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WORLD DIABETES DAY 2017: WOMEN AND DIABETES

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International Diabetes Federation

Diabetes is a serious women's health issue

Dr. Sania Nishtar

I recently had the privilege and the opportunity of travelling around the world as one of the three nominees for Director-General of the World Health Organization (WHO). Wherever I went, in addition to presenting my candidature, I utilised the opportunity to visit hospitals, hospices, primary healthcare centres and communities—and everywhere, I found the footprint of diabetes disturbingly ubiquitous. The official figures are estimated at 415 million adults currently living with diabetes and these estimates are projected to increase to 642 million by 2040. Approximately 199 million women live with diabetes which is projected to rise to 313 million by 2040.[1] I fear this may just be the tip of the iceberg.

Girls and women with diabetes experience a range of challenges. Power dynamics, gender roles and socioeconomic inequalities influence vulnerability to diabetes, such as by exposing women to poor diet and nutrition and physical inactivity disproportionately. These factors also affect women's access to health services and health seeking behaviour, and amplify the impact of diabetes on women, particularly in developing countries.

Diabetes is one of the leading causes of cardiovascular disease (CVD), blindness, kidney failure and lower-limb amputation. In pregnancy, poorly controlled diabetes increases the risk of maternal and fetal complications. Diabetes is the ninth leading cause of death in women globally, and causes 2.1 million deaths per year. Women with type 2 diabetes are 10 times more likely to have heart disease and have significantly increased risk of depression in comparison to men. Globally, there are more deaths attributable to diabetes in women than men.

These are not mere statistics, but facts which incur heavy physical and emotional and economic toll on families. The suffering of four sisters in my country, Pakistan, epitomizes the problem millions of women face worldwide. At 44 years, Rehmat is the youngest of four sisters—all of whom are obese. Recently Rehmat was hospitalised for a diabetic foot amputation, a common and tragic outcome of uncontrolled diabetes, which will place great difficulties and challenges for her ahead, being so scarred at a young age. Two of Rehmat's sisters are on dialysis, due to end-stage diabetes-related renal disease, and already one sister has undergone a heart bypass operation unsuccessfully. All sisters suffer from serious damage to their eyes—another complication of diabetes. The burden of care for the entire extended family in emotional, physical and economic terms is devastating. The opportunity cost weighs heavily in terms of the wellbeing and future outlook for their respective families.

The ravages of diabetes are not confined to the realm of noncommunicable diseases (NCDs) alone. In technical and public health parlance, diabetes is clubbed together with the other NCDs, and is as such siloed outside of the mainstream public health, which is still dominated by infectious diseases and reproductive and maternal and child health (RMNCH). It is imperative that we recognise diabetes as an issue that straddles both RMNCH as well as NCDs, as diabetes is a serious and neglected threat to the health of mother and child. Two out of five women

> *It is imperative that we recognise diabetes as an issue that straddles both RMNCH as well as NCDs*

with diabetes are in reproductive age and half of all cases of hyperglycaemia in pregnancy occur in women under the age of 30, accounting for over 60 million women worldwide. One in seven births is affected by gestational diabetes (GDM). IDF estimates that 20.9 million or a staggering 16.2% of live births in 2015 had some form of hyperglycaemia in pregnancy. Women with diabetes have more difficulty conceiving and may have poor pregnancy outcomes. Many women with GDM experience pregnancy related complications including high blood pressure, large birth weight babies and obstructed labour. A significant

number of women with GDM also go on to develop type 2 diabetes resulting in further healthcare complications and costs.

Most alarming is that the vast majority of cases of hyperglycaemia in pregnancy have been found to be in low- and middle-income countries, where access to maternal care is limited. GDM can also leave its mark on women for life, as approximately half of women with a history of GDM go on to develop type 2 diabetes within five to ten years of delivery. Women with type 1 diabetes have an increased risk of early miscarriage or having a baby with malformations, in any case.

There is, however, a silver lining to this problem. We know that the majority of cases of type 2 diabetes could be prevented through the adoption of a healthy lifestyle. Approximately, seventy percent of premature deaths among adults are largely due to behaviour initiated during adolescence which is where the potential of lifestyle modification is greatest. This is where the role of women and girls is critically important as they are the key agents in the adoption of healthy lifestyles to improve the health and wellbeing of future generations. As gatekeepers of household nutrition and lifestyle habits they have the potential to drive prevention from the household and beyond.

For all these reasons, I would like to lend my voice of support to IDF's message on World Diabetes Day to its constituencies—a network of thousands of foundations and societies all over the world. This network has an enormous influence to cascade IDF messages in their countries to governments, policymakers, civil society, the scientific community and people in general to catalyse a whole of societies approach to tackling this challenge.

At a broader public health and health systems level, diabetes prevention and management, along with extensive measures aimed at NCD prevention and control need to be mainstreamed in country planning with adequate attention to the specific needs and priorities of women with diabetes. Women and girls should be empowered with access to knowledge and resources to strengthen their capacity to prevent type 2 diabetes in their families and better safeguard their own health. In addition, type 2 diabetes prevention strategies must focus on maternal health and nutrition and other health behaviours before and during pregnancy, as well as infant and child nutrition. Antenatal care visits during pregnancy must be optimised for health promotion in young women and early detection of diabetes and GDM.

We can no longer afford to treat diabetes and NCDs as the blind spot of our policies. There must be a conscious effort to drive change. Constituents of IDF can be the drivers of that change. They must marshal the much-needed momentum now, and as a matter of right, not choice, not options.

Dr. Sania Nishtar of Pakistan is a former federal minister and prominent global health leader with extensive experience in public healthcare. She was among the three candidates nominated for the post of Director-General of the World Health Organization (WHO) in 2017.

1. International Diabetes Federation. IDF Diabetes Atlas, 7th edn. Brussels, Belgium: International Diabetes Federation, 2015.

IDF launches global survey on CVD awareness

IDF, in collaboration with Novo Nordisk, has launched a multi-country study on cardiovascular disease (CVD) awareness in people with type 2 diabetes. The study - **Taking Diabetes to Heart** - consists of a survey, the results of which will support the development of tools, educational resources and policies designed to facilitate implementation of recommendations included in the IDF's global report on *Diabetes and Cardiovascular Disease*. A primary goal of the recommendations is to reduce the burden of CVD among people living with or at risk for diabetes.

Insights gathered from the global survey will enable the development of awareness and education campaigns among key stakeholders including people living with diabetes and healthcare professionals.

People with diabetes are at increased risk of CVD. Existing studies, mainly from developed countries, suggest that CVDs account for over one-third of all deaths among people with diabetes. As the number of people with diabetes continues to increase, the outlook for CVD becomes even more alarming. In 2012, it was estimated that over 37.9 million people worldwide died from noncommunicable diseases (NCDs) of which 17.5 million were related to CVD. In 2015, approximately 5.0 million people were estimated to have died from diabetes, and a majority of these were the result of cardiovascular complications.

IDF released the global report on *Diabetes and Cardiovascular Disease* in 2016 and recommendations for people with or at risk for diabetes included:

- Public health measures to promote healthy diets.
- Increased physical activity.
- Smoking cessation.
- Implementation by national governments of NCD monitoring systems.
- Improving access to essential diabetes and CVD medicines.

The survey is available online in multiple languages. Preliminary results will be presented at the IDF Congress 2017 in Abu Dhabi in December 2017.

Stress hormones and metabolism altered by air pollution

A recent study conducted in Shanghai, China suggests that exposure to air pollution is associated with heart disease, stroke, diabetes and early mortality. The study investigated changes in serum metabolites in response to the reduction of particulate matter (PM) exposure among healthy college students.

Working or non-working air purifiers were placed in each student's dorm and left in place for nine days. After a 12-day period during which the filters were removed, researchers did another nine-day test: the students in the original functioning-filter group got non-working filters, and those in the original nonfunctioning-filter group got filters that worked. At the end of each nine-day period, the researchers tested levels of a wide range of small molecules in students' blood and urine as indication of their exposure to PM. Metabolomics analysis showed that high exposure to (PM) may induce metabolic alterations such as increases in

hormones including cortisol, cortisone, and epinephrine. Differences were observed in blood glucose, amino acids, fatty acids and lipids. Researchers found significantly higher blood pressure, hormones, insulin resistance and biomarkers of oxidative stress and inflammation among individuals exposed to higher PMs with aerodynamic diameters ≤2.5 μm.

The research adds new evidence on how exposure to air pollution may lead to a higher risk of NCDs, including cardiovascular disease and diabetes.

Huichu L, Jing C, Renjie C, et al. Particulate matter exposure and stress hormone levels a randomized, double-blind, crossover trial of air purification. *Circulation* 2017; 136: 618-627. https://www.ncbi.nlm.nih.gov/pubmed/28808144

High prevalence of diabetes, prediabetes in China

A large, nationally representative survey in 2013 of adults in China finds that the estimated overall prevalence of diabetes was about 11 percent and that of prediabetes was nearly 36 percent, according to a study published by JAMA.

Previous studies have shown increasing prevalence of diabetes in China, which now has the world's largest diabetes epidemic. To provide more recent estimates of the prevalence of diabetes and prediabetes, researchers analysed data from a nationally representative survey conducted in 2013 in mainland China, which included 170,287 participants. Fasting plasma glucose and HbA_{1c} levels were measured for all participants. Diabetes and prediabetes were defined according to the 2010 American Diabetes Association criteria.

Findings included:

- The estimated prevalence of total diagnosed and undiagnosed diabetes was 10.9 percent; that of diagnosed diabetes, 4 percent; and that of prediabetes, 35.7 percent.

- Among persons with diabetes, 36.5 percent were aware of their diagnosis and 32.2 percent were treated; 49.2 percent of patients treated had adequate glycemic control.

- Tibetan and Muslim Chinese had significantly lower prevalence of diabetes than Han participants (14.7 percent for Han, 4.3 percent for Tibetan, and 10.6 percent for Muslim).

With approximately 1.09 billion adults in total in mainland China, it is projected that 388.1 million Chinese adults (200.4 million men and 187.7 million women) may have had prediabetes in 2013.

