

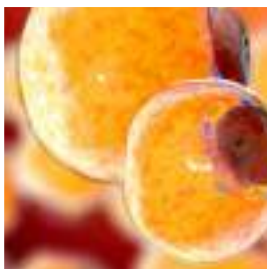
The 2020 Digital Learning Journey on Diabetes

CONGRESS REPORT

**56th Annual Meeting
of the European Association
for the Study of Diabetes**



**EASD 2020
VIRTUAL MEETING**
21-25 September 2020



BIOGRAPHY



Ernesto Maddaloni

Ernesto Maddaloni is a senior research fellow at Sapienza University, Rome, Italy and a consultant endocrinologist at Campus Bio-Medico University, Rome. His research interests focus on the study of aging adults with autoimmune diabetes and the interplay between vascular complications, bone health and autoimmunity. As a mentee of the European Foundation for the Study of Diabetes (EFSD) Future Leaders Mentorship Program, Dr Maddaloni has been actively pursuing his studies on clinical diabetes and cardiovascular outcomes at the Diabetes Trial Unit of the University of Oxford, Oxford Centre for Diabetes Endocrinology and Metabolism (OCDEM), UK. Dr Maddaloni has been a study investigator and coordinator for several national and international clinical trials and has published as lead author in several top-ranked peer-reviewed international medical journals (for publication list see: <https://www.ncbi.nlm.nih.gov/myncbi/1xGOuoCbV1uAs/bibliography/public/>). His scientific achievements have been recognized with several awards, including the 2015 Albert Renold Fellowship from the European Foundation for the Study of Diabetes, the 2017 Young Investigator Award from the Italian Society of Endocrinology and the 2017 Early Investigator Award from the Endocrine Society (USA).



BIOGRAPHY



Luca D'Onofrio

Luca D'Onofrio is currently working at the Sapienza University (Rome, Italy), taking clinical care of diabetes patients, while also involved in several research projects to support his PhD thesis. His career to date has included periods of study and research in Italy, as well as participation in the Erasmus Program, with study in London at the Blizzard Institute and Queen Mary Hospital, and in Manchester (UK), looking at diabetic retinopathy. Dr D'Onofrio's research interests include diabetes management and endocrinology and metabolic disease, including bone metabolism in patients affected by type 1 diabetes.

CONGRESS REPORT



This year, the 56th European Association for the Study of Diabetes (EASD) annual meeting should have been held in Vienna, Austria from 21st to 25th September, but because of the COVID-19 pandemic, the EASD board transformed the congress into a virtual meeting. Professor Stefano Del Prato (EASD President) opened the virtual meeting with the usual presidential address, in front of a scenic, virtual background. He introduced attendees to the virtual EASD Plaza and Associations' Village, which each participant could access using an avatar to explore and interact with other online participants, including some of the scientific and commercial material.

The Presidential Address began with a moment of silence to commemorate EASD colleagues lost due to COVID-19. During this first speech, the President highlighted the huge effort undertaken to study the relationship between COVID-19 and diabetes, with more than 2000 papers published in just over six months. Then he addressed the challenge that COVID-19 poses in caring for patients with diabetes and the new opportunities provided by the use of telemedicine. As always, albeit in virtual form, the meeting offered an outstanding scientific programme, with contributions from researchers and clinicians of the highest calibre from all over the world.

The meeting itself was preceded by a series of interesting symposia, including an expert discussion on new biomarkers of type 2 diabetes (T2D). In this session, Dr Nick Wareham (Cambridge, UK) focused his talk on the right way to use biomarkers for diabetes and obesity, highlighting the relevance of differentiating between correlational versus causal biomarkers for diabetes and obesity risk. Dr Fahd Al-Mulla (Kuwait City, Kuwait) focused his presentation on the role of ANGPTL8, which is responsible for the distribution of fatty acids, and showed evidence that high levels of ANGPTL8 leads to the deposition of fatty acids in skeletal muscle and liver. This finding suggests that high ANGPTL8 could predispose to obesity, diabetes and non-alcoholic fatty liver disease (NAFLD), although more evidence is needed to fully support this idea. Finally, Dr Ernesto Maddaloni (Rome, Italy) described a novel and affordable indicator of insulin resistance and cardiovascular risk – wrist circumference. In a study by Capizzi and colleagues in 2011¹, it was observed that wrist circumference is a reliable marker of insulin resistance in children. Later studies suggested that people with increased wrist circumference showed an increased diabetes risk. Thus, wrist circumference could be used as an affordable and reliable marker of diabetes risk.

