



Diabetes Preventing the Preventable Forum 2024



5 May 2024 • Hong Kong

Organizer:



Co-organizers:



Supporting organizations:



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WELCOME MESSAGE

Dear faculty and delegates,

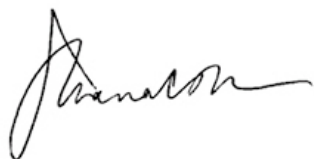
Every person with diabetes has a unique set of risk factors which the care team has to systematically measure, manage and monitor in order to prevent premature death and disabilities for preserving the quality of life.

The most challenging aspect in managing diabetes is to help patients manage their disease for the rest of their life and to personalize treatment choices at different stages of the disease.

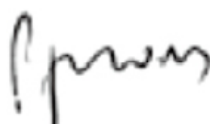
The DPP Forum is an annual meeting which aims to foster collaborations amongst relevant stakeholders to develop care models which can bring out the best of our expertise and technologies in order to make chronic care accessible, sustainable and affordable.

To this end, we have invited a faculty of experts and thought leaders with a diversity of experiences who will share with us their views and insights into this health care challenge.

We hope you will enjoy this meeting and that you will continue to be part of this growing network in pursuit of prevention and control of diabetes and chronic disease.



Professor Juliana Chan
Chairman



Professor Alice Kong
Co-chairman



Professor Andrea Luk
Co-chairman

ORGANIZER



亞洲糖尿病基金會
Asia Diabetes Foundation

CO-ORGANIZERS



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Association of Hong Kong Diabetes Nurses



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香港家庭醫學學院
The Hong Kong College of Family Physicians

ORGANIZING COMMITTEES

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Co-chairmans: Professor Alice Kong
Professor Andrea Luk

Members: Ms. Amy Fu
Mr. Jason Lam
Dr. Eric Lau
Ms. Vanessa Lau
Ms. Renee Tse

PROGRAM COMMITTEES

Members: Dr. Alvin Chan
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Dr. Elaine Chow
Dr. Harriet Chung
Dr. Chung Ping Ho
Professor Alice Kong
Dr. Mary Kwong

Professor Andrea Luk
Professor Ronald Ma
Dr. Risa Ozaki
Dr. Rose Ting
Professor Martin Wong
Ms. Chau Wan Yeung

FACULTY MEMBERS



Joyce Ho Yi Chan

Registered Dietitian, Centre for Health Systems and Policy Research, JC School of Public Health and Primary Care, Faculty of Medicine, The Chinese University of Hong Kong

Ms. Joyce Ho Yi Chan is a Registered Dietitian, Centre for Health Systems and Policy Research, JC School of Public Health and Primary Care, Faculty of Medicine, The Chinese University of Hong Kong. She is also a Lecturer at the Hong Kong Polytechnic University and the Open University of Hong Kong. Ms. Chan is interested in digestive diseases, gut health, geriatric and chronic disease management. She provides evidence-based & individualised care in her practice. She has been interviewed by South Morning China Post, Ming Pao, and TV shows to provide nutrition advice on various health topics. She also founded the Hong Kong Community Dietitian Association and organised various health campaigns to promote her belief of 'food is medicine'.

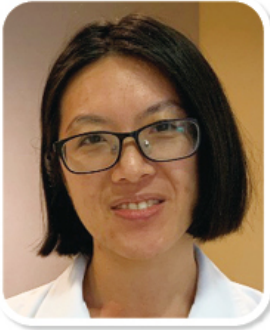


Juliana Chung Ngor Chan

Professor of Medicine and Therapeutics, Faculty of Medicine, The Chinese University of Hong Kong and Chief Executive Officer, Asia Diabetes Foundation

Professor Juliana Chung Ngor Chan is Professor of Medicine and Therapeutics, Faculty of Medicine, The Chinese University of Hong Kong. She is also Director of the Hong Kong Institute of Diabetes and Obesity at CUHK and Chief Executive Officer of the Asia Diabetes Foundation. Her major areas of interest include genetic epidemiology, clinical trials, and care models in diabetes. Her team advocates the use of risk stratification, registry, personalized reporting and collaborative care to prevent and control diabetes. She has published over 800 papers and trained more than 100 postgraduate students/fellows. She is a member of steering committees of multinational studies and advisory boards of Hong Kong Government and international agencies.

FACULTY MEMBERS



Elaine Yee Kwan Chow

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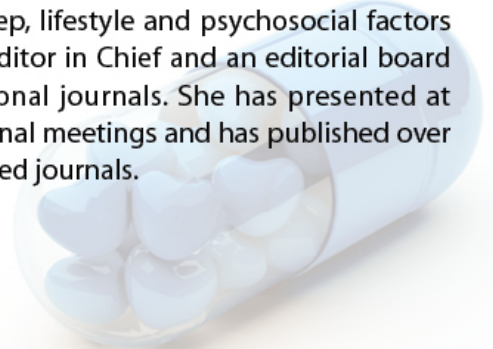
Dr. Elaine Yee Kwan Chow is an Associate Professor, Phase 1 Clinical Trial Centre and Department of Medicine and Therapeutics, Faculty of Medicine, The Chinese University of Hong Kong and Honorary Resident, Prince of Wales Hospital, Hospital Authority. Her main research areas are hypoglycaemia, glycaemic variability, newer insulins and glucagon-like receptor 1 receptor agonists (GLP1-ra) and glucose lowering drugs. She has been principal investigator or co-investigator for over 50 Phase 1 to 4 studies relating to cardiometabolic drugs. She is currently principal investigator for several studies evaluating continuous glucose monitoring devices and comparing different insulins and glucose lowering drug combinations on glycaemic variability. She is also interested in drug utilisation and pharmacoepidemiology using drug data from large registries. She has published in leading journals including *Diabetes Care*, *Diabetologia* and *Diabetes*.



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Professor Alice Pik Shan Kong is Professor in the Department of Medicine and Therapeutics, Faculty of Medicine, The Chinese University of Hong Kong, and Honorary Consultant, Prince of Wales Hospital, Hospital Authority. Professor Kong graduated from the Chinese University of Hong Kong and completed her training in General Medicine and Endocrinology at Queen Elizabeth Hospital, Hong Kong. Professor Kong is the member of Nominating Committee for President, World Obesity Federation. She is the Steering Committee Member of Joint Asia Diabetes Evaluation (JADE) Program, Council Member of Diabetes Hong Kong and the Hong Kong Society of Endocrinology, Metabolism and Reproduction, and the former Vice President of Hong Kong Association for the Study of Obesity. Her major areas of interest include obesity and diabetes with focuses on epidemiological studies and clinical trials related to sleep, lifestyle and psychosocial factors in adults and adolescents. She is the Editor in Chief and an editorial board member for many local and international journals. She has presented at numerous local, regional and international meetings and has published over 340 articles in international peer-reviewed journals.