Wang L, Gao P, Zhang M, et al. Prevalence and ethnic pattern of diabetes and prediabetes in china in 2013.*JAMA*. 2017; 317(24):2515-2523. http://jamanetwork.com/journals/jama/article-abstract/2633917

Study finds diabetes and heart disease linked by genes

In a large analysis of genetic data, published in Nature Genetics, researchers from the Perelman School of Medicine at the University of Pennsylvania (USA) have studied what causes type 2 diabetes and secondly, clarified how type 2 diabetes and coronary heart disease (CHD)–two diseases that are the leading cause of global morbidity and mortality–are linked.

Examining genome sequence information for more than 250,000 people, the researchers first uncovered 16 new diabetes genetic risk factors, and one new CHD genetic risk factor providing novel insights about the mechanisms of the two diseases. They then showed that most of the sites on the genome known to be associated with higher diabetes risk are also associated with higher CHD risk. For eight of these sites, the researchers identified a specific gene variant that influences risk for both diseases. The shared genetic risk factors affect biological pathways including immunity, cell proliferation, and heart development.

The findings add to the basic scientific understanding of both these major diseases and point to potential targets for future drugs. The researchers found evidence that the genetic link between the diseases appears to work in one direction, so that risk genes for type 2 diabetes are much more likely to be associated with higher CHD risk than the other way around. Additionally, there could be some pathways where pharmacological lowering of one disease increases the risk of the other.

Researchers also found that diabetes-linked gene variants tend to differ in their apparent effects on CHD risk, depending on their mechanisms. Variants that increase the chance of obesity or high blood pressure, for example, appear to boost CHD risk more strongly than variants that alter insulin or glucose levels.

Zhao W, Rasheed A, Tikkanen E, et al. Identification of new susceptibility loci for type 2 diabetes and shared etiological pathways with coronary heart disease. *Nature Genetics 2017*; doi:10.1038/ng.3943.
http://www.nature.com/ng/journal/vaop/ncurrent/full/ng.3943.html?foxtrotcallback=true

Risk of type 2 diabetes associated with artificially sweetened beverages

Artificially sweetened beverages are associated with an increased risk of developing diabetes, according to a recent study. However, substituting a serving of either an artificially sweetened beverage (ASB) or sugar-sweetened beverage (SSB) with water might reduce the risk.

The study included 64,850 women who enrolled in the Women's Health Initiative between 1993 and 1998. Participants in the study completed lifestyle questionnaires that were used to measure ASB, SSB and water intake. Study participants self-reported their diabetes status.

During the mean 8.4 years of follow-up, 4675 women had developed diabetes. Consumption of ASBs and SSBs was associated with an increased risk of developing diabetes. However, the researchers only found an increased risk of diabetes associated with ASB consumption for participants with obesity during subgroup analyses.

While substituting SSBs with an equal amount of ASBs did not significantly reduce the risk of developing diabetes, substituting either beverage with water was found to reduce the risk. Replacing a serving of ASB with water reduced the risk of diabetes by 5%, and replacing a serving of SSB reduced the risk by 10%.

Researchers concluded that while ASBs were associated with a 21% increased risk of developing type 2 diabetes approximately half the magnitude of SSBs (43% increased risk)—replacing ASBs and SSBs with water could potentially reduce the risk. The researchers also added that caution should be taken in interpreting their results as causal because both residual confounding and reverse causation could explain results.

Huang M, Quddus A, Stinson L, et al. Artificially sweetened beverages, sugar-sweetened beverages, plain water, and incident diabetes mellitus in postmenopausal women: the prospective Women's Health Initiative observational study. *Am J Clin Nutr.* 2017;106: 614-22.

Type 2 diabetes risk four times higher in women with PCOS

Women who have polycystic ovary syndrome (PCOS) have a higher risk of developing type 2 diabetes (T2D) and are diagnosed at an earlier age with the condition, according to a new study published in the Endocrine Society's Journal of Clinical Endocrinology & Metabolism. The study is the first to show a connection between T2D development and PCOS.

To determine the risk of T2D development in women with PCOS, researchers studied two populations with PCOS: all pre-menopausal Danish women with a diagnosis of PCOS in the National Patient Register (18,477 women) and a local sub-group of 1,162 women with PCOS who were examined at Odense University Hospital in Denmark. The local participants were tested for insulin and glucose levels, cholesterol, triglycerides and testosterone levels. Women with PCOS were compared with age-matched females who did not have the disorder, nor a previous diagnosis of T2D. Three women without PCOS were randomly selected from the Nation Patient register for each woman with PCOS.

Researchers found that women with PCOS were four times more likely to develop T2D compared to their counterparts who did not have the disorder. The average age for women with PCOS who received a diagnosis of T2D was 31 years. The average age for women without PCOS and diagnosed with T2D was 35 years.

Body mass index, insulin and glucose levels, and triglycerides were positively associated with development of T2D, whereas a higher number of births were negatively associated with the development of T2D. The study's authors note that BMI and fasting blood glucose levels are the best predictors of the development of T2D in patients with PCOS. Increasing age, however, should not be included in future guidelines as a risk factor because most cases of diabetes in this study were found

before the age of 40. The authors add that further research is needed to evaluate the effect of oral contraceptives and number of births for the risk of T2D development in PCOS.

"The increased risk of developing T2D in PCOS is an important finding," said one of the study's authors, Dorte Glintborg. "Diabetes may develop at a young age and screening for diabetes is important, especially in women who are obese and have PCOS."

Rubin KH, Glintborg D, Nybo M, et al. Development and risk factors of type 2 diabetes in a nation-wide population of women with polycystic ovary syndrome. *JCEM* 2017 https://academic.oup.com/jcem/article-lookup/doi/10.1210/jc.2017-01354, ahead of print.

Gaining weight between pregnancies may increase risk for GDM

Results from a study conducted in Norway found that the risk of gestational diabetes (GDM) in second pregnancy rises significantly with increasing weight gain between pregnancies, and more strongly among women who had a BMI below 25 (kilo/meters squared) in first pregnancy. These study findings may suggest weight change as a metabolic mechanism behind the increased risk of GDM, and therefore may point to a need to include weight change as an independent factor for screening GDM in clinical guidelines. The study also found that decreasing BMI by >2 units from first to second pregnancy had a preventive effect on GDM in overweight and obese women.

In the observational cohort, 24,198 mothers who were pregnant twice in about an eight-year span but did not develop GDM during their first pregnancy were included in data from the Medical Birth Registry of Norway (2006–2014). Between their first and second pregnancies, about 36 percent of the women gained weight, and 17 percent lost it; weight remained stable for the remaining 47 percent. During the second pregnancy, 439 women developed GDM. Those who had gained weight between pregnancies were more likely to have developed GDM than were women whose weight had stayed steady.

Along with improved GDM screening, researchers emphasize the need to target healthy weight from preconception through the postpartum period.

Sorbye LM, Skjaerven R, Klungsoyr K, et al. Gestational diabetes mellitus and interpregnancy weight change: A population- based cohort study. *PLoS Med* 2017; 14(8): e1002367. https://doi.org/10.1371/journal.pmed.1002367

"La Comunidad": community-based diabetes prevention

Type 2 diabetes mellitus (T2D) disproportionately affects Hispanic Americans; they are almost twice as likely to have T2D compared to non-Hispanic whites and 1.5 times as likely to die from the disease. Several studies have demonstrated the potential for the prevention of T2D through lifestyle change, yet these interventions have not been disseminated effectively into Latino communities. Given the higher risk for T2D in Latino communities there is a great need for cost-effective and sustainable interventions for diabetes prevention and health promotion.

The Latinos Combatiendo La Diabetes (La Comunidad) study was adapted to model the Healthy Living Partnerships to Prevent Diabetes (HELP PD), a translation of the Diabetes Prevention Program that yielded nearly identical results (Vitolins, Blackwell et al).

"La Comunidad" was designed to translate the community-based HELP PD intervention for delivery by Latino Health Workers (LHAs). Two hundred and twenty-five overweight/obese (BMI 25-45 kg/m2) Latino adults at risk for T2D (HbA_{1c} 5.7-6.4%) were randomized to a lifestyle intervention or to a usual care condition. The goal of the intervention was to achieve 5-7% weight loss through increased physical activity and decreased caloric intake. Intervention materials from the highly successful HELP PD program were translated into Spanish and adapted for use in the Latino community, including a DVD series to aid in fidelity of the intervention delivery.

Intervention participants attended weekly group meetings led by LHAs for six months, followed by meetings every other month for 18 months. Usual care participants received counseling with a registered dietitian and monthly newsletters. The primary outcome was change in HbA_{1c}. Secondary outcomes included markers of metabolic syndrome were collected every 6 months. Participants in "La Comunidad" had a mean age at baseline of 41.5 years, 191 (84.9%) were female, and the mean BMI at baseline was 32.8 kg/m2. During the screening and enrollment process, fewer men qualified to participate as they did not meet the study inclusion criteria. This finding is of concern as it suggests that Latino women are less healthy and at higher risk for T2D than Latino men. Additionally, in the HELP PD study, the average age was 57.9 years while in "La Comunidad" the age was 41.5 years, suggesting that Latinos are at risk for developing diabetes earlier in life.

For more information:
https://clinicaltrials.gov/ct2/show/NCT01831921

ADA and JDRF lead hurricane relief

JDRF and the American Diabetes Association (ADA) announced they will provide emergency support to the diabetes community affected by Hurricane Irma just as they did for Huricane Harvey, and they will do so with the support of two additional organizations.

The American Association of Diabetes Educators (AADE) and the Endocrine Society are joining ADA and JDRF as the coalition prepares to provide emergency help to those that will be affected by Hurricane Irma. Other coalition members include the American Association of Clinical Endocrinologists (AACE), Insulin For Life and Research!America.

JDRF and the coalition marshaled their resources in a new hurricane relief effort launched last month to help those impacted by Hurricane Harvey. The organizations provided information, medical supplies and support to people with diabetes in Texas (USA) to help them manage their diabetes during the crisis. They teamed up with Insulin For Life, an organization that delivers insulin and testing supplies to people in need. Together, the organizations delivered more than 7,000 pounds of diabetes supplies, including syringes, pen needles, alcohol pads, blood glucose meters, glucose test strips, lancets, and insulin — in both analogue and human insulins and vial and pen forms.

