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CLINICAL PRACTICE UPDATE IN
ENDOCRINOLOGY & DIABETES

A New Era for Insulin Pumping

Ashleigh Walker
RN, CDE

Megan Skinner
RD, CDE

There is a persistent treatment gap in Type 2 diabetes patients in Canada. A cross-sectional study has shown that only **50% of patients meet the recommended A1c target of 7.0%.** A survey of glycemic control one year following basal insulin therapy initiation similarly shows that only 25% of patients have reached their target goal. Addition of prandial insulin typically achieves glycemic targets in only a further 25-30% of patients, and then at the price of further weight gain and hypoglycemia risks.

The 2013 Canadian Diabetes Association (CDA) Clinical Practice Guidelines (CPGs) recommend that insulin pump therapy (or basal-bolus insulin regimens) should be used in adults with Type 1 diabetes, as part of an intensive diabetes management regimen. Until now, we haven't had comparable research looking into the efficacy & safety of pump therapy in the Type 2 diabetes population. OpT2mise was the first global multi-center, randomized controlled trial in patients living with Type 2 diabetes. OpT2mise focused on patients who had not responded to multiple daily injections (A1c > 8%), with insulin analogues, despite an 8-week period of insulin optimization.

In this special issue of Clinical Practice Update, we will highlight the advantages that insulin pump therapy could offer patients living with Type 2 diabetes and share practical perspectives on simplifying pumping.

Meet Frank

"I was terrified of injections, and until the pump, would usually skip my doses, making my blood sugars really high all the time. With the pump, I only have to poke myself once every three days!"

What Pumps Can Do for Your Type 2 Patients

The pump therapy group achieved a mean reduction of A1c of 1.1% versus only 0.4% for those continuing their titration of multiple daily injections.

1. REDUCE A1C

The OpT2mise trial demonstrated a significant benefit in the Type 2 patient population, of similar extent to that seen in patients with Type 1 Diabetes.

A similar study also found a reduction in A1c along with a significant reduction in insulin requirements in their Type 2 group - likely due to improved absorption and less insulin resistance on a cellular level from smaller boluses of insulin.

Don't Forget! **Clinically, we know that pump therapy often results in fewer hypoglycemic episodes than multiple daily injections, and therefore, the margin of improvement in A1c is often underestimated.**

2. REDUCE FREQUENCY OF HYPOGLYCEMIA

Frequency of hypoglycemia is one of the major considerations in evaluating a diabetes therapy – the results of the OpT2mise study demonstrated **no severe hypoglycemia or increased time spent in hypoglycemia** during 6 months of using the pump.

Insulin pump therapy offers patients a greater sense of confidence and control:

- ability to precisely match both their basal and bolus requirements
- the option of using the temporary basal feature, or
- disconnecting from the pump completely

Don't Forget! **Each of these features alone or taken together reduce the likelihood of hypoglycemia, which can halt the urge for patients to 'feed their insulin' at bedtime with excessive snacking.**

Twice the amount of participants using insulin pump therapy in OpT2mise achieved an A1c <8.0%, compared to those using multiple daily injections.

The Bolus Wizard has been shown to limit the post-prandial spikes in blood glucose and contributes to fewer fluctuations in the overall blood glucose levels.

3. REDUCE GLYCEMIC VARIABILITY

We know that the A1c doesn't tell us the whole story – even when it is at or close to target, widely fluctuating blood glucose levels may still be increasing the risk of microvascular and macrovascular complications.

A unique feature of the pump called the "Bolus Wizard" can recommend a more precise bolus dose as it considers the amount of active insulin, the known correction doses for the individual, and the specific amount required for the carbohydrates consumed. Pump users can safely fine-tune their blood glucose levels throughout the day, with doses measured to the decimal, and tracked in the "insulin-on-board" feature.

Don't Forget! **Pump therapy is the ideal option for high-risk patients with active retinopathy or at cardiovascular risk to manage dangerous post-meal glucose excursions.**

4. IMPROVE ADHERENCE

Often when we are caring for our patients living with diabetes, for many patients with Type 2 diabetes, adherence to treatment can be a significant care challenge.

Although insulin omission may also occur when patients use a pump; these omissions are visible through review of the pump software tracking system. The healthcare provider and patient can identify problem areas when looking at these reports, **helping increase accountability and personalize goal setting, which improves adherence to therapy.** The pump will also provide a reminder for patients to take their meal-time insulin.

Don't Forget! **An insulin pump offers patients a way to get their basal insulin continuously without having to remember to actively inject themselves.**

5. IMPROVE QUALITY OF LIFE

Quality of life is important when deciding on the therapy regimens for our patients. **The OpT2mise study found that pump users experienced improvements in treatment convenience, flexibility, and in willingness to recommend pump therapy.** Patients can safely delay or miss a meal, sleep in on the weekends, or engage in extensive exercise, without diabetes getting in the way. In OpT2mise, pump users were more satisfied to continue treatment with the pump. Pump therapy offers patients the opportunity for shared decision-making – allowing them to review previous doses, current active insulin, and patterns for meal boluses or correction doses.

Don't Forget! **Building trust in a medical device that is designed to fit an individual's lifestyle and habits can result in tremendous confidence and self-management progression in our patients.**

Most pumps have a linked meter that automatically transfers blood glucose levels to the pump – where the Bolus Wizard can make the necessary calculations and – with the user's approval – administer the insulin required.