FACULTY MEMBERS



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Dr. Ka Kui Lee is a Specialist in Endocrinology, Diabetes and Metabolism, Honorary Clinical Associate Professor, Department of Medicine, School of Clinical Medicine, The University of Hong Kong and President, Diabetologists and Endocrinologists Alliance. He was a Former President of the Osteoporosis Society of Hong Kong. He graduated from the Medical School of the University of Hong Kong in 1993. He underwent training in internal medicine and endocrinology at Queen Mary Hospital, and then worked as a Visiting Fellow for a year at Harbor-UCLA Medical Centre in 2001, focusing on reproductive endocrinology. He acted as Temporary Advisor to World Health Organization (WHO) for a male contraceptive trial in 2006. He started private practicing from 2007 and his main interests are in osteoporosis, diabetes management and androgen replacement therapy.



Paul Chi Ho Lee

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Dr. Paul Chi Ho Lee is a Clinical Associate Professor, Department of Medicine, School of Clinical Medicine, The University of Hong Kong and Honorary Consultant, Queen Mary Hospital, Hospital Authority. Dr. Lee graduated in 2006 from the University of Hong Kong (HKU) and became an endocrinologist in 2013. His research focuses on type 2 diabetes (T2D) and its complications, particularly in the contribution of adipokines and novel biomarkers that enhance risk stratification in the clinical management of diabetes and its complications. Dr. Lee also has special interests in studying metabolic dysfunction-steatotic liver disease (MASLD) in T2D and initiated the Hong Kong West Diabetes NAFLD Cohort to investigate the risk factors of liver fibrosis progression in T2D. His research has resulted in authorship in over 110 peer-reviewed publications. He is an editorial board member of *JCEM* and *Diabetes & Metabolism Journal*.

FACULTY MEMBERS



Ronald Ching Wan Ma

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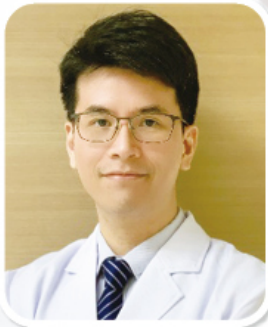
Phoenix Kit Han Mo

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Wing Hung Tam

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Professor Wing Hung Tam is a Specialist in Obstetrics and Gynaecology, Subspecialist in Maternal Fetal Medicine and Clinical Professor (honorary), Department of Obstetrics and Gynaecology, Faculty of Medicine, The Chinese University of Hong Kong. He received both his undergraduate medical degree and Doctor of Medicine from the Chinese University of Hong Kong in 1989 and 2012, respectively. He has been working in the field of obstetrics and gynaecology for more than 30 years. Professor Tam has convened the working group on gestational diabetes for the Hospital Authority in 2014. He also convened the writing groups to update the Hong Kong College of Obstetricians and Gynaecologists (HKCOG) guidelines on the management of gestational diabetes.

FACULTY MEMBERS



Martin Chi Sang Wong

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SCIENTIFIC PROGRAM

5 May 2024 (Sunday)

08:45 - 09:10	Registration	
09:10 - 09:15	Welcome remarks	Andrea On Yan Luk

Symposium 1 Cutting edge in self management, diet and lifestyle changes

Co-chairs: Andrea Luk and Chau Wan Yeung

09:15 - 09:45	Which diet has the best evidence for disease prevention?	Joyce Ho Yi Chan
09:45 - 10:15	Microbiota, prebiotics and probiotics in metabolic health	Martin Chi Sang Wong
10:15 - 10:45	How can we motivate behavioral change?	Phoenix Kit Han Mo
10:45 - 11:00	Break	

Symposium 2 What's next after RAS inhibitors for CV-renal protection: SGLT2i or nsMRA

Co-chairs: Chung Ping Ho and Mary Kwong

11:00 - 11:30	SGLT2i should be used before nsMRA	Tiffany Tse Ling Yau
11:30 - 12:00	nsMRA should be used before SGLT2i	Jack Kit Chung Ng

Symposium 3 Cutting-edge strategies for weight management and beyond

Co-chairs: Eric Lee and Rose Ting

12:00 - 12:30	GLP1 and co-agonists - promises beyond weight management	Paul Chi Ho Lee
12:30 - 13:30	Lunch	

