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REDEFINING DIABETES STRATEGIES IN PRIMARY CARE: FOUR NEW PILLARS OF MANAGEMENT

Introduction

The management of Type 2 diabetes mellitus (T2DM) is possibly becoming one of the most challenging aspects of primary care. With millions of individuals worldwide living with T2DM, who are at a higher risk of developing multiple additional chronic conditions including cardiovascular disease (CVD) and renal disease, it is imperative that primary care practitioners (PCPs) around the world are comfortable with the management of T2DM. However, with dozens of T2DM medications available, many of which have associated risks of side effects such as hypoglycemia, the management of T2DM can be quite time-consuming for the busy family physician.

In light of the above, it is important that we look at T2DM through a new lens. It is imperative that clinicians view the management of T2DM not just as “blood glucose management” but rather, that they adopt a person-centric, holistic management approach that takes into account the mitigation of microvascular and macrovascular complications, in order to reduce the morbidity and mortality associated with the condition. When it comes to the management of this condition, one needs to be less of a “glucologist” and more of a “diabetologist”. In order to develop this approach, with the busy PCP in mind, I suggest four pillars on which to focus during a T2DM appointment, that are beyond the laboratory HbA1c measurement (**Figure 1**).

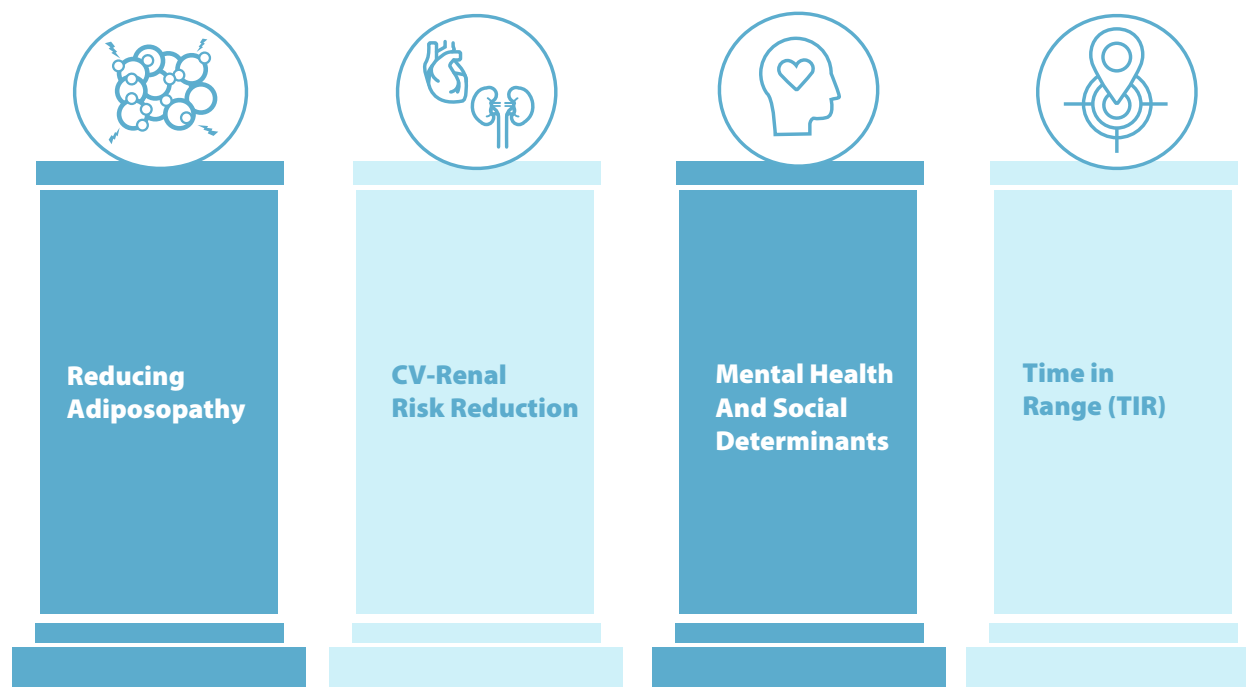
1. Reducing the burden of adiposopathy

Obesity is known to increase insulin resistance. However, current obesity definitions are restrictive as they only take into account the height and weight of the individual. It is actually the excessive adipose tissue (particularly that which is deposited in and around the viscera) that leads to chronic comorbidities; this concept of the “sick fat tissue” is known as adiposopathy. We know that sustained weight loss of >5% can lead to improvement in glycemic control, as well as cardiovascular (CV) outcomes.¹ At the same time, the likelihood of achieving diabetes remission is directly proportionate to the degree of weight loss. It is imperative that weight loss strategies include medical nutrition therapy (ideally under the supervision of qualified personnel such as a registered dietitian) and physical activity, in combination with behavioural therapy, pharmacotherapy and/or bariatric surgery.^{2,3} Therefore, for the appropriate patient with T2DM, ideally a clinician would favour utilization of diabetes pharmacotherapy that does not lead to weight gain but, instead, promotes loss of excess adiposopathy. This would imply the use of agents such as glucagon-like peptide-1 receptor agonists (GLP-1 RA) followed by sodium-glucose cotransporter-2 inhibitors (SGLT-2 inhibitors); they perform markedly better than other classes of T2DM therapy in this regard.^{4,5}

2. Reducing cardiovascular and renal event risks