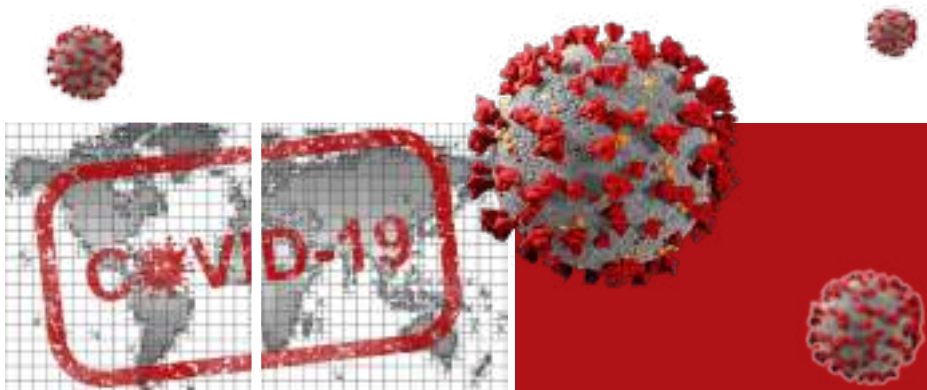


Outstanding lectures were made by leading researchers as they were presented with career achievement awards, including the 52nd Claude Bernard Lecture (the '*EASD's highest award in recognition of an individual's innovative leadership and lifetime achievements in diabetes research*') by Professor Takashi Kadowaki (Tokyo, Japan). This lecture explored Professor Kadowaki's findings during his career, starting from his observation of early dysfunction of glucose-induced insulin secretion and the presence of insulin resistance in patients with diabetes, the discovery of IRS-1 and IRS-2 and their role in the pathophysiology of T2D, followed by evidence of the central role of adiponectin in the development of T2D. Finally, he showed his work on genetic susceptibility to T2D in the Asian population using genome-wide association studies (GWAS).

The Camillo Golgi prize was awarded to Professor Naveed Sattar (Glasgow, UK) for his work on the relationship between diabetes and cardiovascular risk. His lecture focused on the detrimental role of diabetes in cardiovascular disease, in particular, highlighting how both early onset of T2D and long duration of type 1 diabetes (T1D) were responsible for increased risk of cardiovascular complications. Further, he emphasized how diabetes and cardiovascular disease could have a detrimental impact on COVID-19 prognosis.

Professor Guy A. Rutter (London, UK), winner of the Albert Renold Prize, focused his lecture on the role of beta-cells as glucose sensors, and how this role is altered during T2D. He also highlighted the relevance of intercellular connectivity and genes in the development of diabetes, but also in the opportunity to find new and tailored treatments for T2D.

During the virtual meeting, several results of relevant clinical trials were presented and discussed, including the 'Evaluation of Ertugliflozin Efficacy and Safety Cardiovascular Outcomes Trial' (VERTIS CV outcome). This trial enrolled more than 8000 patients with T2D and established cardiovascular disease, who were treated with ertugliflozin 5 mg, 15 mg or with placebo. The study started in 2013 and ended in 2019, with a mean follow-up of 3.5 years. At the end of the trial, ertugliflozin achieved the





primary endpoint of non-inferiority for major adverse cardiovascular events (MACE) compared with placebo. However, the trial did not show a reduction of either MACE or cardiovascular death in patients treated with ertugliflozin, but did show a significantly decreased rate of hospitalization for heart failure (HR 0.7, 95% CI: 0.54–0.9) and a significantly decreased risk of the renal composite endpoint of sustained >40% reduction in the estimated glomerular filtration rate (eGFR), end-stage renal disease (ESRD) or renal death with an HR of 0.66 (95% CI: 0.50–0.88) compared with placebo.

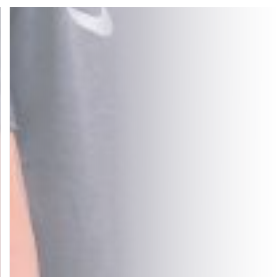
Results were presented on the effects of sodium-glucose co-transporter-2 (SGLT2) inhibitors on heart failure with data from the EMPEROR-Reduced trial. This phase III trial enrolled 3730 patients with class II, III or IV heart failure and an ejection fraction of $\leq 40\%$ with or without T2D. Patients treated with empagliflozin showed an HR of 0.75 (95% CI: 0.65–0.86; $P < 0.001$) for the composite primary endpoint of cardiovascular death or hospitalization for worsening heart failure compared with placebo. Further, empagliflozin slowed down the annual rate of decline in the eGFR.

The effects of SGLT2 inhibitors on kidney function were further explored in the DAPA-CKD trial conducted to investigate the effects of dapagliflozin on kidney function. In this trial, 4300 patients were enrolled (70% with a diagnosis of T2D), with a baseline eGFR of 43 mL/min. Patients treated with dapagliflozin showed a reduction in the primary composite outcome of sustained >50% eGFR decline, ESRD, renal or cardiovascular death with an HR of 0.61 (95% CI: 0.51–0.72, $P < 0.001$). The authors also estimated a number need to treat of 19.