"Right now, it's critical that we help provide people with diabetes whatever they need to stay safe in the management of their disease while they work to get the rest of their lives in order after this terrible storm," said Derek Rapp, JDRF President and CEO. "People with type 1 diabetes simply can't live without insulin and other supplies. We're grateful for the partnership with these diabetes care organizations, especially their efforts to help in this emergency."

A special webpage with information and resources — diabetes.org/hurricanerelief — is available for those with diabetes, caregivers, and on-site responders and care professionals facing the hurricane. It includes shelter locations; how to advocate for themselves or a loved one with diabetes; how to help someone with diabetes and signs of a diabetes emergency; and additional resources from partners on how to access supplies and/or medication. Information will be updated regularly.

During emergency crises such as this, it is critical for people with diabetes to have access to the medications and testing supplies needed to maintain proper blood glucose control, and to prevent serious sudden complications such as hypoglycaemia or hyperglycemia.

For more information: http://www.jdrf.org/press-releases/ada-jdrf-led-hurricane-relief-partnership-expands-prepares-help-diabetes-community-path-irma/

Argentina: YLD member meets with Governor

From left to right: Gladys González, former National Deputy and current candidate for National Senator; Estefania Malassisi, IDF Young Leader in Diabetes; Maria Eugenia Vidal, Governor of the Province of Buenos Aires; Liliana Tieri, Director and Founder of CUI.D.AR; and Esteban Bullrich, Minister of Education of the Nation.

On July 14, 2017, the Governor of the Province of Buenos Aires, Maria Eugenia Vidal, accompanied by the Minister of Education, met Estefania Malassisi, an IDF Young Leader in Diabetes (YLD) to learn more about the work of Asociación para el Cuidado de la Diabetes in Argentina CUI.D.AR and what it means to live with type 1 diabetes. Governor Vidal was very keen to learn what the needs and issues are for people who live with diabetes in the Province.

For two years, CUI.D.AR has tried to arrange a meeting with Governor Vidal in order to discuss the needs of people with diabetes in the Buenos Aires Province. This all changed with the work of Estefania who independently wrote the Governor to tell her story and how she works to advance diabetes as a part of YLD and CUI.D.AR. Governor Vidal was so taken with Estefania's letters that she prioritized a meeting with the young woman.

Estefanía discussed diabetes care with Governor Vidal and showed her the medicines and supplies that people with diabetes require including a blood glucose meter, test strips, insulin and a glucagon kit. The Governor was very interested as Estefania explained the importance of access to these essential life-saving supplies for people with diabetes.

Estefania Malassisi has lived with type 1 diabetes since age two. Currently she studies medicine and dreams of being a pediatrician and diabetes specialist.

At CUI.D.AR, we are proud of Estefania's achievements. The work of IDF's YLD program is critical to achieve success in diabetes advocacy worldwide. We hope that her success can become an inspiration for other young people with diabetes who are fighting to improve care, treatment and rights for people with diabetes.

Ecuador: Congress highlights diabetes education

Participants of the Third International Congress of Education in Diabetes (June, 2017).

How do we define diabetes education? This was precisely the topic of the Third International Congress of Education in Diabetes (June 2017, Guayaquil, Ecuador) organized by the Casa de la Diabetes Foundation which also commemorated the organisation's 15th year anniversary. The congress was attended by experts from Spain, Mexico, Venezuela, Colombia, Costa Rica and Ecuador. All participants supported an important component of the Congress agenda: the need to provide not only medical advice to people with diabetes, but also provide self-management education which gives a greater opportunity for growth and empowerment.

Lifestyle changes can make all the difference for diabetes prevention and families of people living with or at risk of type 2 diabetes must be integrated into community nitiatives. It should be noted that the lack of proper information, poor adherence to treatment or lifestyle changes and absence of a support network often lead to the development of serious complications. Comprehensive care is based on the following elements: medical care, nutritional counseling, physical activity plan, family support and structured diabetes education.

The following are excerpts from a few of the significant discussions that were held at the June 2017 Congress:

Dr. Rosa María Aguilar, a Mexican researcher, teacher and expert on diabetes discussed how diabetes education is often a specialty that just doesn't exist in many countries of the world, but can be provided by healthcare professionals. It is her belief that this vision of healthcare provider as educator is critical for a healthy community where diabetes poses such a great risk. Structured educational interventions adapted to the needs of each person will help win the war on diabetes.

"With a clear, simple and sincere language we can reach our

patients, it is necessary to take advantage of those spaces offered by the media, communities and neighborhoods to socialize information and continue to educate about diabetes, so we could boost efforts and save many lives," said Dr. Aguilar.

Ana Fernanda Sánchez (Ecuador), a diabetes educator and clinical psychologist and Adriana Gómez (Colombia), a nutrition expert, believe a diabetes educator is responsible for demonstrating the impact of education on the lifestyle generating behavioral changes for better diabetes self-care. Sánchez explained how individualized education is necessary from the very first consultation and follow-up. This dynamic process, where delivery of varied diabetes information is offered, demands an interactive and therapeutic relationship between the educator and the person with diabetes. Negotiating with a patient for lifestyle changes can be very important for progress. Individualized education protects a patient's privacy, seeks to generate empathy and as a result, gains a patient's confidence. Regarding group therapies, Gómez emphasized that diabetes educational sessions should be provided in small groups and include families and/or patient support networks.

Dietician and diabetes educator, Adriana Herrera (Costa Rica), believes diabetes education is an ongoing process, since each educational program must consider that the needs of patients are changing and renewed according to the requirements of each individual. Evaluating aspects biomedical parameters (such as HbA_{1c}, and blood pressure values) as well as psychosocial aspects (such as quality of life, well-being and self-care) need to be reviewed with positive reinforcements set against achievements and improvements of previously set objectives.

Nutrition and diabetes experts, Ana Gladys Arauz (Costa Rica) and Adriana Herrera (Costa Rica) discussed how food is a fundamental pillar for the prevention and treatment of diabetes. One challenge is how knowledge in this area is continually changing, not just recommendations and nutritional guidelines but also in teaching methodologies. Documenting patient education activities allows progress of each patient to be seen and gives an opportunity to evaluate obstacles that have been presented in fulfilling patient objectives. Availability to the entire healthcare team assists when assessing achievements. Carbohydrate counting, glucose monitoring, and other skills are necessary to support a healthy diet, without unnecessary food deprivation or excess, for lack of knowledge.

In sum, let us look at diabetes as an opportunity to rethink a new way of life where together healthcare providers can help patients not only with scientific knowledge, but also by giving more time and effort. Diabetes is an opportunity to work and to walk together as a team for better health!

For more information on the Casa de la Diabetes Foundation:

- Internet: http://casadeladiabetes.org.ec/
- Facebook: https://www.facebook.com/CasaDeDiabetes/
- Twitter: @CasaDeDiabetes

All women with diabetes deserve the right to a healthy future

The theme of this year's World Diabetes Day (WDD) campaign is Women and Diabetes, with the slogan *Our Right to a Healthy Future.* Many activities are planned this November 14, 2017 to bring greater awareness to women at risk for or living with diabetes around the world.

Led by the International Diabetes Federation (IDF), the campaign is promoting the importance of affordable and equitable access for all women at risk for or living with diabetes for access to the essential diabetes medicines and technologies, self-management education and information they require to achieve optimal diabetes outcomes and strengthen their capacity to prevent type 2 diabetes.

There are currently over 199 million women living with diabetes and this total is projected to increase to 313 million by 2040. Diabetes is the ninth leading cause of death in women globally, causing 2.1 million deaths each year. As a result of socioeconomic conditions, women and girls with diabetes experience barriers in accessing cost-effective diabetes prevention, early detection, diagnosis, treatment and care, particularly in developing countries.

In view of the particular burden of the disease and its impact on women's lives, IDF will mark World Diabetes Day 2017 with the launch of a new program that aims to initiate a wide range of actions in support of women living with diabetes in Middle East and North Africa (MENA), North America and Caribbean (NAC), South America and Central America (SACA), sub-Saharan Africa and South-East Asia (SEA). IDF actions will focus on capacity building for health professionals including train-the-trainer sessions, face-to-face workshops, online refresher CME sessions, and the development and dissemination of information and advocacy resources.

The program will be launched at an IDF stakeholder event in Brussels on November 14. The event will also serve to promote the release of the 8th edition of the IDF Diabetes Atlas, providing the latest data on the prevalence of diabetes worldwide.

World Diabetes Day 2017 will serve as a vehicle to deliver key advocacy information and request recognition and renewal of the 22 action based commitments for the response to noncommunicable diseases (NCDs) that governments agreed to in 2012. The aims and objectives of WDD 2017 support WHO voluntary targets on 0% increase in diabetes prevalence and 80% access to essential diabetes care by 2025 as well as the Global Monitoring Framework on NCDs and the target under Goal 3 of the Sustainable Development Goals, which aim to reduce one-third premature mortality from non-communicable diseases through prevention and treatment by 2030. A letter will be sent to all IDF Members who will be requested to tailor it with information from their own country, deliver the document to their national governments and take an active role in obtaining government recognition and renewal of their commitments by signing the letter.

As is the custom, the global diabetes community will be marking World Diabetes Day 2017 with a wide range of awareness and advocacy activities in November, in the more than 160 countries represented by IDF. A snapshot of these activities can be viewed on the WDD events map – www.idf.org/wdd-events.

Visit www.worlddiabetesday.org for more information and resources about the World Diabetes Day 2017 campaign.

Women with diabetes around the world

To support IDF's World Diabetes Day 2017 theme of "Women and diabetes: Our right to a healthy future", Diabetes Voice reached out to a variety of public or privately supported initiatives focused on improving the lives of women with diabetes around the world. In Singapore, we learn about the Ministry of Health's determination to reduce the risk of diabetes for their population with an emphasis on women and their families, and in Italy, the Donna (Woman) Study Group explores potential gender differences in the quality of care in Italy, with special emphasis on cardiovascular risk factor targets and current treatments. In the US, we are introduced to a research team helping Latina women overcome barriers to diabetes self-management and prevention strategies, and we meet DiabetesSisters, a US nonprofit organisation who with online and in-person outreach provide support and education without judgment. Finally, in Saudi Arabia, we learn that women there are overcoming cultural barriers to access healthier lifestyles.

