

ON THE **CUTTING EDGE** Diabetes Care and Education

INSULIN DYNAMICS AND TITRATION

- 4 The Insulin Dose and Titration Gaps
- 8 Current Topics on Insulin Therapy
- 11 Mealtime Insulin Dosing:
Beyond Carbohydrate Counting
- 16 Managing Insulin for Physical
Activity and Exercise: Part 2
- 21 Insulin Management and
Advancing Practice of the
Registered Dietitian Nutritionist
(RDN) in Diabetes Care
- 27 Lessons Learned While Actively
Titration Insulin Doses

Message from the Theme Editor:

Mary M. Austin, MA, RDN, CDE, FADE
Clinical Services Manager, Hygieia, Inc.
Livonia, MI

In a few short years, insulin will have been in use for a century in the treatment of diabetes. Through its history, we have witnessed the development of a variety of insulins with varying pharmacodynamic properties, all of which have the goal of mimicking the action of endogenous insulin. An inherent property of all exogenous insulins is that titration is required to obtain an effective dose since insulin doses do not reach a steady state themselves. In his article "The Insulin Titration and Dosage Gaps," Israel Hodish, MD, PhD, captures the essence of insulin management: "Once optimal A1C goals are initially achieved, insulin requirements continue to change constantly and do not reach a steady state." This quote, along with Figure 1: Example of the Dynamic Nature of Insulin Requirements, has profound implications for the patient, the professional, and the way diabetes care is organized and delivered for the insulin-using person. Persons with diabetes (PWD), especially type 2 diabetes (T2D), should be made aware that insulin doses administered at any given time are not likely to remain

constant. All insulin-using PWD should be provided with tools and support to titrate their insulin doses. Professionals will need to recognize that insulin management requires ongoing titration, and as such, their roles must be defined within this process. In most cases our current system of health care delivery is not structured to allow for initial or ongoing insulin titration. Successful insulin titration may require new health care delivery models.

The average glycated hemoglobin A1c (A1C) of patients who use insulin is 8.5% (1). As payment and practice models evolve, and are ultimately influenced by desired outcomes, effective insulin titration and improvement in A1C will become even more important. In 2017 the American Association of Diabetes Educators (AADE) released the AADE Practice Paper "Diabetes Educators Play a Critical Role in Successful Insulin Management," which looked at insulin initiation, titration, and optimization. The paper defined the practice of insulin optimization and identified the gaps in tools and resources for patients

and educators to achieve glycemic control (2).

Insulin manufacturers also recognize the importance of insulin titration and are providing titration guidance for professionals on their websites. For example, the FullSTEP® Approach adds mealtime bolus injections sequentially to a basal insulin regimen as needed (3). The Novolog 4-T Approach provides guidance when adding three bolus doses of insulin to a basal regimen (4). Other efforts by manufacturers include titration apps and coach support.

This *OTCE* issue has brought together experts with a wide variety of backgrounds to discuss insulin management and titration. Jerry Meece, BPharm, CDE, RPh, FACA, FAADE in his article, *Current Topics in Insulin Management*, discusses issues in insulin management related to the rising cost of insulin, drug formulary driven insulin changes and the increased use of CGM in insulin titration.

Carbohydrate counting has long been considered the accepted approach to calculating mealtime insulin needs. In their thought-provoking article "Mealtime Insulin Dosing: Beyond Carbohydrate Counting," Alison Evert, MS, RD, CDE and Melinda Maryniuk, MEd, RDN, CDE discuss the growing interest in how other macronutrients and meal timing factors affect insulin needs.

Physical activity and exercise directly affect insulin dosing. In her article, "Managing Insulin During Physical Activity and Exercise: Part 2," certified clinical exercise physiologist and registered dietitian nutritionist Charlotte Hayes, MMSc, MS, RDN, ACSM, CCEP discusses insulin dosing strategies for physical activity and exercise. (For *The Role of the RDN in*

Optimizing Nutrition for the Athlete and Active Individual with Type 1 Diabetes: Part 1, please see *OTCE*, Vol. 39 No. 2: Type 1 Diabetes).

RDNs may not currently have prescriptive authority, but that does not mean that they have no role in insulin titration and management. Patricia Davidson, DCN, RDN, CDE, LDN, FAND and Laura Russell, MA, RD, LD, CDE in "Insulin Management and Advancing Practice of the Registered Dietitian Nutritionist (RDN) in Diabetes Care" discuss the recently released Standards of Practice (SOP) and Standards of Professional Performance (SOPP) (Competent, Proficient, and Expert) for RDNs in Diabetes Care and how to use the document for self-evaluation and practice advancement.

Most of my career has been spent trying to help patients adopt, adapt, or adhere to diabetes self-management strategies. This includes providing sound nutrition counseling and teaching how to use self-monitoring blood glucose (SMBG) results to make lifestyle and medication decisions. Few practice settings provide the opportunity to focus solely on insulin titration. In the article, "Lessons Learned While Actively Titrating Insulin," I share some of the key learnings of working with a cohort of T2D patients over a two-year period focusing *solely* on insulin titration. My experience leaves me with questions. How can RDNs, or other health care providers, provide the continuous guidance and support required for insulin titration if the current norm is episodic care? Is the adoption of technology the answer? It is my sincere hope that this *OTCE* issue will provide food for thought and inspire you to examine your current role in insulin titration.

The development and production of *OTCE* requires a team effort. Thank you to the contributing authors, reviewers, and item writers for the giving of their time and talent. I want to give a very special "thank you" to Charlotte Hayes, MMSc, MS, RDN, ACSM CCEP, who not only served this issue as a contributing author (and the last *OTCE* issue!), but also as a theme team member. Thank you for your dedication to DCE and for sharing your expertise. Thank you to our *OTCE* Editor, Janice MacLeod, MA, RDN, CDE, FAADE, for the opportunity to serve as theme editor. Her constructive input, guidance, support and countless hours of work are much appreciated. (Thank goodness for unlimited data plans!)

References

1. Selvin E, Parrinello CM, Daya N, Bergenstal RM. Trends in Insulin Use and Diabetes Control in the U.S.: 1988-1994 and 1999-2012. *Diabetes Care*. 2016;39(2):e33-35.
2. American Association of Diabetes Educators. AADE Practice Paper: Diabetes Educators Play a Critical Role in Successful Insulin Management. <https://www.diabeteseducator.org/docs/default-source/practice/practice-documents/practice-papers/insulin-titration-survey-summit-paper.pdf?sfvrsn=8>. Accessed July 20, 2018.
3. FullSTEP® Approach. <https://www.novologpro.com/resources/expert-Q-and-A/the-FullSTEP-approach.html>. Accessed July 20, 2018.
4. Novolog 4-T Approach. <https://www.novologpro.com/prescribing/dosing/4-t-approach.html>. Accessed July 20, 2018.