Symposium 4 Redefining diabetes and prediabetes

Co-chairs: Harriet Chung and Lorna Ng

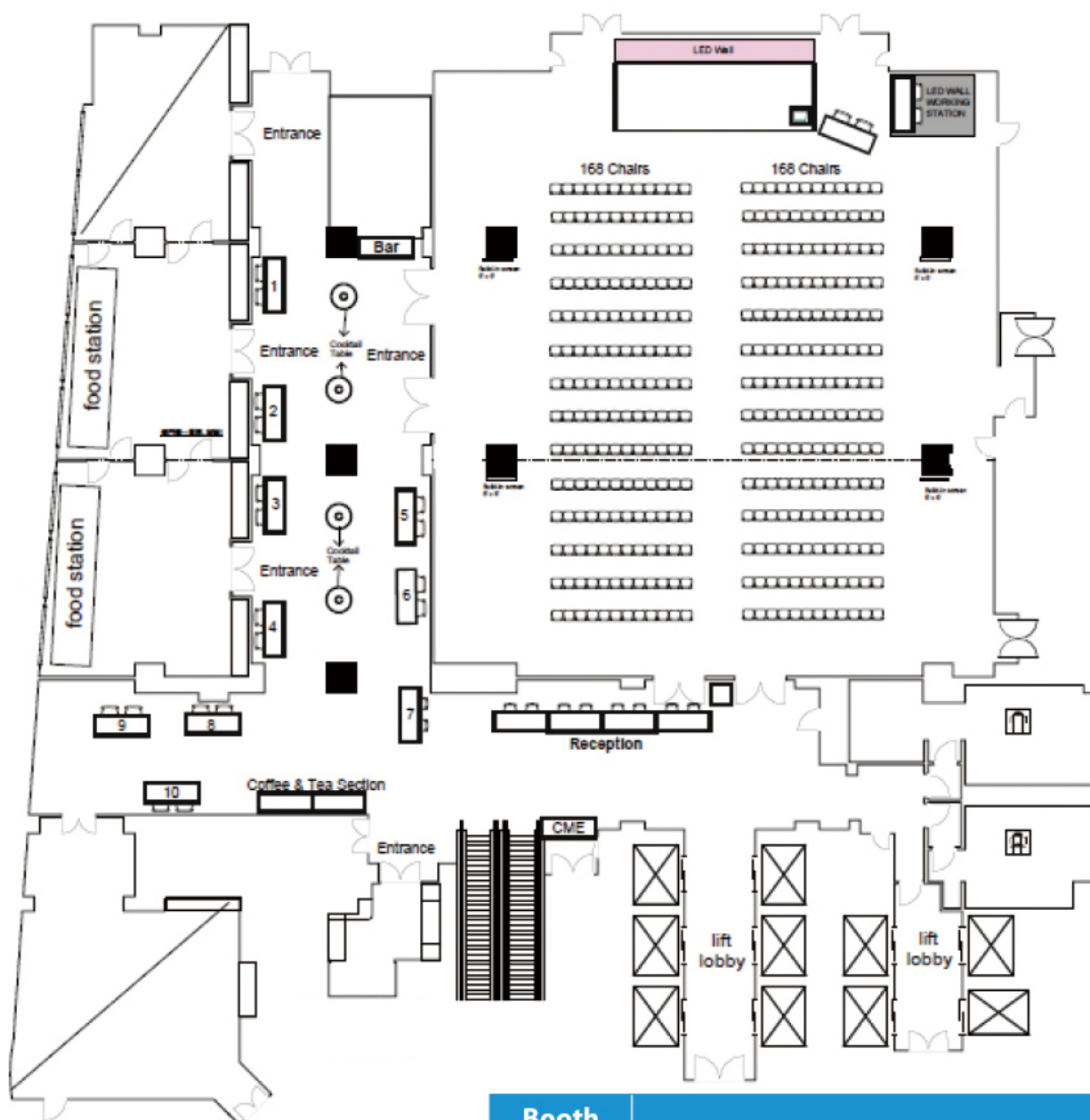
13:30 - 14:00	Definition of diabetes and prediabetes revisited	Elaine Yee Kwan Chow
14:00 - 14:30	How many types of diabetes are there?	Ronald Ching Wan Ma
14:30 - 15:00	Diabetes remission - is it achievable in real-world practice?	Alice Pik Shan Kong
15:00 - 15:15	Break	

Symposium 5 Hot topics in diabetes prevention and management

Co-chairs: Wing Sun Chow and Alice Kong

15:15 - 15:45	Testosterone and cardio-metabolic health in men	Ka Kui Lee
15:45 - 16:15	Prevention and management of gestational diabetes mellitus (GDM)	Wing Hung Tam
16:15 - 16:45	Prevention and management of diabetes in young people	Juliana Chung Ngor Chan
16:45 - 16:50	Closing remarks	Juliana Chung Ngor Chan

FLOOR PLAN AND EXHIBITORS



Booth No.	Exhibitors Name
1	Boehringer Ingelheim (Hong Kong) Limited
2	AstraZeneca Hong Kong Limited
3	Merck Pharmaceutical (Hong Kong) Limited
4	Abbott Laboratories Limited
5	Zuellig Pharma Limited
6	Servier Hong Kong Limited
7	Novo Nordisk Hong Kong Limited
8	Novartis Pharmaceuticals (Hong Kong) Limited
9	Celki International Limited
10	Fresenius Kabi Hong Kong Limited

ACADEMIC ACCREDITATIONS

College Name	CDE/CE/CEU/CME/CNE/CPD points
Association of Hong Kong Diabetes Nurses Limited (For ALL NURSES)	6
Hong Kong College of Community Medicine	6
Hong Kong College of Emergency Medicine	6
Hong Kong College of Paediatricians	6
Hong Kong College of Physicians	6
Hong Kong College of Radiologists	6
Hong Kong Dietitians Association	1 core and 4 non-core
Hong Kong Nutrition Association Limited	5
Hong Kong Physiotherapy Association Limited	Pending
Hong Kong Podiatrists Association	3
International Podiatrists Association of Hong Kong	10
MCHK CME Programme	5
Occupational Therapists Board	Pending
Pharmacy Central Continuing Education Committee	Pending
The College of Ophthalmologists of Hong Kong	Pending
The College of Surgeons of Hong Kong	6
The Hong Kong College of Anaesthesiologists	6
The Hong Kong College of Family Physicians	5
The Hong Kong College of Obstetricians and Gynaecologists	5
The Hong Kong College of Orthopaedic Surgeons	Pending
The Hong Kong College of Otorhinolaryngologists	3
The Hong Kong College of Pathologists	6
The Hong Kong College of Psychiatrists	Pending

SYMPOSIUM 1

Cutting edge in self management, diet and lifestyle changes

09:15 - 09:45

Which diet has the best evidence for disease prevention?

Joyce Ho Yi Chan

Registered Dietitian, Centre for Health Systems and Policy Research, JC School of Public Health and Primary Care, Faculty of Medicine, The Chinese University of Hong Kong

Type 2 diabetes is a prevalent and preventable chronic disease that can be addressed through lifestyle modifications. Research indicates that up to 58% of cases of type 2 diabetes can be prevented or delayed through targeted lifestyle changes.

While managing pre-diabetes shares similarities with diabetes prevention in the general public, it is clear that simply limiting carbohydrates alone cannot adequately prevent the onset of disease. In this presentation, I will delve into the evidence surrounding various dietary patterns for diabetes prevention, namely the Mediterranean diet, plant-based diet, low glycemic index (GI) diet, and the Dietary Approaches to Stop Hypertension (DASH) diet.

I will emphasize some important nutritional strategies in both diabetes prevention and pre-diabetes management. This includes the significant impact of weight loss, as evidence shows that losing 7-10% of current weight can cut the risk of developing type 2 diabetes in half. Additionally, I will discuss the importance of portion control, choosing healthy fats, opting for whole foods over refined and processed options, and replacing red and processed meat with lean protein sources.

Furthermore, I will introduce novel evidence related to disease prevention, such as the potential benefits of fermented food products, the impact of artificial sweeteners on weight management and blood sugar control, and the substitution of animal protein with plant-based protein sources.