In OpT2mise, patients using pump therapy used 20% less insulin compared to those patients on multiple daily injections.

6. REDUCE NEEDLE PHOBIA

Needle phobia is another common barrier for our insulin-using patients. Pump therapy eliminates the need for multiple daily injections--- patients now only have to change their infusion site once every three days. The ability for the bolus insulin to be delivered discreetly with a few button pushes instead of worrying about carrying and administering the insulin is also an important advantage.

Don't Forget! **Those using pumps do not have to be concerned about seeing the actual needle as the insertion devices are able to hide this within their design.**

Now that we have convinced you about pump therapy… here are some reasons why it is even easier in Type 2 patients:

1. SIMPLER

Pumping in Type 2 can mimic what you do with a patient on multiple daily injections—it doesn't require the intensity of Type 1 management. **The Getting2Goal Type 2 Pumping Protocol** outlines the simpler approach to pumping, which includes using fixed doses and eliminating the need to carbohydrate count.

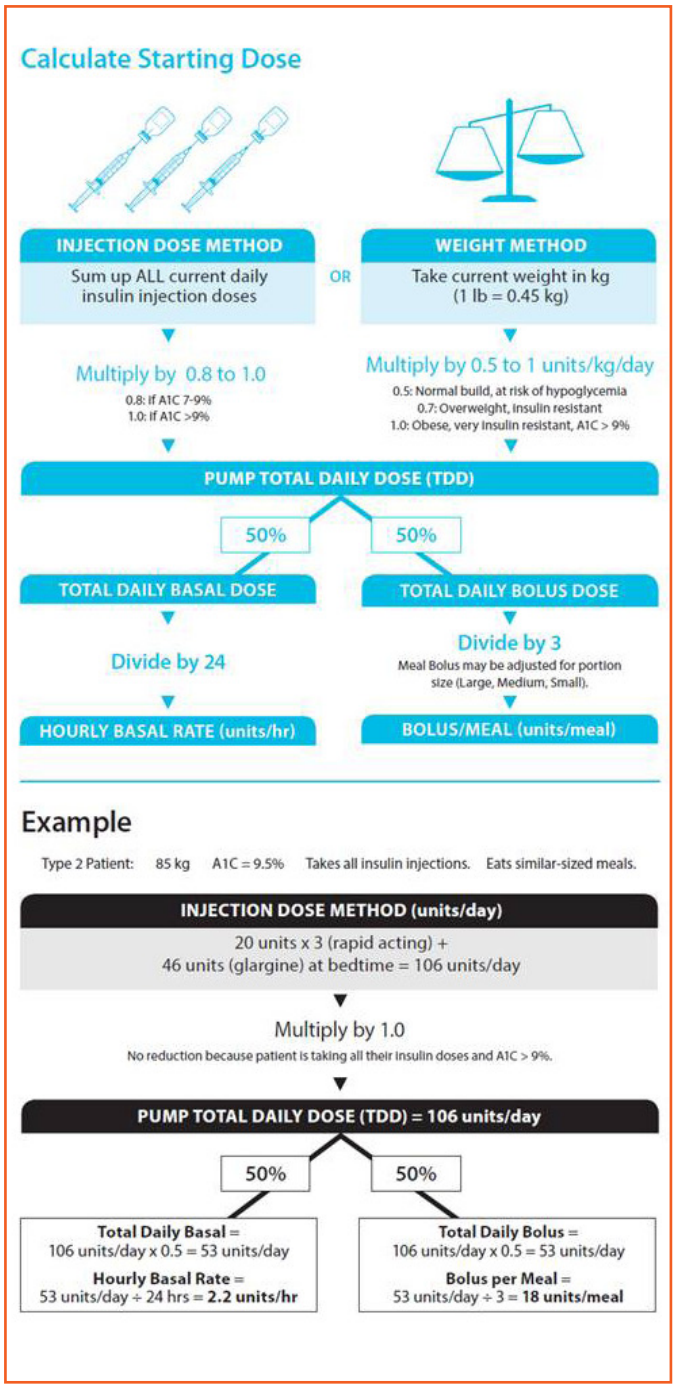
2. REMOVE THE TECHNOLOGY BARRIER

Often healthcare providers will not bring up the insulin pump with certain patient populations whom they feel are not technologically savvy. According to the Canadian PI for OpT2mise, Dr. Ronnie Aronson, the best aptitude assessment of whether a patient is capable of pump technology is two simple questions: "Do they text? Do they have an active email address?"

In OpT2mise, 38% of patients were found to have mild cognitive impairment, and yet were still successful on pump therapy.

3. THE TIMES ARE A'CHANGIN'

Some private insurance plans DO cover pump therapy for Type 2 patients--many private insurance plans do not distinguish the difference between Type 1 and Type 2. Upon completion of OpT2mise, the majority of patients remained on pump therapy.



✔ Check Yourself: Who is a Type 2 insulin pump candidate?

Clinical Criteria

- ✔ HbA1c > 8%
- ✔ High insulin requirements
- ✔ Recurrent hyperglycemia/ high glucose excursions

Patient Criteria

- ✔ Willing to check blood glucose levels at least 2-3/day
- ✔ Capable of using a cell phone, email, or a calculator
- ✔ Open to trying an alternative method of insulin delivery
- ✔ Adequate vision or hearing to allow recognition of the pump signals & alarms

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