Duration of exposure to hyperglycemia and poor control of T2DM are known to be directly proportional to increased

Diabetes Management



Person-centered approach

Figure 1. The four pillars on which to focus during a T2DM appointment, that are beyond the laboratory HbA1c measurement; courtesy of Akshay Jain, MD, FRCPC, FACE, CCD, ECNU, DABIM, DABOM.

risk of CV and renal events. We now have robust evidence demonstrating that utilization of SGLT-2 inhibitor therapy can reduce the risk of hospitalization for heart failure (HF), as well as progression of nephropathy in patients at greater risk of experiencing these events. At the same time, both GLP-1RA and SGLT-2i therapy with appropriate agents have been shown to reduce the risk of heart attacks, strokes and CV events in patients with known atherosclerotic cardiovascular disease (ASCVD). Finally, GLP-1RA therapy using appropriate pharmacotherapy is effective in primary prevention of CV events in individuals >60 years old living with T2DM with additional risk factors. In addition, the established guidelines suggest the use of a CV risk reduction strategy with appropriate control of hypertension and dyslipidemia, smoking cessation, and use of agents such as renin-angiotensin-aldosterone system (RAAS) inhibitors and statins, among others.

In light of this, we are now encouraged to consider agents such as GLP-1RA's and SGLT-2i's as disease-modifying agents when addressing high-risk individuals with T2DM as a result of their ability to reduce the risk of developing CV and renal events.⁶

3. Mental health and social determinants of health

Often, while managing conditions such as T2DM, excessive importance is placed on laboratory parameters/objective targets and clinicians may forget the overall

mental health of the individual living with that condition. T2DM is associated with metabolic, mechanical, monetary and mental health consequences that often affect the overall well-being and glycemic control of the individual. The financial burden arising from direct costs (e.g., cost of medications, devices, travel to medical appointments) as well as indirect costs (e.g. absenteeism, diminished productivity, diabetes-related disability causing unemployment) frequently lead to an individual being unable to use medications as directed. This contributes to inadequate glycemic control, thereby leading to a greater risk of T2DM-related complications. It is therefore imperative that we evaluate for T2DM distress as well as the financial burden of T2DM when performing a patient assessment. Access to medication is an extremely important consideration when selecting appropriate pharmacotherapy; if access is restricted, alternatives should be discussed.⁷

4. Time in range

Glycemic control continues to be a major pillar in the management of T2DM. In individuals who continue to have suboptimal glycemic control despite addressing the three aforementioned pillars, reiteration of diabetes education with lifestyle modifications, as well as escalation of pharmacotherapy should be considered. Current guidelines promote preferentially using agents that are