Microbiota, prebiotics and probiotics in metabolic health

Martin Chi Sang Wong

Professor, JC School of Public Health and Primary Care, Faculty of Medicine, Director, Centre for Health Education and Health Promotion and Professor (by courtesy), Department of Sports Science and Physical Education, Faculty of Science, The Chinese University of Hong Kong

There has been emerging evidence that the abundance and composition of gut microbiota play a pivotal role in the pathogenesis of various metabolic disorders in humans, including diabetes, obesity, malnutrition, non-alcoholic fatty liver disease (NAFLD), and cardiometabolic disorders. In the past decade, studies on microbiota and metabolic diseases have shifted from descriptive studies to mechanistic evaluations that aim to explore cause-and-effect relationship between modulation of microbiota by prebiotics/probiotics and clinical outcomes. For instance, the abundance of short chain fatty acid (SCFA) producers such as *Roseburia intestinalis* and *Eubacterium ventriosum* is associated with obesity, whilst butyrate producers like *Oscillospira* spp. and the methanogenic archaeon *Methanobrevibacter smithii* have been linked with leanness. Similarly, subjects with NAFLD have an escalated amount of species belonging to *Clostridium*, *Anaerobacter*, *Streptococcus*, *Escherichia* and *Lactobacillus*; whereas *Oscillibacter*, *Flavonifaractor*, *Odoribacter* and *Alistipes* spp. are less abundant.

Given the strong relationship and possible cause-and-effect relationship between gut microbiota and human diseases, recent trials have provided insights into interventions through probiotic/prebiotics on prevention and control of metabolic diseases. A typical study IMPACT has evaluated the use of a microbiome formula SIM 01 which consists of three Bifidobacterium strains (*B. adolescentis*; *B. bididum*, and *B. longum*). This double-blind, randomised, placebo-controlled trial included subjects aged ≥ 65 years or with type two diabetes mellitus and randomize the study participants in a 1:1 ratio to receive three months of SIM01 or placebo (vitamin C). The rate of adverse health outcomes was significantly lower in the SIM01 group than the placebo at one month (6 [2.9%] vs. 25 [12.6], $p < 0.001$) and three months (0 vs. 5 [3.1%], $p = 0.025$). At three months, more subjects who received SIM01 than the placebo reported better sleep quality, improved skin condition, and better mood.

This seminar will describe the relationship between the abundance/biodiversity of microbiota and various human diseases; discuss on the possible mechanisms of action; and provide a review of recent intervention trials studying the impact of prebiotics and probiotics as interventional tools on metabolic diseases. Their potential applications in clinical practice will be elaborated, and future research on this topic will be recommended.

References

¹Fan, Y., Pedersen, O. Gut microbiota in human metabolic health and disease. *Nat Rev Microbiol* 19, 55–71 (2021). <https://doi.org/10.1038/s41579-020-0433-9>.

²Wong, Martin C. S., Lin Zhang, Jessica Y. L. Ching, et al. 2023. Effects of Gut Microbiome Modulation on Reducing Adverse Health Outcomes among Elderly and Diabetes Patients during the COVID-19 Pandemic: A Randomised, Double-Blind, Placebo-Controlled Trial (IMPACT Study)" *Nutrients* 15, no. 8: 1982. <https://doi.org/10.3390/nu15081982>.

How can we motivate behavioral change?

Phoenix Kit Han Mo

Associate Professor, JC School of Public Health and Primary Care, Program Director, BSc in Community Health Practice and Director, Center for Health Behaviours Research, Faculty of Medicine, The Chinese University of Hong Kong

Extensive evidence has emphasized the significance of self-care management, such as regular physical activity, maintaining a healthy diet, and adherence to medication regimens, for individuals living with diabetes. Despite this, the level of self-care among individuals with diabetes remains below optimal levels. Promoting diabetes self-management is crucial for effectively managing the condition. To achieve success in diabetes self-management, it is essential to understand the underlying factors that influence individuals' adoption of self-care behaviors.

It is recognized that theory-based self-management programs are more effective than non-theory-based programs. Many successful diabetes self-management interventions are grounded or informed by behavior change theories or models. The application of theories enables the identification of key determinants of target behaviors and the formulation of behavior change strategies necessary to achieve desired health outcomes. These strategies can then be translated into specific behavioral techniques that can be used to promote specific behavior change. A notable contribution to the field of behavior change is the taxonomy of behavior change techniques (BCTs) developed by Abraham and Michie. This taxonomy categorizes BCTs as observable, replicable, and irreducible components of interventions designed to modify the processes that regulate behavior. By utilizing this taxonomy, researchers and practitioners can identify effective BCTs and utilize them in the development of effective diabetes self-management interventions.

This presentation aims to provide an overview of the commonly used taxonomy of BCTs in the design of behavioral interventions for diabetes self-management. By understanding and categorizing these techniques, practitioners can select the most effective BCTs to promote self-management behaviors. The discussion will focus on identifying the BCTs that have proven to be particularly effective in promoting self-management behaviors among individuals with diabetes. By employing the BCT taxonomy, health promotion programs can benefit from a standardized and reliable means of understanding intervention techniques. This understanding enables the development of tailored strategies that drive behavioral changes, which has the potential to promote diabetes self-management and improve overall health outcomes for individuals living with diabetes.



SYMPOSIUM 2

What's next after RAS inhibitors for CV-renal protection: SGLT2i or nsMRA

11:00 - 11:30

SGLT2i should be used before nsMRA

Tiffany Tse Ling Yau

Specialist in Endocrinology, Diabetes and Metabolism and Clinical Professional Consultant, Faculty of Medicine, The Chinese University of Hong Kong

Sodium-glucose cotransporter-2 (SGLT2) inhibitors, initially developed as a novel class of anti-hyperglycaemic drugs, have been shown to significantly improve metabolic indicators and have demonstrated improved cardiovascular and renal outcomes in patients with or without type 2 diabetes mellitus (T2D) in numerous large-scale clinical trials. The possible mechanism underlining the cardiorenal benefits are being extensively investigated as it is increasingly clear that this cannot be attributed to the improvement in glycaemic control alone.

SGLT2 is localized to the renal proximal convoluted tubules, which reabsorbs the majority (~90%) of the filtered glucose coupled with sodium. SGLT2 inhibition therefore leads to glucosuria and natriuresis, and are associated with reduction in glycated haemoglobin, blood pressure, albuminuria, and body weight.

A number of mechanistic hypotheses have been proposed to explain the cardiorenal benefits of SGLT2 inhibitors, including the tubular hypothesis, the sodium hypothesis, and the 'thrifty substrate' hypothesis.