Some novel data were also presented about insulin. In particular, Professor Julio Rosenstock (Dallas, USA) presented the results of a phase 2 clinical trial conducted on once-weekly basal insulin icodec compared with once-daily glargine 100. The trial was conducted on 247 patients with T2D treated with a combination of metformin and dipeptidyl peptidase 4 inhibitors (DPP4i) that need an intensification in hypoglycemic treatment and who were insulin naïve. The results showed that while both insulins had a similar glucose-lowering effect and safety profile, icodec showed an improvement in the mean value of self-monitoring of blood glucose (SMBG) and time spent in range (TIR): 95% CI: 0.7–10.1, $P = 0.02$. No differences in weight gain or number of hypoglycemic episodes were reported between the treatments. Promising findings were also presented by Dr Roy Eldor (Tel-Aviv, Israel) on oral insulin. He revealed the results of a 12 week, phase 2 trial on the efficacy of oral insulin (ORMD-0801), showing favourable results in reducing HbA1c in patients with T2D inadequately controlled with standard therapy. Moreover, treatment with ORMD-

0801 was not associated with an increased risk of hypoglycemia.

Exciting data were also shown regarding therapy for people with T1D. In particular, Dr Gregory Forlenza (Denver, USA) showed





the results of a study on a hybrid closed-loop system that integrates an Omnipod 5 patch pump with continuous glucose monitoring (CGM) provided by a G6 sensor in children with T1D. The study showed that the system was safe and performed well in increasing the TIR during the study. Further, the use of the hybrid closed loop decreased the percentage of time above range (TAR) and of time below range (TBR), adding useful information on therapy based on a hybrid closed loop system.

Dr Robert Dowd (San Diego, USA) continued the theme of diabetes technology, with data on the use of CGM with Dexcom G6 in an observational study that enrolled more than 9000 patients with both T1D (59% of patients) and T2D. Patients showed a high level of engagement with CGM and high persistence in the use of the device in both cohorts (>86% of time). Unfortunately, the study showed the mean TIR was below the target suggested by the 2019 'Recommendations From the International Consensus on Time in Range'², and the mean TAR was above target. Nevertheless, the TBR was less than 2%, as suggested by the consensus.

Data were presented showing the relationship between average TIR and chronic complications of diabetes from the REimbursement Study of Continuous gLUcose monitoring (RESCUE) in Belgium. Data were collected and analysed from more than 500 people with T1D and treated with an insulin pump. Dr Anass El Malahi (Antwerp, Belgium) showed that longer TIR was associated with less microvascular complications, even after correcting for age and disease duration. No association between TIR and macrovascular disease was found in this study.

A post-hoc analysis of the DEVOTE trial,³ designed to compare efficacy and safety of insulins degludec and glargine, looked at the relationship between derived TIR and MACE in patients with T2D. Dr Richard Bergenstal (Minneapolis, USA) showed that derived TIR, estimated analysing data on 8-point self-monitoring of blood glucose, was significantly associated with time to first MACE; in particular, patients who showed TIR>70% had the lowest observed incidence of MACE.

Interesting results were also shown in the extensive poster sections. In 'Glycemic control and incretin-based therapies', a post-hoc analysis of the phase 3 PIONEER program, presented by Professor Tina Vilsbøll (Copenhagen, Denmark), reported that oral semaglutide 14 mg improved HbA1c or the composite outcome of HbA1c reduction of $\geq 1\%$ and body weight loss $\geq 5\%$ compared with comparators (placebo, metformin, sitagliptin, liraglutide or empagliflozin). In 'Understanding clinical neuropathy', Dr Luca D'Onofrio (Rome, Italy) observed that patients affected by severe hypertriglyceridemia showed reduced parameters with corneal confocal microscopy, a non-invasive methodology to assess small fiber neuropathy.

Finally, many posters were devoted to data on the COVID-19 pandemic and the impact on diabetes management. The main findings of the data published so





far suggests that patients with diabetes show a worse COVID-19 prognosis. Risk factors include a higher HbA1c, presence of obesity and comorbidities (kidney failure, cardiovascular disease). Great attention was given to the opportunity afforded by telemedicine and how it can improve diabetes care and management. Interestingly, data available up until now does not seem to suggest an increased rate of T1D incidence, but more data are required on this specific topic.

These are just a few of the many topics addressed during the 56th EASD virtual meeting, a unique occasion to learn, debate and keep up-to-date in the broad field of diabetes. The virtual contents will remain available throughout the year, providing opportunities to revisit the presentations and further explore new findings.

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