care Cardiovascular Society

EQuiP – European Society for Quality and Safety in Family Practice

EURADIA – Alliance for European Diabetes Research

EUROPREV – European Network for Prevention and Health Promotion in Family Medicine and General Practice

Fundación redGDPS – Network of Diabetes Study Groups in Primary Health Care

GedapS-CAMFiC – Primary Health Care Diabetes Study Group of the Catalan Society of Family and Community Medicine

Government of Catalonia, Department of Health – Advisory Council on Diabetes in Catalonia

Government of Catalonia, Department of Health – Health Quality and Assessment Agency of Catalonia

IDF Europe – International Diabetes Federation Europe

IDIAP Jordi Gol – Primary Care University Research Institute

semFYC – Spanish Society of Family and Community Medicine

SEMG – Spanish Society of General and Family Physicians

SEMERGEN – Spanish Society of Primary Care Physicians

SEMI – Spanish Society of Internal Medicine

WONCA – World Organization of Family Doctors

Index of Speakers and Abstracts Authors

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Conference Secretariat

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