Emerging evidence suggests that metabolic reprogramming is involved in the progression of cardiorenal and metabolic diseases, which affects the outcome and prognosis of patients. Metabolic programming was previously used to describe a phenomenon where cancer cells metabolically adapt to changes in unfavourable environment to meet the requirements for survival and proliferation, which was described as one of the hallmarks of cancer. SGLT2 inhibitors can induce a fasting-like metabolic paradigm, involving the metabolic switch from carbohydrates to other energetic substrates and regulation of the related nutrient-sensing pathways, which may partially explain some of the cardiorenal protective effects of SGLT inhibitors. Further studies are needed to elucidate more clearly the effects of SGLT2 inhibition on metabolism and its mechanisms.

nsMRA should be used before SGLT2i

Jack Kit Chung Ng

Assistant Professor, Department of Medicine and Therapeutics, Faculty of Medicine, The Chinese University of Hong Kong and Honorary Associate Consultant, Prince of Wales Hospital, Hospital Authority

Sodium-glucose cotransporter-2 (SGLT2) inhibitors has transformed the management of patients with type 2 diabetes with chronic kidney disease (CKD) in the past decade. It is now regarded as the foundational therapy as it significantly slowed down kidney disease progression and reduced cardiovascular events. On the other hand, finerenone is a novel, selective, non-steroidal mineralocorticoid receptor (MR) antagonist (MRA), which exhibits potent anti-inflammatory and anti-fibrotic activity by blocking overactivation of MR. Two complementary phase 3 randomized controlled trials (FIDELIO-DKD and FIGARO-DKD) suggested that finerenone, on top of maximal tolerated renin-angiotensin system blockade, significantly improved kidney and cardiovascular composite endpoint respectively. These two trials together have formed the largest cardio-renal outcome programme in type 2 diabetes with CKD. Recently, the Finerenone in chronic kidney disease and type 2 diabetes: Combined FIDELIO-DKD and FIGARO-DKD Trial programme analysis (FIDELITY) pooled and analyzed the results of these two studies (n=13026), which further supported the cardio-renal benefit of finerenone across a wide spectrum of CKD patients with type 2 diabetes.

Although current clinical practice guidelines strongly recommended the use of SGL2 inhibitor and non-steroidal MRA in patients with type 2 diabetes and CKD (grade A recommendation for both agents in "Standards of Care in Diabetes" by American Diabetes Association), it remained uncertain which agent should be used first, or whether a combination of both agents would produce synergistic effects. Subgroup analyses of FIDELITY showed that benefits of finerenone compared with placebo on cardiorenal outcomes persisted irrespective of baseline use of SGLT2 inhibitor. Nevertheless, a definite conclusion was limited by lack of statistical power given the relatively small sample size (only 6.7% patients were on SGLT2 inhibitor). On the contrary, the development of serious adverse effects such as Fournier gangrene and euglycemic diabetic ketoacidosis after SGLT2 inhibitor, although uncommon, may preclude further use of SGLT2 inhibitor. In this regard, finerenone may have an advantage such that it has similar incidence of treatment emergent adverse events compared with placebo, except for higher risk of hyperkalemia which is usually manageable.

While both SGLT2 inhibitor and finerenone provide significant cardio-renal protection, they target different pathogenic drivers of diabetic kidney disease, with different side effect profiles. This lecture will aim to discuss the mechanisms of action of both agents, and compare their efficacy and safety based on current published evidence.



SYMPOSIUM 3

Cutting-edge strategies for weight management and beyond

12:00 - 12:30

GLP1 and co-agonists - promises beyond weight management

Paul Chi Ho Lee

Clinical Associate Professor, Department of Medicine, School of Clinical Medicine, The University of Hong Kong and Honorary Consultant, Queen Mary Hospital, Hospital Authority

Obesity is a global health problem with increasing prevalence in both genders. Obesity leads to increased risks of type 2 diabetes (T2D), metabolic dysfunction-associated steatotic liver disease (MASLD), cardiovascular diseases (CVD), chronic kidney disease (CKD), cancer and even deaths. Recently, several phase 2 and 3 clinical trials reported promising findings from using novel therapeutic strategies for individuals with obesity and/or diabetes. These are all incretin-based therapy involving agonism of glucose-dependent insulinotropic polypeptide (GIP) and/or glucagon in addition to glucagon like peptide-1 (GLP1) receptors. In the trials, these multi-receptor agonists demonstrated unprecedented level of clinical efficacy in body weight reductions, and it is foreseeable that they will bring revolutionary changes in the future paradigm of obesity and/or diabetes management.

This talk will discuss how these multi-receptor agonists work, focusing on their potentials to improve obesity-related complications including metabolic dysfunction, MASLD and cardio-renal diseases, beyond weight management alone.

SYMPOSIUM 4

Redefining diabetes and prediabetes

13:30 - 14:00

Definition of diabetes and prediabetes revisited

Elaine Yee Kwan Chow

Associate Professor, Phase 1 Clinical Trial Centre and Department of Medicine and Therapeutics, Faculty of Medicine, The Chinese University of Hong Kong and Honorary Resident, Prince of Wales Hospital, Hospital Authority

Different diagnostic criteria for diabetes and prediabetes, or intermediate hyperglycaemia (IH) have been proposed and the lack of standardization may be hampering global efforts to screen and prevent diabetes. Historically, the choice of fasting and two hour glucose thresholds were pragmatic and based on levels above which retinopathy ensues. The choice of glucose test has also been a matter of controversy. While HbA_{1c} has lower analytic variability and does not require fasting, it is subject to ethnic variation and affected by red cell turnover. A significant proportion of individuals (especially Chinese) have isolated impaired glucose tolerance (IGT) not picked up without an oral glucose tolerance test (OGTT). For example, using data from the NHANES survey with complete FPG, 2h-PG and HbA_{1c} data, the prediabetes prevalence varied from 4.3% (IEC-HbA_{1c}) to 43.5% (ADA-IFG) based on different definitions.

Recently a position statement has called for using 1-hr glucose from OGTT to define IH and diabetes which might simplify screening and enable earlier detection of glucose abnormalities. With the widening availability of continuous glucose monitoring (CGM), there is also considerable interest in using CGM to define dysglycemic states. We will revisit the evolving definitions of diabetes and prediabetes and discuss implications for screening, prevention and management in primary care.



How many types of diabetes are there?