Singapore: Empowering women in the 'war on diabetes'

Participants of "Healthy Kitchen, Healthy Women."

Diabetes is a global health concern. In Singapore, 1 in 9 residents aged 18 to 69 have diabetes: of these, 1 in 3 persons are undiagnosed. Among those diagnosed, 1 in 3 have poor blood sugar control. Recognising this, Singapore's Health Ministry declared 'war on diabetes' for a whole-of-nation effort to better prevent, screen and control diabetes.

Apart from managing their own risk factors for diabetes and other chronic diseases, women play an important role in their families as they can influence food and lifestyle choices at home. Singapore's Health Promotion Board (HPB) works with grassroots and women's groups to raise women's awareness of diabetes. For example, HPB worked with the People's Association Women's Executive members to publish a collection of healthy recipes entitled "Healthy Kitchen, Healthy Women" and community talks on diabetes prevention and management were held to promote the initiative.

HPB's efforts also extend to identifying persons with increased risk of developing diabetes later in life, and exploring ways to reduce this risk. One important group is women with gestational diabetes (GDM) who also have a higher risk of pregnancy complications. Close to 1 in 5 pregnant women in Singapore have GDM. GDM also places babies at higher risk for obesity and type 2 diabetes.

In Singapore, routine GDM screening is offered to all pregnant women at public healthcare institutions. This is a shift from previous guidelines where only pregnant women at high risk were screened. Subsidies are also available to support eligible women in their regular screening for diabetes. Initiatives are being developed to anchor care in the community to facilitate holistic management and continuity of care for women post-delivery. Upstream, our preventive efforts include tackling the modifiable risk factors through various strategies. HPB in collaboration with KK Women's and Children's Hospital, developed a national mobile application allowing pregnant women to track their body mass index, blood pressure and blood sugar levels, and offered personalised health content.

Currently, screening for diabetes is recommended for Singaporeans 40 years and older. Later this year, we will launch a diabetes risk assessment (DRA) tool to assess the risk of undiagnosed diabetes in Singaporeans between 18 to 39 years old. This can help nudge those identified "at-risk" to attend screenings, and adopt habits to prevent diabetes. We want all younger women to use the DRA tool to assess their risk, and encourage their peers to follow suit.

We hope that this year's World Diabetes Day theme – "Women and Diabetes" – will inspire women to take up a pivotal role in our 'war on diabetes' and help our loved ones lead healthier, happier lives.

Contributed by **Dr Amy Khor**, Senior Minister of State (Health and Environment & Water Resources), Singapore.

1. National Health Survey 2010.
2. Poor control is defined as Hba_{1c} ≥8%

Italy: Gender differences in treating type 2 diabetes

The impact of diabetes on cardiovascular risk is particularly evident in women, who experience more major cardiovascular events, especially myocardial infarction, and higher mortality rate, even during pre-menopause. In Italy, a continuous improvement effort by a network of diabetes clinics has been implemented since 2006 under the aegis of the L'Associazione Medici Diabetologi (AMD), called the AMD Annals Initiative.

The AMD initiative, which includes approximately one-third of all diabetes outpatient clinics operating within the Italian national healthcare system, allows the monitoring of a large set of process and outcome indicators and the use of specific classes of drugs. The "Donna (Woman)" Study Group analyzed the AMD Annals data to explore potential gender differences in the quality of care in Italy, with particular regard to the achievement of cardiovascular risk factor targets and current treatments.

Overall, 415,294 patients from 236 diabetes outpatient centers were evaluated, of whom 188,125 (45.3%) were women. We found that gender disparities are less

AMD Donna Group.

pronounced in Italy than in other countries, but they still exist, despite equal access to specialist care and universal coverage of healthcare costs. The achievement of targets for the major cardiovascular risk factors is systematically unfavorable to women with diabetes, who are more obese, often have a worse control of diabetes and worse lipid profile, and a higher frequency of reduced glomerular filtration rate, with a lower prevalence of microalbuminuria.

In the world, women with diabetes are systematically under-treated with drugs for cardiovascular risk factors, such as ASA, ACE-I, β-blockers, statins, and hypoglycemic agents, and this may explain the failure to achieve recommended targets. On the contrary, the Italian data do not confirm the trend by showing that there are no gender differences in the use of drugs: women and men are similarly treated with statins (40% both), but the difference in reaching the LDL target is still evident in all age-strata; women are more frequently treated with two or more antihypertensive drugs and the results in hypertension control are the same; women are more frequently treated with insulin or insulin and oral hypoglycemic drugs than men, but women were 11% more likely than men to have HbA_{1c} levels >8.0% (64mmol/mol), mainly in more elderly patients.

Since men and women with type 2 diabetes receive the same "quantity and quality of care for their diabetes", our data suggest that other biological, genetic and/or behavioral factors may underline these differences, and gender-specific studies are needed to explore these potential areas of intervention.

Contributors: **Valeria Manicardi, Maria Chiara Rossi, Giuseppina Russo, Patrizia Li Volsi, Nicoletta Musacchio, Domenico Mannino** on behalf of the "Donna" Study Group" of AMD (Diabetologists' Medical Association).

USA: Improving outcomes for Latina women

La Comunidad participants.

Although research studies have demonstrated that weight-loss through increased exercise and reduced calorie intake can help prevent or delay the development of type 2 diabetes and recent efforts on the national level have been aimed at diabetes prevention, these programs have yet to be effectively disseminated in Hispanic/Latino communities. Statistics from the American Diabetes Association suggest that the rates of diabetes are higher in Hispanic/Latina women than in the general population in the United States. Hispanic/Latina women tend to develop diabetes younger in the lifespan than non-Hispanics and are two to three times more likely to develop the disease. By age 70, more than 50 percent of these women have diabetes compared to around 10 percent for non-Hispanic whites. Researchers at Wake Forest School of Medicine developed a group-based weight-loss intervention for diabetes prevention and have now adapted it for delivery in the local Latino community. The weight-loss intervention being tested is designed to be delivered in a community setting by a peer lay health advisor with support and training from healthcare professionals.

Beginning in 2014, 225 Hispanic/Latino participants have enrolled in the Latinos Combating Diabetes (La Comunidad) study. Of these, 191 are female, presenting the study team with a unique opportunity to examine the challenges faced by Latina women as they strive to make healthier lifestyle choices. Many of these women work more than one job or work longer hours, making it difficult to find time for exercise each day. Similarly, childcare, transportation, and rotating work schedules make attendance at the weekly group meetings problematic. The lack of affordable, healthy food choices that are both appealing and culturally appropriate can also make improving their diets difficult. Finally, some Latina women face challenges in fostering and maintaining support for weight-loss and healthy habits in their own households. The La Comunidad study could provide important insight into overcoming these barriers and improving health outcomes in Latina women.

Contributed by **Mara Vitolins**, lead researcher for The Latinos Combatiendo La Diabetes (La Comunidad) study. **Dr. Vitolins** is Professor, Epidemiology & Prevention Office of Women in Medicine and Science Center on Diabetes, Obesity, and Metabolism at Wake Forest School of Medicine, North Carolina (USA).

USA: DiabetesSisters offers support to all women with diabetes

DiabetesSisters (USA)

Founded in 2008, DiabetesSisters is a non-profit organization dedicated to improving the health and quality of life of women with or at risk of developing diabetes. The organization serves the community both online and in-person, providing support and education in a safe, non-judgment zone.

Addressing the needs of women living with diabetes candidly, DiabetesSisters has tackled sensitive subjects such as pregnancy, parenting with diabetes, menopause and eating disorders, discussing and learning about each topic and providing professional and peer support along the way. Filling this gap has been instrumental in their success, with women returning to DiabetesSisters events and discussing their progress. Another issue that has been prevalent has been stigma and isolation in living with diabetes. Our programming emphasizes that no woman should walk the path of diabetes alone. Because our community is inclusive, women with all kinds of diabetes can share their successes, triumphs, struggles and fears, and have other Sisters provide their own experiences in the same realm. We have recently started to speak about issues on the rising cost of medications and the fear in losing access to diabetes treatment.

The organization works with national government agencies, national corporations, private practitioners, women's organizations, and diabetes organizations to carry the message of education, support, and empowerment to women with diabetes around the country. As of June 2017, the organization had over 13,000 registered members and nearly 10,000 social media followers. The website also receives half a million visitors annually.

Online, DiabetesSisters offers innovative, user-friendly web-based programs to address the various ways women prefer to connect with others and receive diabetes education. For women who prefer to learn through quiet observation, DiabetesSisters provides articles (blogs) from actual women living with type 1 and type 2 diabetes. In between visits with her healthcare team, a member can engage with healthcare professionals via *From the Experts* Columns or download educational materials from an educational library. Registered members receive a monthly e-newsletter which features tips and resources for living better with diabetes. Additionally, DiabetesSisters offers a free Life Class Webinar Series, with a 30-minute focus on a specific diabetes-related topic.

Additionally, since 2009, DiabetesSisters has offered in-person monthly PODS (Part of DiabetesSisters) Meetups in various locations throughout the US, as well as a Virtual Meetup for those who cannot meet in person. Various times a year, we host a Global PODS Meetup, which has included women from Brazil, United Kingdom, India, and Ghana. In 2015, the organization received funding

to offer a Leadership Institute open to PODS Leaders, where we come together to enhance skills in recruitment and facilitation, as well as receive more education in diabetes. We also offer a Weekend for Women Conference, which has become a signature event for DiabetesSisters, drawing attendees from all over the US with all types of diabetes of varying ages. Recently, DiabetesSisters launched a Minority Initiative Program, designed to reach underserved populations and provide more resources and everyday ways to improve life with diabetes. This program has offered programs such as cooking demonstrations, exercise suggestions, and resource sharing.

For more information on DiabetesSisters, please visit www.diabetessisters.org
Contributed by **Anna Norton**, CEO of DiabetesSisters.

Saudi Arabia: New opportunity for women and girls to access exercise

In Saudi Arabia, women cannot exercise with men and there are no public sports facilities for women, but things are changing. For the first time, women in Saudi Arabia are being encouraged to exercise in public gyms due to the efforts of a prominent Saudi princess, Princess Reema Bint Badar, who became head of a new Department of Women's Affairs at the General Authority of Sports last year. This has been widely seen as signalling the potential for greater female access to sports in the Saudi Arabia, a country where women's participation in sports has been relatively rare.