able to lower elevated blood sugars without the risk of hypoglycemia and/or weight gain. Following metformin monotherapy, these would constitute GIP/GLP-1 RA, GLP-1RA's, SGLT-2i's and dipeptidyl peptidase 4 inhibitors (DPP-4i's), in order of degree of glucose lowering capability. Medication selection should be influenced by the three pillars cited above, as well as consideration of contraindications, tolerability, and patient access and preference. Clinicians have long regarded HbA1c as the gold standard for the assessment of glycemic control. However, HbA1c is merely an estimate of the average of blood sugars and therefore may not provide an accurate reflection of an individual's glycemic excursions. With the availability of continuous glucose monitoring (CGM) devices, we are now able to obtain an accurate representation of the total time an individual has achieved glucose readings in a predefined target range (time in range [TIR]). Worsening TIR is associated with worsening microvascular complications.⁸ More importantly, TIR also provides a very good understanding of an individual's risk for hypoglycemia. When combined with an ambulatory glucose profile, clinicians can develop a targeted approach toward the adjustment of pharmacotherapy and patient counseling regarding lifestyle changes. Importantly, in addition, the individual with T2DM can view these glycemic excursions on an ongoing basis, thereby leading to ongoing modifications that will support them in improving their glycemic control. Therefore, CGM devices are not only helpful for glucose measurement but also for behavioural modification. Improving access to these devices in the future can lead to being able to focus on more than just a HbA1c laboratory measurement in order to understand glycemic control.

Conclusion

Focusing on each of the above-mentioned four pillars will assist the busy PCP in delivering a holistic, person-centered management approach for T2DM that extends beyond merely playing the role of a "glucologist".

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References:

1. Diabetes Canada Clinical Practice Guidelines Expert Committee; Can J Diabetes. 2018;42 Suppl 1:S124-S129.
2. MacKay D, Chan C, Dasgupta K, Dominy C, Gagner M, Jin S, Kim J, Little JP, MacDonald B, McInnes N, Reichert S. Remission of Type 2 Diabetes: Diabetes Canada Clinical Practice Guidelines Expert Working Group. Canadian Journal of Diabetes. 2022 Dec 1;46(8):753-61.
3. Wharton S, Lau DC, Vallis M, Sharma AM, Biertho L, Campbell-Scherer D, Adamo K, Alberga A, Bell R, Boulé N, Boyling E. Obesity in adults: a clinical practice guideline. CMAJ. 2020 Aug 4;192(31):E875-91.
4. Lipscombe L, Butalia S, Dasgupta K, Eurich DT, MacCallum L, Shah BR, Simpson S, Senior PA, Lipscombe L, Eurich Bsp DT, Goldenberg R, Khan N, MacCallum Bscphm L, Shah BR, Simpson Bsp S. Diabetes Canada Clinical Practice Guidelines Expert Committee-2018 Clinical Practice Guidelines, Pharmacologic Glycemic Management of Type 2 Diabetes in Adults. Canadian Journal of Diabetes. 2018;42:S88-103.
5. ElSayed NA, Aleppo G, Aroda VR, Bannuru RR, Brown FM, Bruemmer D, Collins BS, Hilliard ME, Isaacs D, Johnson EL, Kahan S. 9. Pharmacologic approaches to glycemic treatment: Standards of Care in diabetes—2023. Diabetes Care. 2023 Jan;46(Supplement_1):S140-57.
6. Lipscombe L, Butalia S, Dasgupta K, Eurich DT, MacCallum L, Shah BR, Simpson S, Senior PA, Diabetes Canada Clinical Practice Guidelines Expert Committee. Pharmacologic glycemic management of type 2 diabetes in adults: 2020 update. Canadian Journal of Diabetes. 2020 Oct 1;44(7):575-91.
7. Diabetes Canada Clinical Practice Guidelines Expert Working Group; Robinson DJ, Hanson K, Jain AB, Kichler JC, Mehta G, Melamed OC, Vallis M; Diabetes Canada Clinical Practice Guidelines Steering Committee; Bajaj HS, Barnes T, Gilbert J, Honshorst K, Houlden R, Kim J, Lewis J, MacDonald B, MacKay D, Mansell K, Rabi D, Sherifali D, Senior P. Diabetes and Mental Health. Can J Diabetes. 2023 Jun;47(4):308-344.
8. Beck RW, Bergenstal RM, Riddlesworth TD, Kollman C, Li Z, Brown AS, Close KL. Validation of time in range as an outcome measure for diabetes clinical trials. Diabetes Care. 2019 Mar 1;42(3):400-5.