Ronald Ching Wan Ma

S.H. Ho Professor of Diabetes, Department of Medicine and Therapeutics, The Chinese University of Hong Kong and Honorary Consultant Physician, Head of Division of Endocrinology and Diabetes (Academic Affairs), Prince of Wales Hospital, Hospital Authority

Diabetes is traditionally classified into type 1 diabetes, type 2 diabetes and gestational diabetes as the main forms of diabetes. However, there is increasing recognition that there is significant hidden heterogeneity within diabetes. Resolving this heterogeneity of diabetes can help facilitate personalized treatment and precision medicine in diabetes. For example, identification of monogenic diabetes may facilitate tailored choices of diabetes medications. Recent advances have included the use of clinical characteristics to empower subtyping of adult-onset diabetes, often utilizing “hard clustering”, exemplified by the Ahlqvist model, which utilized 6 clinical variables to derive 5 clusters/subtypes of adult-onset diabetes. More recent advances have included use of other methodologies, which provide more refined subtyping of diabetes, using an approach known as “soft clustering”. These different approaches to diabetes subtyping can give rise to different number of clusters or subtypes, and can be best summarized by the “palette”, “threshold”, or “gradient” models. Regardless of the approach of subclassification, the essence of diabetes subtyping is to differentiate between individuals with diabetes due to different underlying pathophysiological defects, and hence have different prognosis towards complications or response to treatment. In addition to using clinical information alone, recent discoveries have also highlighted the potential to incorporate genetic information to understand underlying differences in diabetes subtypes. The ability to resolve this heterogeneity, and thereby provide treatment that is best tailored to the underlying pathophysiology, provides exciting opportunities to realize precision medicine in diabetes towards better patient outcomes.

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²Tobias D, Merino J et al, Second International Consensus report on gaps and opportunities for the clinical translation of precision diabetes medicine. *Nature Medicine* 2023; 29: 2438-2457.

Diabetes remission - is it achievable in real-world practice?

Alice Pik Shan Kong

Professor, Department of Medicine and Therapeutics, Faculty of Medicine, The Chinese University of Hong Kong and Honorary Consultant, Prince of Wales Hospital, Hospital Authority

Type 2 diabetes (T2D) is a prevalent chronic disorder that increases morbidity and reduces longevity. Historically, T2D is considered as a permanent disease which requires lifelong treatment. However, from the results of a randomized clinical trial (DiRECT) conducted at 49 primary care practices in Scotland and England, it demonstrates that remission of T2D through weight management programme delivered in primary care setting is feasible. Recent guidelines for pharmacological treatment of T2D also place increasing emphasis on personalized therapy targeting on the individual pathophysiological defects and encourage using glucose lowering drugs which avoid causing weight gain particularly in T2D with obese phenotype. Moreover, there is a wealth of data supporting the use of bariatric surgery in morbidly obese T2D to attain complete or partial remission of diabetes with recent guideline advocating the relaxation of criteria to select surgical candidates. This lecture will give an overview of the strategies to achieve diabetes remission in people with T2D attempting to answer the question whether diabetes remission is achievable in real-world practice from current body of evidence.



SYMPOSIUM 5

Hot topics in diabetes prevention and management

15:15 - 15:45

Testosterone and cardio-metabolic health in men

Ka Kui Lee

Specialist in Endocrinology, Diabetes and Metabolism, Honorary Clinical Associate Professor, Department of Medicine, School of Clinical Medicine, The University of Hong Kong and President, Diabetologists & Endocrinologists Alliance

Male sex hormone is essential for sexual life, musculoskeletal health and the feeling of wellbeing in a male. Restoring testosterone to normal level will improve libido, sexual function, and vitality of a hypogonadal male. Epidemiological studies have shown that low serum testosterone levels were associated with increased cardiovascular morbidity and mortality. Combined with the relationships between testosterone and cytokines, vascular reactivity, haemostatic factors, and cholesterol, the effect of testosterone replacement on the cardiovascular system will be difficult to predict. There are recent trials showing that testosterone replacement therapy will increase cardiovascular risk, at least in high risk males. During the talk, recent evidences of the relationship of testosterone to cardiovascular risks will be visited.

Prevention and management of gestational diabetes mellitus (GDM)

Wing Hung Tam

Specialist in Obstetrics and Gynaecology, Subspecialist in Maternal Fetal Medicine and Clinical Professor (honorary), Department of Obstetrics and Gynaecology, Faculty of Medicine, The Chinese University of Hong Kong

In the mid 1960's O'sullivan and Mahan developed gestational diabetes mellitus (GDM) diagnostic criteria based on 100g oral glucose tolerance test (OGTT), using 2 standard deviations (fasting, 1-h, 2-h and 3-h venous whole blood glucose levels) above the mean as diagnostic cut-offs. They required at least 2 elevated values for the diagnosis of GDM. It was later modified to Carpenter and Coustan criteria using plasma glucose levels. In 1973, O'sullivan et al also proposed 50g glucose challenge test as screening before a formal OGTT. In 2010, International Association of Diabetes in Pregnancy Study Group (IADPSG) proposed using 5.1, 10.0 and 8.5mmol/L in fasting, 1-h and 2-h, respectively, as diagnostic cut-off for GDM using a 75g OGTT and 1-step instead of O'sullivan's 2-step approach. There has been a lot of debate to adopt the new IADPSG criteria, regardless of the adoption by the World Health Organization (WHO) and Australasian Diabetes in Pregnancy Society (ADIPS). NICE guideline in UK did not adopt IADPSG but used 5.3 (fasting) and 7.8mmol/L (2-h) as diagnostic criteria of GDM in UK and it relied on risk factor screening. FIGO in 2015 proposed a pragmatic approach and adopted the IADPSG criteria. Yet, there are still problems with and debates for and against the implementation of a universal criteria and approach on the diagnosis and management of GDM across the world. There are a few challenges ahead to decide what diagnostic criteria, 1-step vs 2-step screening, compromised approach during the COVID outbreak. Whether we should unify or entertain different approach for different races and ethnicities remain a question to be answered? What glycaemic threshold should we target at for the management of GDM mothers? Beyond hyperglycaemia, should we also consider a broader scope of hypernutrition during pregnancy and its impact on the in-utero programming? This talk will highlight the principles in the management of hyperglycaemia in pregnancy and some of the controversial issues mentioned above. About the prevention of GDM, there are several randomized controlled trials, e.g. LIMIT, ROLO, LIP, UPEAT, RADIEL, etc. The results are inconsistent and there is one important factor and principle to be highlighted in this talk. Pregnancy is also a window of opportunity to detect the future risk of type 2 diabetes and it is a golden opportunity to prevent the progression from GDM to DM.

Prevention and management of diabetes in young people

Juliana Chung Ngor Chan

Professor of Medicine and Therapeutics, Faculty of Medicine, The Chinese University of Hong Kong and Chief Executive Officer, Asia Diabetes Foundation

Precision diagnosis is the keystone of clinical medicine. In East Asians, classical type 1 diabetes is uncommon in patients with young-onset diabetes diagnosed before age of 40, in whom a family history, obesity, and beta-cell and kidney dysfunction are key features. Young-onset diabetes affects one in five Asian adults with diabetes in clinic settings; however, it is often misclassified, resulting in delayed or non-targeted treatment. Complex aetiologies, long disease duration, aggressive clinical course, and a lack of evidence-based guidelines have contributed to variable care standards and premature death in these young patients. The high burden of comorbidities, notably mental illness, highlights the numerous knowledge gaps related to this silent killer. The use of biomarkers including autoimmune antibodies, C peptide for estimating beta-cell function and genetic markers can improve disease classification to guide targeted treatment. Apart from early use of medications to increase glycaemic durability, a multidisciplinary approach is needed to help these young patients understand possible causes and trajectories of young-onset diabetes and the importance of selfmanagement, regular reviews and treatment adherence in order to reduce their high lifetime risks for hospitalizations, disabilities and premature death.