Following the appointment of Princess Reema in November 2016, the General Authority for Sports and the prestigious Princess Nora University in Riyadh, the largest women's university, signed a memorandum of cooperation for the promotion of sports facilities with a view to the promotion of healthy lifestyles. Further plans in relation to women's sports include:

- the licensing for the first time of women's gyms; and
- modifying outdoor areas to allow women to work out without being seen by men.

Allowing gyms for women and access to a healthier lifestyle could make a huge difference for the overall health of Saudi women. Around 44 percent of women are classified as obese in Saudi Arabia, and the country has some of the world's highest rates of obesity and diabetes.

When unveiling the licensing in March of 2017, Princess Reema said the change is about *"opening the doors for our girls to live a healthy lifestyle."* The Princess also said the Islamic Kingdom planned for every district and neighborhood to have a gym, and while swimming, running and bodybuilding will be allowed, a blanket ban will remain for competitive sports like tennis, football, volleyball and basketball.

Saudi Arabia is currently following a modernisation program called Saudi Vision 2030 where one of the aims is to increase the scale of community participation in sports from 13 per cent to 40 per cent by 2030.

From: Developments in Saudi Sports following Saudi Vision 2030: accessed on the Internet Sept 6, 2017;

IDF Congress 2017: Scientific Programme

The global diabetes community will unite on 4-8 December for the IDF 2017 Congress in Abu Dhabi, United Arab Emirates. The 2017 Congress will include more than 200 expert speakers, 230 national diabetes associations from 170 countries and high level participation from the Health Authority Abu Dhabi (HAAD) and other health organisations. IDF's scientific programme will take place over four days with the aim of delivering worldwide diabetes expertise through varied and innovative program stream sessions.

For 2017, IDF has nine streams covering all areas of the field of diabetes. Below, Manny Hernandez, Stream Lead for Living with Diabetes; Hak Chul Jang, Stream Lead for Diabetes in Women and Children; and Massimo Massi Benedetti, Stream Lead for Diabetes in Society and Culture provide the opportunity for us to learn more about their respective programs and what they have planned for the 2017 IDF Congress.

Living with Diabetes

Manny Hernandez

As we approach our global gathering in Abu Dhabi this December, I'm glad to reconnect with fellow people with diabetes (PWD) and other friends and colleagues from around the world.

Since 2016, I've been working alongside an incredible group of advocates to bring to life the 2017 World Diabetes Congress Living with Diabetes (LWD) stream. Deputy Lead Renza Scibilia (Australia), Kelly Close (USA), Mary Shi (China), and Hakeem Adejumo (Nigeria) are to be thanked for the extraordinary program congress attendees will have an opportunity to participate in and learn from. In the context of this Diabetes Voice issue, dedicated to "Woman and Diabetes", I feel honored that more than two thirds of the 34 speakers we will hear from in our stream in Abu Dhabi are women: mothers, daughters, sisters… all touched by diabetes.

A cornerstone Living with Diabetes (LWD) session will be the Wim Wientjens Memorial Symposium: "Hypoglycaemia and time-in-zone", to be chaired by Kelly Close, with Daniela Rojas (Costa Rica), Simon Heller (UK), and Bart Van der Schueren (Belgium). Dr Wientjens lived with diabetes from 1951 until his passing in 2016. He was a staunch champion for people with diabetes, and in his last years focused his advocacy on hypoglycaemia. Presentations about the personal impact of severe low BG, impaired hypoglycaemia unawareness, and time-in-zone as a new endpoint beyond HbA_{1c} will allow us to honor Wim's legacy.

In the past five years, the #WeAreNotWaiting movement has impacted the lives of thousands of people with type 1 diabetes (T1D) around the world. OpenAPS (Open Artificial Pancreas System) gives anyone with compatible medical devices who is willing to build their own system the tools to have basic overnight closed loop APS technology. Renza Scibilia will moderate a debate that will likely be standing room-only: Dana Lewis (creator of the OpenAPS) and Annie Astle (a UK mother of a child with T1D) will argue for the rationale built into

#WeAreNotWaiting versus "why are we waiting" regarding diabetes technology.

From shame and blame to living with diabetes "in the closet"—the stigma of diabetes is very real and keeps people with diabetes from realizing their full potential. I will have the honor of chairing a symposium about the stigma surrounding diabetes. Rivers Solomon (UK) and Mohammad AlBahar (Kuwait) will share the European and Middle-Eastern perspectives, and Sama Ajmal (Pakistan) will focus on the topic from the point of view of young women in the developing world.

The LWD stream will also touch on emotional and mental health aspects of life with diabetes and the importance of peer-to-peer support; dive into how language matters when speaking to and about people with diabetes; and explore diabetes tools and apps… all from the perspective of people with diabetes.

I look forward to seeing you in Abu Dhabi. If you see me roaming around the Convention Center, don't hesitate to say "HOLA!"

Manny Hernandez (@askmanny) is the Living with Diabetes, Stream Lead.
He was born in Venezuela and has been living with type 1 diabetes since 2002. Manny co-founded TuDiabetes.org and EsTuDiabetes.org in 2007 and is currently Senior Vice President of Member Experience at Livongo Health.

Diabetes in Women and Children

Hak Chul Jang

Hyperglycaemia in pregnancy includes both gestational diabetes mellitus (GDM) and diabetes mellitus in pregnancy. IDF estimates that 20.9 million or 16.2% of live births to women had some form of hyperglycaemia in pregnancy worldwide in 2015. GDM is one of the most prevalent metabolic disorders during pregnancy. Women with GDM have an increased risk of adverse pregnancy outcomes and both mothers and their children are at increased risk of developing type 2 diabetes. In addition, women with past GDM also have higher prevalence of metabolic syndrome and cardiovascular diseases in later life.

The Diabetes in Women and Children (DWC) Stream for the IDF Congress 2017 in Abu Dhabi will provide programs covering several important issues including detection and diagnosis of GDM, update of diabetic pregnancy management, prevention of GDM in women with high risk, prevention of type 2 diabetes and /or

cardiometabolic syndrome in women with past GDM, and long-term complications of offspring of women with diabetes. One highlight will be the IDF Congress 2017 Award Lecture given by Professor Boyd Metzger, the primary investigator of the HAPO study. He will discuss the challenges in the diagnosis of GDM. Further recognizing the emerging controversy of diagnosis of GDM, the IDF–International Federation of Gynecology and Obstetrics (FIGO) joint symposium and special session for the diagnosis and management of GDM in low-resourced settings will be held.

Our program offers sessions covering reproductive issues for women living with diabetes including discussions on contraception, polycystic ovary syndrome (PCOS) and menopause. As medical services using ICT-devices have been developed to improve diabetes management, we will explore the "Role of ICT and mHealthcare in diabetic pregnancy" along with recent updates of medical nutritional therapy and pharmacological treatment during pregnancy.

The management of children and adolescents with type 1 or type 2 diabetes will be presented and discussed in an open session of the DWC stream. The International Society for Pediatric and Adolescent Diabetes (ISPAD) lecture entitled, Perils of the postpubertal period, will be given by Joseph Wolfsdorf, MD, BCh, Director of the Diabetes Program at Boston Children's Hospital (USA).

Hak Chul Jang is a Professor of the Department of Internal Medicine, Seoul National University College of Medicine and Stream Lead for Diabetes in Women and Children.

Diabetes in Society and Culture

Massimo Massi Benedetti

The Diabetes in Society and Culture (DSC) Stream is designed to stimulate the IDF community to consider the impact on diabetes of environmental and cultural factors in a wide advanced perspective through sessions dealing with

- Primary and secondary prevention.
- Scientific methodologies for real life evidence.
- Relationship between diabetes and beliefs.
- Partnership with service organisations.
- Role of public and private partnership.
- Integration of people with diabetes in the society.
- Relationship between migrants and host societies.

Primary and secondary prevention are most frequently approached with traditional clinical trials which evaluate the impact of a restricted, selected number of environmental and behavioural factors in (more or less) ample cohorts. Their value is undeniable to prove the concept of prevention. However, an unpredictable number of factors which vary and have a different

impact in diverse environments, societies and cultures has a relevant effect on the implementation of real life preventive programs at the population level. Appropriate and robust scientific methodologies need to be adopted and possibly developed to design, monitor and provide evidence of the outcomes of population based interventions. These issues will be dealt with in Session 1: *The role of society in primary prevention of diabetes: Health in all policies;* Session 2: *The role of society in secondary prevention of diabetes: cultural and socio-economic factors;* and in Session 3: *Real life evidence and value based diabetes care.*

The DSC session on Diabetes and beliefs highlights examples on how beliefs, and not only religious ones, can influence the lives of people with diabetes. Much has already been said about diabetes and Ramadan, while little attention is paid to food and beliefs generally especially regarding the growing diffused attitudes towards nutrition. Additionally, the role of traditional healers, evaluated with appropriate scientific methodologies, is proven to represent a valuable resource in environments where modern healthcare has objective difficulties to penetrate.

The open forum on Service Organizations and Foundations should motivate the IDF community to establish more structured partnership with independent humanitarian agencies not only to increase the availability of economic resources but also, and possibly more importantly, to take advantage of their cultural background and networks to increase awareness on diabetes in various societies throughout the world.

The debate on the Public-private partnership should represent an opportunity for IDF to re-evaluate its relationships with public or private partners having in mind old and new prejudices. Caveats and opportunities are to be evaluated objectively to select the right partner for any specific initiative by taking advantage of newly prevailing doctrines in economy within the frame of the sustainable development concept.

The Symposium on Integration of people with diabetes in the society deals with an issue that is deeply relevant in the daily life of people with diabetes. Administrative and at workplace discrimination is well known, however more subtle forms of discrimination undermine the daily life of people with diabetes with different expressions and perceptions in different cultures generating reduced self-esteem and resilience.

The topic of Migrants is of high relevance in our world today. However, the DSC program is subdivided into one, the burning condition of "refugees" which is being considered in a specific stream and two, the condition of "legal" migrants who find difficulties in long-term full integration into the new country of residence. This is of particular relevance for people with diabetes as they might experience difficulties with language, nutritional behaviours, beliefs and more which may interfere with diabetes management and control.

