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Insulin Initiation: Challenges for Low-Middle-Income Countries

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ABSTRACT

It is a mini review article on initiation of insulin and it challenges, in both globally and especially in lower middle income countries (such as, Trinidad and Tobago (TTO)). International Diabetes Federation (IDF) revealed that in 2015 1,40,300 cases of diabetes were in TTO. Due to which economic burden was at $322 billion globally.
There are 3 stages to insulin therapy: initiation, optimization and intensification.

INTRODUCTION

Type 2 Diabetes (T2D) has reached epidemic proportions globally [1] and in particular Trinidad and Tobago (TTO) a low-middle-income country. In 2015 the International Diabetes Federation (IDF) reported that there were 140 300 cases of diabetes in TTO, a prevalence of 14.5% [2]. The economic burden of T2D was estimated at $322 billion globally in 2012 [3]. It contributes to both increased morbidity and mortality particular coronary artery disease, which remains the leading cause of death in TTO since the 1940's [4], resulting in the reduction in life expectancy. Glucose lowering therapy to achieve an HbA1c <7.0% [5], preservation and management of β cell defect shave emerged as the biggest challenge for all physicians caring for patients with T2D across all borders in the 21st century. This is against a background of an avalanche of new therapeutic agents including GLP analogues like Exenatide and Liraglutide [6,7], dipeptidyl peptidase-4 (DPP-4) inhibition by sitagliptin and increased islet survival [8,9] and islet cell regeneration through islet neogenesis associated protein (INGAP) peptide therapy aiming at islet cell regeneration [10], troglitazone, repaglinide, miglitol, acarbose and the sodium-glucose co-transporter (SGLT) 2 inhibitors [11-14]. However T2DM is a progressive disorder that requires periodic intensification of therapy to achieve and maintain glycemic targets. The pathophysiology of T2DM is complex, involving declining pancreatic β cell function, increased secretion of glucagon by pancreatic α cells and peripheral insulin resistance. In fact, patients have lost up to 80% of β cell function by the time they are diagnosed. The gradual deterioration in β cell function leads to attenuated insulin secretion in response to glucose intake, which eventually will require exogenous insulin to maintain glycemic control. Persistent and progressive hyperglycemia increases the risk for diabetes-related complications, especially microvascular complications such as nephropathy, retinopathy, and peripheral neuropathy. Importantly, the use of intensive anti-hyperglycemic therapy to maintain recommended glycemic targets has repeatedly been demonstrated to reduce the onset and progression of microvascular complications. [15-17]. Hence insulin remains an essential requirement for type 1 and advanced T2D and is listed in the WHO Model List of Essential Medicines [18].

There are 3 stages to insulin therapy: initiation, optimization, and intensification. One common barrier to treatment intensification is the patient's reluctance to start an injectable therapy. Approaches to help patients overcome this barrier include a better understanding of the existential barriers in the local context. This provides the platform to counteract these barriers and convince the patient to accept insulin as an important component in the management of theirT2D. It is in this context we undertook a study to determine barriers to initiating insulin therapy in a primary care setting in Trinidad, to inform appropriate interventions towards effective conversion [19]. We reported that knowledge of insulin was high (98%) however the majority of patients (64.2%) were unaware they may require insulin in the future. Key barriers to initiating insulin treatment were, fear of needles, pain and apprehension about injecting

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oneself were prominent among respondents (85, 53.5%). The largest barrier to insulin therapy (54.1%) was anxiety about mastering the skill of giving oneself an injection, the general hassle of taking injections, concern about preparing the correct dose of insulin, and apprehension about the proper technique of needle injection. These barriers were similar to the developed world. Adequately addressing these as well as demonstrating the very small needles now used in injection devices; performing a test injection in the office so they understand how to do it and how relatively painless they are to perform; and promoting the benefits of injectable therapies should successfully complete the first phase of initiating insulin therapy.

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