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† ≥50% sustained decline in eGFR.

‡ There were comparable rates of the individual component of CV death vs placebo (0.0% vs 3.7%; HR 0.81; 95% CI, 0.58, 1.12).

§ Primary composite endpoint of ≥50% sustained decline in eGFR, reaching ESKD, and renal or CV death. ESKD is defined as the need for maintenance dialysis for at least 28 days and renal transplantation or sustained eGFR <15 mL/min/1.73m² for at least 28 days.

¶ Baseline eGFR categories: <45 mL/min/1.73m² and ≥45 mL/min/1.73m².

** Observed only in T2D patients.

†† CKD stage groups: Stage 4 and Stage 2/3.

‡‡ Diabetic nephropathy, glomerulonephritis, ischaemic or hypertensive CKD, or CKD of other or unknown cause.

§§ In patients with severe hepatic impairment, a starting dose of 5 mg is recommended. If well tolerated, the dose may be increased to 10 mg.

¶¶ In DAPA-CKD, patients may continue on FORXIGA 10 mg once daily if eGFR falls below 25 mL/min/1.73m².

** Due to limited experience, it is not recommended to initiate treatment with dapagliflozin in patients with GFR <25 mL/min.

AKI, acute kidney injury; CI, confidence interval; CKD, chronic kidney disease; CV, cardiovascular; CVD, cardiovascular disease; eGFR, estimated glomerular filtration rate; ESKD, end-stage kidney disease; HF, heart failure; hHF, hospitalization for heart failure; HR, hazard ratio; SAE, serious adverse event; SGLT2i, sodium-glucose co-transporter-2 inhibitor; T2D, type 2 diabetes; UAE, urine albumin-creatinine ratio.

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Abbreviated Prescribing Information (API)

FORXIGA (dapagliflozin)
Composition: Dapagliflozin propionate monohydrate film-coated tablet, 5 mg or 10 mg. **Therapeutic Indications:** For the treatment of insufficiently controlled type 2 diabetes mellitus in adults as an adjunct to diet and exercise, either as monotherapy when metformin is considered inappropriate due to intolerance, or in addition to other medicinal products for the treatment of type 2 diabetes. For the treatment of symptomatic chronic heart failure with reduced ejection fraction. For the treatment of chronic kidney disease. **Dosage and Administration:** Type 2 diabetes mellitus: Recommended dose is 10 mg to be taken orally once daily at any time of day with or without food. Tablets are to be swallowed whole. Heart Failure: Recommended dose is 10 mg to be taken orally once daily. Chronic Kidney Disease: Recommended dose is 10 mg to be taken orally once daily. In patients with severe hepatic impairment, a starting dose of 5 mg is recommended. **Contraindications:** Hypersensitivity to the active substance or to any of its excipients. **Warnings and Precautions:** Renal function, risk of volume depletion and/or hypotension should be taken into account in patients. Dosage of insulin and sulphonylurea (SU) may need to be mediated to reduce the risk of hypoglycaemia. May add to the diuretic effect of diuretics and loop-diuretics and may increase the risk of dehydration and hypotension. Use with caution in patients with increased risk of diabetic ketoacidosis, on anti-hypertensive therapy with a history of hypotension, elderly (≥ 65 years). Treatment should be temporarily interrupted when volume depleted, when treating pyelonephritis or urosepsis; in patients who are hospitalized for major surgical procedures or acute serious medical illnesses, until ketone values are normal. Should not be initiated in patients with type 1 diabetes, hereditary problems of galactose intolerance, total lactase deficiency, or glucose-galactose malabsorption. Additional glucose lowering treatment should be considered for glycaemic control improvement if GFR is persistently below 45 mL/min for the treatment of diabetes; no dose adjustment is required based on renal function for the treatment of heart failure and chronic kidney disease. Due to limited experience, it is not recommended to initiate treatment with dapagliflozin in patients with GFR < 25 mL/min. Discontinue if suspected or diagnosed diabetic ketoacidosis; if Fournier's gangrene is suspected; when pregnancy is detected; while breast-feeding. Limited or no data in cardiac failure NYHA class IV, pregnancy, and paediatric population. **Adverse Reactions:** Very common: hypoglycaemia when used with SU or insulin. Common: vulvovaginitis, balanitis and related genital infections, urinary tract infection, dizziness, rash, back pain, dysuria, polyuria, dyslipidaemia, decreased creatinine renal clearance (during initial treatment), and increased haematocrit. Uncommon: Fungal infection, volume depletion, thirst, constipation, dry mouth, nocturia, vulvovaginal and genital pruritus, increased blood creatinine (during initial treatment), increased blood urea, and decreased weight. Rare: diabetic ketoacidosis (when used in type 2 diabetes). Very rare: necrotising fasciitis of the perineum (Fournier's gangrene), angioedema. Not known: acute kidney injury. **Drug Interactions:** Co-administration with rifampicin may reduce dapagliflozin systemic exposure; co-administration with meloxicam may increase dapagliflozin systemic exposure. Monitoring glycaemic control with 1,5-AO assay is not recommended in patients taking SGLT2 inhibitors. **Storage:** Store below 30 °C. **Local prescribing information is available upon request. API.HK.FOR.1221**

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CV: cardiovascular; RRR: relative risk reduction; ADA: American Diabetes Association; EASD: European Association for the Study of Diabetes; CVD: cardiovascular disease; OAD: oral antidiabetic drug; T2DM: type 2 diabetes mellitus
Reference: 1. Zinman B, et al. *N Engl J Med*. 2019;373(22):2117-2119. 2. Jardiance Hong Kong Prescribing Information. 3. Davies MJ, D'Alessio DA, Fradkin J, et al. Management of hyperglycaemia in type 2 diabetes, 2018. A consensus report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD). *Diabetologia*. 2018.