Massimo Massi Benedetti is President and Scientific Director, Hub for International Health ReSearch HIRS, IDF Senior Programme Advisor and Stream Lead for Diabetes in Society and Culture.

Lessons from WINGS

Belma Malanda

Notwithstanding several decades of research, there are several constraints to gestational diabetes (GDM) care, from screening to postpartum follow-up. Awareness and knowledge about GDM is poor even among healthcare professionals (HCPs). Furthermore, lack of standardized protocols in screening and management, and lack of coordination among HCPs involved in providing care for GDM often results in less than optimal care and poor follow-up during pregnancy and after delivery. The postpartum period provides an opportunity for lifestyle intervention to prevent future risk of diabetes

To address these challenges and critical gaps in effective care for GDM, WINGS (Women In India with GDM Strategy), a three and a half year-long project, was conducted by IDF from 2012 to 2015 in Chennai, Tamil Nadu, India, with the aim of developing a model of care that is suitable for women with GDM in low- and middle-income countries.
It was carried out in two phases.

In Phase 1, a situational analysis was conducted to understand the practice patterns of healthcare professionals and determine the best screening criteria which was achieved through a pilot study. In Phase 2, the project aimed to develop a standardized approach to GDM care that was evidence-based, feasible, and acceptable in resource-constrained settings. The project also aimed to evaluate the effectiveness of this new model of care (MOC).

WINGS take-home messages

After implementation of the WINGS MOC, women with GDM were found to have pregnancy outcomes similar to pregnant women without GDM, i.e, the general population of Tamil Nadu. Most importantly, WINGS saw ninety-six percent of women return for follow-up after delivery which is a new record of sorts in India where post-partum follow-up rates are usually between ten to twenty percent.

At the six weeks follow-up screening, four percent of women had developed type 2 diabetes. This percentage likely reflects pre-existing diabetes in these women and further emphasizes the need for an immediate follow-up check for diabetes after the delivery. WINGS demonstrated that through an intensive and continued effort, universal post-partum follow up is achievable, which creates a significant opportunity for prevention of type 2 diabetes.

WINGS demonstrates that following a structured model of care, pregnancy outcomes in women with GDM can be improved to the level seen in non-diabetic women. This multi-level strategy helps to approach GDM at not only at the individual level but also at the family and community levels providing a holistic approach to overcome barriers to care.

The framework of the GDM model of care[1]

The WINGS pilot phase was made local by using materials in Tamil and Hindi languages as well as English. Aligning with the new WHO definition on GDM, WINGS was a joint community and health facility-based intervention for the management of GDM. The WINGS MOC is suitable for integration into existing maternal and child health systems, strengthening capacity to address GDM and improving health outcomes of women with GDM and their newborns.

The WINGS model approach to care for GDM was developed targeting the individual (pregnant women), their families, the health facility, community, and the global scientific audience with a variety of initiatives and programs.

- At the individual and family level, WINGS aimed to build the awareness and education on GDM through one-on-one counseling, educational programs, and various educational materials. An educational booklet on GDM entitled "Having a baby?" was developed for pregnant mothers. The booklet uses simple and easy to understand language to educate women on defining GDM, how it develops, who is at risk, and instructions related to self-managing

the condition, such as blood glucose testing, healthy eating, safe exercise and an area for diary keeping.

- At the health facility level, capacity building was done by training HCPs in identifying, treating, and managing GDM. A training curriculum was developed for this purpose.

- At the larger community level, especially the remote and the rural regions which have limited access and availability to GDM care, community health workers (CHW) were trained with basic awareness and information about GDM. Community-based activities were conducted as part of the WINGS outreach program with the help of experts in the field of nutrition. Pregnant women were invited to attend the program and were educated about proper nutrition and physical activity through cooking demonstrations and lively interactive sessions. Link to CHW training manual.

- Reaching out to a broader global audience was always a part of the WINGS objective with the idea that the implementation of the model in India would help to provide insights and recommendations for improved care of women diagnosed with GDM in other low-resource settings. Through peer-reviewed scientific publications, the model was disseminated and made available to the global community.

Study HCP participants found that WINGS provides a comprehensive package of tools for every level of care focusing on diagnosis, management, and follow-up of women with GDM who were followed prospectively throughout their pregnancy. The educational booklet, discussed above, offers guidance on self-management of GDM including sample meal plans and physical activity tips. Medical nutrition therapy (MNT) was the first line of treatment given to women with GDM and women were advised to undergo fasting blood glucose and postprandial blood glucose testing every fortnight—insulin was indicated when the target blood glucose levels were not achieved with MNT. Women were evaluated for pregnancy outcomes and postpartum glucose tolerance status.

The issue: GDM in low- and middle-income countries[2]

GDM contributes to about ninety percent of diabetes complicating pregnancy.

Prevalence of GDM has dramatically increased in the past 20 years among various ethnic groups. IDF estimates that

as of 2015, 16.2% of women with live births had some form of hypoglycaemia in pregnancy, 85% of which were due to GDM. There is a notable difference in the prevalence of GDM, with the IDF South-East Asia Region (SEA) having the highest prevalence (87.6%) of all the low- and middle-income countries where access to care is often limited. Asian women are more prone to develop GDM than European women and Indian women have an 11-fold increased risk of developing glucose intolerance in pregnancy compared to Caucasian women. Studies done in the 1980's estimated the prevalence of GDM in India at two percent, which substantially increased to 16.55% in 2000.

GDM imposes risks for both mother and fetus, and some of these risks continue throughout the life of mother and child. Immediate maternal complications include preeclampsia, need for cesarean sections, and poly/oligohydramnios. Complications in the baby include hyperinsulinemia, macrosomia, shoulder dystocia, neonatal hypoglycemia, and respiratory distress syndrome. Women with GDM are at an increased risk of GDM in future pregnancies and they are also at a higher risk of developing type 2 diabetes in the future. GDM also increases the risk of obesity and glucose intolerance in the offspring. GDM is an important public health issue that has major repercussions for both mother and offspring. Detection of GDM provides a window of opportunity to intervene and reduce adverse perinatal outcomes.[3]

For more information on IDF work on GDM: https://www.idf.org/our-activities/care-prevention/gdm.html

WINGS was developed and supported through a partnership between IDF, the Madras Diabetes Research Foundation (MDRF) in Chennai, India, and the Abbott Fund, the philanthropic foundation of the global healthcare company Abbott. The study was approved by the Institutional Ethics Committee of the MDRF. Permission was also obtained from the Directorate of Public Health and the Ministry of Health, Government of Tamil Nadu, to conduct the study in the primary health centers.

Belma Malanda, MD, MPH is Senior Programmes Manager for IDF.

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2. International Diabetes Federation. IDF Diabetes Atlas. 7th ed. Brussels, Belgium: International Diabetes Federation; 2015.

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Diabetes in pregnancy: an opportunity for healthy change

Jessica Lynn

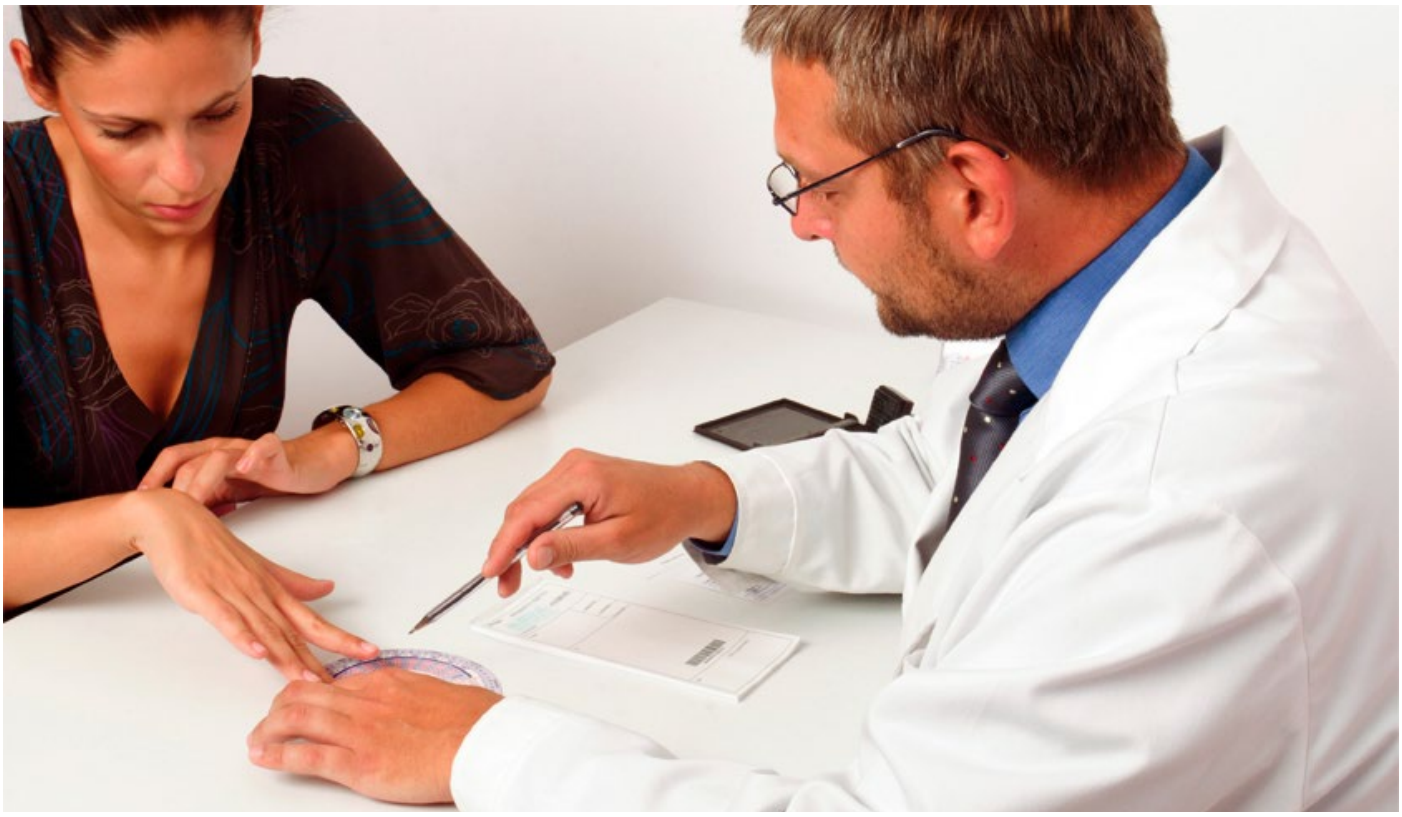
In July, the Centers for Disease Control (CDC) published updated statistics on diabetes in the United States. Nearly half the US population has diabetes or its precursor, pre-diabetes.[1] On one hand, these numbers are staggering. On the other, there's no disease with such opportunity for prevention and even reversal. When I was growing up with type 1 diabetes (T1D), my father often reminded me how fortunate I am to have a manageable disease. He told me I could live a long and even healthier life as a result of having T1D. "It's not a death sentence. It's an opportunity!" he'd say.