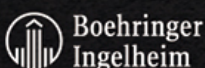
- ¹ JARDIANCE demonstrated RRR in CV death in adult patients with insufficiently controlled type 2 diabetes (baseline HbA1c 7-10%) and established CV disease (coronary artery disease, peripheral artery disease, or a history of myocardial infarction or stroke).
- [†] Standard of care included CV medications and glucose-lowering agents given at the discretion of physicians.
- [‡] Empagliflozin versus placebo on top of standard of care.²
- [§] Management of hyperglycaemia in type 2 diabetes, 2018. A consensus report by the ADA and EASD stated that among patients with established CVD, there is likely cardiovascular benefit, with the evidence of benefit modestly stronger for empagliflozin than canagliflozin.
- [#] Established CV disease included coronary artery disease, peripheral artery disease, history of myocardial infarction, or history of stroke
- [¶] Statistically significant

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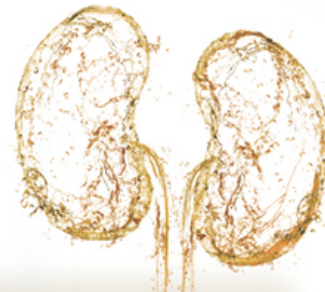
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Study Design¹: A secondary analysis of the LODESTAR trial was conducted to compare the long term efficacy and safety of rosuvastatin with LIPITOR® treatment in adults with CAD. In the LODESTAR trial, a total of 4,400 patients diagnosed with CAD were assigned to receive either rosuvastatin (n=2204) or LIPITOR® (n=2196) using 2x2 factorial randomisation. The primary outcome was a 3-year composite of all cause death, myocardial infarction, stroke, or any coronary revascularisation. Secondary outcomes were safety endpoints: new onset DM; hospital admissions due to heart failure; deep vein thrombosis or pulmonary thromboembolism; endovascular revascularisation for peripheral artery disease; aortic intervention or surgery; end stage kidney disease; discontinuation of study drugs owing to intolerance; cataract surgery; and a composite of laboratory detected abnormalities.

Study Design²: A single-center study performed in Korea enrolled a total of 484 DM patients treated with moderate-intensity dose statin treatment for > 12 months (LIPITOR® 10-20 mg/day [n=295] or rosuvastatin 5-10 mg/day [n=189]) to investigate and compare the renal effects of moderate-intensity doses of statins in Asian patients with diabetes. The primary endpoints included the change in eGFR from baseline during the 12-month statin treatment, and the proportion of patients experiencing rapid renal decline (defined as a >3% reduction in eGFR in a 1-year period).

Abbreviations: CAD: coronary artery disease; CI: confidence interval; CVD: cardiovascular disease; DM: diabetes mellitus; eGFR: estimated glomerular filtration rate; HR: hazard ratio; LDL-C: low-density lipoprotein-cholesterol

References: 1. National Institute for Health and Care Excellence. *Cardiovascular disease: risk assessment and reduction, including lipid modification*. December 14, 2023. 2. Lee YJ, Hong SJ, Kang WC, et al. *BMJ*. 2023;383:e075837. 3. Han E, Lim G, Lee JT, et al. *Endocrinol Metab (Seoul)*. 2017;32(2):274-280.

LIPITOR SUMMARY OF PRODUCT INFORMATION. TRADE NAME: Lipitor® **INDICATIONS:** Prevention of Cardiovascular Disease in Adults - In adult patients without clinically evident coronary heart disease, but with multiple risk factors for coronary heart disease, such as age, smoking, hypertension, low HDL-C, or a family history of early coronary heart disease, LIPITOR is indicated to reduce the risk of myocardial infarction, stroke, revascularization procedures and angina. In patients with type 2 diabetes, and without clinically evident coronary heart disease, but with multiple risk factors for coronary heart disease, such as retinopathy, albuminuria, smoking, or hypertension, LIPITOR is indicated to reduce the risk of myocardial infarction and stroke. In adult patients with clinically evident coronary heart disease, LIPITOR is indicated to reduce the risk of non-fatal myocardial infarction, fatal and non-fatal stroke, revascularization procedures, hospitalization for Congestive Heart Failure and angina. Hyperlipidemia - LIPITOR is indicated as an adjunct to diet to reduce elevated total-C, LDL-C, apo B, and TG levels and to increase HDL-C in patients with primary hypercholesterolemia (heterozygous familial and non-familial) and mixed dyslipidemia (Fredrickson Types IIa and IIb); As an adjunct to diet for the treatment of adult patients with elevated serum TG levels (Fredrickson Type IV); For the treatment of adult patients with primary dysbetalipoproteinemia (Fredrickson Type III) who do not respond adequately to diet; To reduce total-C and LDL-C in patients with homozygous familial hypercholesterolemia as an adjunct to other lipid-lowering treatments (e.g., LDL apheresis) or if such treatments are unavailable; As an adjunct to diet to reduce total-C, LDL-C, and apo B levels in pediatric patients, 10 to 17 years of age, with heterozygous familial hypercholesterolemia if after an adequate trial of diet therapy the following findings are present: (a) LDL-C remains ³ 190 mg/dL or (b) LDL-C remains ³ 160 mg/dL and; there is a positive family history of premature cardiovascular disease or two or more other CVD risk factors are present in the pediatric patient. **DOSE & ADMINISTRATION:** The recommended starting dose is 10 or 20mg once daily. Patients who require a large reduction in LDL-C (more than 45%) may be started at 40mg once daily. The dosage range is 10 to 80 mg once daily. LIPITOR can be administered as a single dose at any time of the day, with or without food. **CONTRAINDICATIONS:** Active liver disease, which may include unexplained persistent elevations in hepatic transaminase levels; hypersensitivity to any component of this medication; pregnancy and lactation. **WARNINGS & PRECAUTIONS:** Skeletal muscle - Rare cases of rhabdomyolysis with acute renal failure secondary to myoglobinuria. Myopathy. Immune-Mediated Necrotizing Myopathy. Liver dysfunction. Endocrine function - Increase in HbA1c and fasting serum glucose levels. CNS toxicity. Used in patients with recent stroke or TIA. **INTERACTIONS:** Cyclosporine, gemfibrozil (and other fibrates), anti-viral medications, azole antifungals or macrolide antibiotics, niacin, Colchicine, Grapefruit juice, rifampin, oral contraceptives, digoxin. **PREGNANCY AND LACTATION:** LIPITOR is contraindicated in pregnancy and during breast-feeding. **SIDE EFFECTS:** Nasopharyngitis, arthralgia, diarrhea, pain in extremity, urinary tract infection, dyspepsia, nausea, musculoskeletal pain, muscle spasms, myalgia, insomnia, pharyngolaryngeal pain. Reference: HK PI (NOV2020) Date of preparation: JAN2022 Identifier number: LIPI0122 **FULL PRESCRIBING INFORMATION IS AVAILABLE UPON REQUEST.**



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