I realize this is not a typical viewpoint. Barriers to managing a chronic disease are many and multifaceted. Taking advantage of an opportunity like this requires desire, consciousness and a confluence of positive factors, including mental and physical health, access to healthcare, education, financial tools and community support.

In addition to having diabetes and the privilege of being a mother of two, I am a nurse midwife and perinatal diabetes educator. I have had the great honour of delivering babies and caring for women with diabetes in the US, Jamaica and Guatemala. Today, I am part of a dedicated diabetes-in-pregnancy practice in a Brooklyn (New York, US) public hospital with a team of high-risk doctors, nurses and dietitians. We work in a diverse and under-served population where rates of diabetes and its complications are even higher than average in the US. We recognize the need to provide more comprehensive screening and support as our population has been deeply affected by racial and socioeconomic health disparities.

Working with a population of pregnant women who have diabetes, I am inspired to see their remarkable potential as change agents. They have the lowest no-show rate. They readily make healthier food choices and decide to exercise. They consistently drop their HbA_{1c} throughout pregnancy. Their health habits routinely influence their families. Women are lifestyle guides for their children, partners, parents, churches and schools. Observing this made me wonder: what if we could help women sustain the healthy changes made during pregnancy for the rest of their lives?

I developed and continue to update diabetes in pregnancy guidelines for the New York City public hospital system, but guidelines are not enough. Diabetes in pregnancy deserves a conversation, a sharing of ideas for how to make change happen. In addition to talking with patients and other healthcare providers, I often speak to obstetrics departments to encourage more comprehensive diabetes prevention and management. Here are some highlights from my presentations:



All health care providers need diabetes education

Diabetes is no longer a disease for endocrinologists alone, nor solely primary care providers. Diabetes is present in every medical specialty and at home for people without any medical care. In obstetrics, we are often the first healthcare access point for women. This makes us primary care providers. To help create positive change in the diabetes epidemic, I encourage all healthcare providers to borrow some wisdom from a diabetologist.

Suspect hyperglycaemia

Knowing that hyperglycaemia affects almost half our population, we added HbA_{1C} to our initial labs for all pregnant women with or without known diabetes. We have been able to put individual hyperglycaemia on the map, screen women earlier for gestational diabetes mellitus (GDM) and more closely follow changes in glycaemia throughout pregnancy. We actively find undiagnosed type 2 diabetes (T2D), as well as identify and discuss pre-diabetes within a receptive population.

High blood glucose is the culprit, not diabetes

Hyperglycaemia (undiagnosed or unmanaged) causes miscarriage, excessive fetal growth, birth trauma, increased caesarean section rates, and even fetal death. Hyperglycaemia in pregnancy also contributes to neonatal complications and childhood disease including obesity, T2D and non-alcoholic fatty liver disease. When I tell a woman she has diabetes in pregnancy, she is often frightened, disappointed, and confused. I reassure her it's not the diabetes diagnosis but high blood glucose that can cause harm to her and her baby. I always let her know that our medical team will help her learn how to manage blood glucose and reduce her risks of complications.

Collaborate across disciplines

The American Congress of Obstetricians and Gynecologists (ACOG) recently made sweeping changes in their GDM guidelines: recommending more comprehensive screening, expanding the time frame for postpartum glucose testing, and reconsidering the role of insulin in pregnancy as opposed to oral hypoglycemics.[2] Throughout the guidelines, ACOG referenced the position of the American Diabetes Association. This is an example of sharing research and clinical experience to improve outcomes. Good news for all!

Women need individualized and culturally specific care

First line therapy for diabetes is lifestyle change, and lifestyle is affected by cultural, socioeconomic and family factors. It's important to get to know your patient. Ask her what happens in a typical day. Is her schedule determined by her children's activities? Does she work at night? Does she eat pizza and soda and or tacos and rice? Consider helping her tailor her life, instead of overhauling it. This leads to a higher likelihood of success. We have a Yemeni

population at my hospital and I noticed many women have high blood glucose following their afternoon meal. I learned they were eating asida, essentially a cooked wheat flour sometimes with butter or honey and often eaten alone. Once I knew this, I was able to suggest workable options: smaller portions, limiting the honey, and going for a walk after the meal. Talking about culturally important factors like asida and fasting during Ramadan have been trust building. The ultimate result: improved blood glucose that's sustainable in pregnancy and beyond.

Every visit is a preconception visit

With or without diabetes, almost half of pregnancies in the United States are unintended. Unplanned pregnancy is associated with poor outcomes, more so for women with diabetes. Healthcare providers should have preconception discussions with women of childbearing age. One Key Question® can be a useful tool. Ask women at every visit 'Would you like to become pregnant in the next year?' If the answer is no, offer contraception. If yes, provide preconception care. For women with diabetes, this starts with HbA_{1c} <6%. In our busy practice, we encourage this approach.

Discuss goals with women

I've seen first-hand that pregnant women are interested in health and extremely goal oriented. Discuss targets for blood glucose, $HbA_{1c,}$ and weight at every visit. I often give women their HbA_{1c} history in writing so they can be involved and proud when they meet their goals. Pregnant women with diabetes can and do reach those goals, more often when discussed with a healthcare provider.

GDM is a form of prediabetes

Gestational diabetes does not disappear at birth. This myth of its disappearance is pervasive and potentially injurious. At the time of their initial postpartum glucose testing, nearly half of women diagnosed with GDM have either impaired fasting glucose, impaired glucose tolerance, or overt diabetes. I tell every woman I meet in our practice, "You have gestational diabetes which often leads to type 2 diabetes. However, your healthy changes in diet, weight loss, exercise, and breastfeeding can help prevent or delay diabetes in your future."

Small changes are important changes

Eliminating liquid carbohydrate can have a powerful effect on health, changing the course of diabetes. Recently, a woman in our practice with no known history of diabetes had an HbA_{1c} of 6.7% at her initial prenatal visit. She was drinking 4 glasses of juice a day, but otherwise had a healthy diet of moderate carbohydrate, no processed food, lots of vegetables and proteins. Still, I thought she would need insulin therapy. Fortunately, she was willing to completely stop drinking juice. I had her monitor blood glucose and return in 5 days. To my surprise, her blood glucose was 100% within our pregnancy target. She proceeded to drop her HbA_{1c} to 5.9% in the second trimester and 5.2% by the third trimester having made just that one change in her diet.

Believe in the ripple effect

Think of women as central to the health of their families and communities. Talk about reducing or eliminating juice and soda intake. Encourage more physical activity, stress reduction and adequate sleep. Women can and will alter the lifestyles of their children and beyond. They are central to the powerful ripple effect for change we need to see in diabetes.

Be inspired. Be positive. Diabetes is an opportunity for health!

Jessica Lynn, MSN, CNM, CDE is a midwife and perinatal diabetes educator in Brooklyn. She has lived passionately with T1D for more than 40 years, and devotes her career to diabetes care for women.

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Women living with type 1 diabetes go the distance

Erin Spineto

Erin and Erika prepare for (stand up) paddle boarding.

Each year, I lead a team of people with type 1 diabetes (T1D) on what is often considered the adventure of a lifetime. In the summer of 2017, I wrapped up another one of my Sea Peptide adventures, this time in the beautiful waters of Turks & Caicos. On my adventures, the following philosophies are key for success:

- Every person with diabetes can be happy.
- Every person with diabetes needs others to commiserate with, to plan with, and to adventure with.
- Your big adventure may not be the same as my big adventure — but whatever your BIG is, you can find a way to make it safe with diabetes.

This year, as part of the One Drop Caicos adventure, my trek with Erika Young and Kati Long included 50 miles on paddle boards, 20 miles hiking and swimming, and another 50 miles on bikes for a total of 120 miles from South Caicos to North Caicos. The goal? To get a group of people living with T1D together to push beyond what we think we are capable of achieving. Living with diabetes day in, day out can get tough, and having or making adventures remind us that we are more than just our diabetes. We are stronger than our highest highs and lowest lows. We all need a little reminding every now and then!

We started training in January, 2017. I put together a

training program for Erika, Kati & myself at the start of the year and for the next six months leading up to the trip, we trained each day, keeping each other accountable and updated on our progress even though we do not live in proximity to each other.

When One Drop Caicos finally began, our trio was ready for action. Our team was set; we had all our diabetes supplies carefully packed, meals and snacks planned out for our days, and specially-designed rigs that I made to carry backpacks (which included essential diabetes supplies). We towed our rigs behind us in the water as we swam from cay to cay.

When you're out on an adventure sometimes your safety can be in the hands of your teammates and you want to know that they have put in the time to be competent, should you need them. With Kati & Erika by my side, I felt fully confident in our crew. With an all-woman team, we all knew and understood just how far we could push ourselves. Adding type 1 diabetes into the mix and we were unstoppable! All of us understood what we were going through when we saw blood glucose spikes during or after an eight-hour paddle or when any of us endured hypoglycaemia that would not let up. Without saying a word, we knew each other's pains and triumphs. We also encouraged each other, pushed each other and held each other's packs when someone needed a juice break. Our trio went to the limit and beyond.

When I finish and succeed on an adventure, I am always motivated to take good care of my diabetes and after returning from the Caribbean, I am once again back home with a renewed passion for taking amazing care of my diabetes.

While I set out on these adventures always with a mile-marker in mind (this time, it was 120), the end-goal isn't about hitting that magic number any more than taking care of diabetes is about always catching a blood sugar unicorn (100 mg/dL). Instead, it's all about doing the best we can, together, and pushing ourselves to do better than yesterday. And our trio learned to do just that.

Erin Spineto was diagnosed with diabetes in 1996. When she ran out of motivation after fighting hard for twelve years, she turned to adventure to provide the motivation she sought starting with a 100-mile solo sail down the Florida Keys. You can read more about her adventures on her blog: **SeaPeptide.com**. Erin currently lives in San Diego, California, USA.

Type 1 diabetes and pregnancy

Ginger Vieira

It wasn't very long ago when a young girl's diabetes diagnosis would come with the doctor warning her parents that she would never be able to experience pregnancy and give birth to her own children. In fact, if you have the unfortunate luck of being diagnosed by the wrong medical team, they might still be telling parents and young women that pregnancy with type 1 diabetes (T1D) is out of the question.

Today, it's very possible for a woman with T1D to pursue a healthy and safe pregnancy. However, women living with T1D need to understand that while this journey doesn't come without challenges, it's perfectly natural if the idea of managing diabetes during pregnancy seems daunting. Managing blood glucose with insulin therapy and carbohydrates is complicated on any given day, and it absolutely becomes much more complicated with pregnancy.

With the right support, the correct information and knowledge, a woman with T1D can anticipate how insulin needs and blood glucose will be impacted by the journey of pregnancy. Giving birth is a reasonable pursuit for any woman, and that includes women with T1D.

In 2017, I wrote Pregnancy with Type 1 Diabetes. Simply put, the book was created to provide women with the most important information in order to manage diabetes well during pregnancy. The first half of the book is a detailed, in-depth guide to T1D management prior to pregnancy, and the second half of the book guides the reader through each month of pregnancy, delivery, postpartum and breastfeeding.

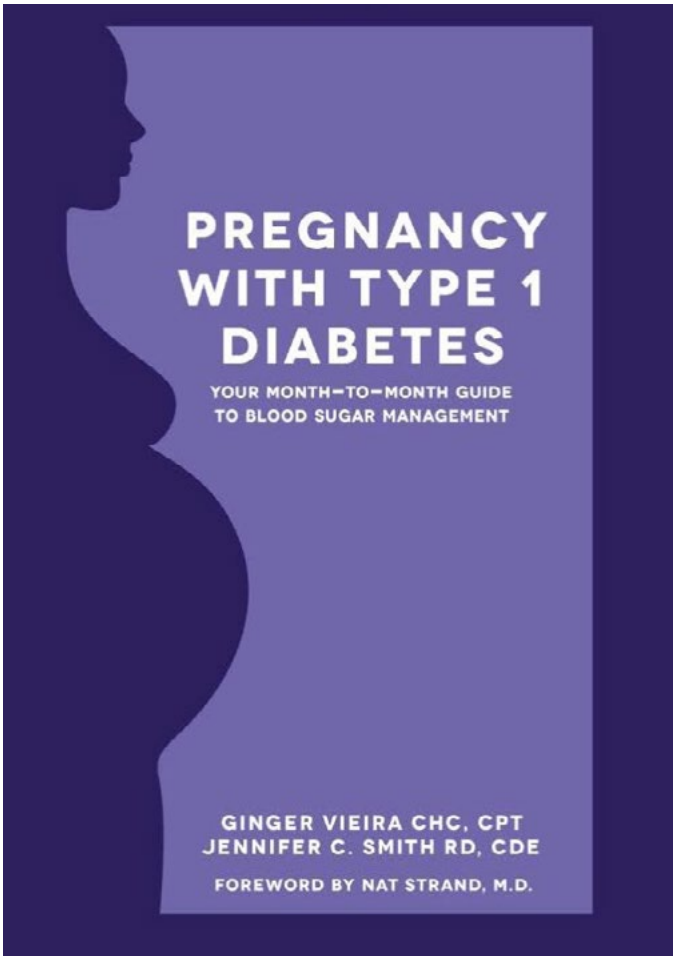
Why is pregnancy with type 1 diabetes complicated?

The hardest part about managing blood glucose in that much tighter range during pregnancy is that insulin needs will be constantly changing, in part, because of hormones which play a big role in glucose fluctuations. Pregnancy for any woman, living with diabetes or not, is full of several different types of hormones that increase gradually throughout pregnancy. The following targets for blood glucose from the American Diabetes Association give an

idea of the tight control that is required for most pregnant women living with diabetes:

- Before meals, at bedtime, and overnight: 90 mg/dL(5 mmol/L) or less
- 1 hour after eating: 130 mg/dL (7.2 mmol/L) to 140 mg/dL (7.8 mmol/L) or less
- 2 hours after eating or 120 mg/dL (6.7 mmol/L) or less

These are very general guidelines: most doctors will work with their patients to individualize targets. However, variation in insulin needs will occur. For example, in the first trimester, insulin requirements will actually decrease and it can be normal to battle constant low blood sugars



or hypoglycaemia until doses are adjusted. As the second trimester gets going insulin doses will creep up and many women will be shocked at how many more insulin units are required to cover something as basic for the carbohydrates in an apple. Soon though, as everything starts winding down and with a delivery date approaching, insulin doses start to decrease again.

Managing type 1 diabetes with pregnancy can be a very complicated journey, but it can be done. Many women are truly shocked by their ability to manage daily blood glucose tighter than they've ever managed them before and most people agree that having a healthy baby is the ultimate motivation. It's not uncommon for women to achieve HbA_{1c} levels that were previously thought to be out of reach.

Once upon a time, I thought pregnancy and T1D were two things I would never want to mix. I told myself that putting the physical and mental stress of pregnancy on my body wasn't healthy, and I was sure it wasn't healthy for a baby either. Fortunately, I read stories and saw photos and heard the news of so many other women with type 1 diabetes successfully giving birth to their very own biological children. They did it. I realized I could do it, too. Type 1 diabetes may prevent people living with the condition from producing insulin, but it doesn't have to stop us from producing a gorgeous, healthy baby boy or girl. Someday, whenever a young girl or woman is diagnosed with T1D, all doctors will quickly reassure her and her parents that she can absolutely pursue pregnancy.

Ginger Vieira has lived with type 1 diabetes and celiac disease since 1999, and fibromyalgia since 2014. She is the author of Pregnancy with Type 1 Diabetes, Dealing with Diabetes Burnout, Emotional Eating with Diabetes and Your Diabetes Science Experiment. Ginger is a freelance writer and editor at DiabetesDaily.com, with a B.S. in Professional Writing.

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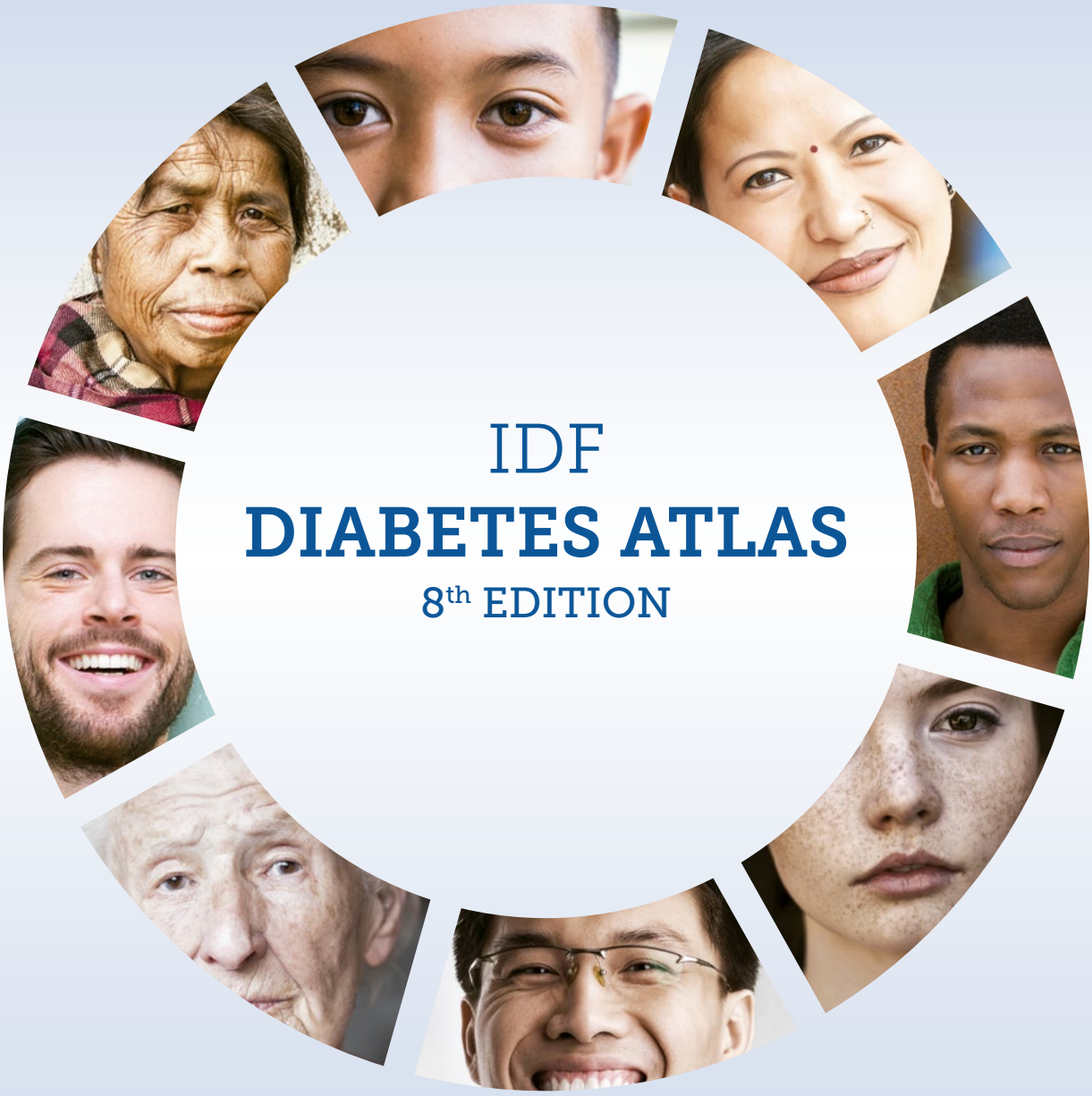

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