



Insulin Dose Adjustment Decision Support Tool and Competency Framework for Registered Nurses

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Development of Document

The Insulin Dose Adjustment Decision Support Tool and Competency Framework for Registered Nurses 2nd edition (2021) is a revision of the 1st edition: Decision Support Tool for Insulin Dose Adjustment (IDA) by Registered Nurses (2009).

The revision of the first edition is based on expert clinical review, survey responses completed by users of the DST, and broad stakeholder feedback. Although maintenance of the document is the responsibility of Fraser Health Authority, collaboration and input of Registered Nurses, Registered Dietitians - who are involved in IDA and their colleagues and leaders across all British Columbia health authorities was a key component of the revisions.

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In addition, several professionals were involved as expert reviewers of the 1st edition.

Organizational Support

Child Health BC provided financial support for a consultation workshop held in Vancouver BC in March 2009 to prepare the first edition of this document. The purpose of the workshop was to bring together content experts from each health region in BC to obtain input on the Decision Support Tool before its publication.

Disclaimer and Conditions of Use of the Insulin Dose Adjustment Decision Support Tool and Competency Framework for Registered Nurses

This Decision Support Tool (DST) and competency framework includes a description of limits and conditions for Insulin Dose Adjustment (IDA), required clinical competencies, and intended/unintended outcomes of IDA. The document is intended for Registered Nurses (RNs) in BC but is the sole responsibility of the Fraser Health Authority for revising and updating. Any revisions to the document will be done in collaboration with all BC health authorities and content experts.

A critical component of the use or implementation of any aspect of the DST, including the competencies and appendices, is that the employer review the document and may choose to further limit the scope of practice of nurses whom they employ. For example, changing the timing of insulin may not be supported by all employers although this activity is included in the British Columbia College of Nursing and Midwives (BCCNM) definition of insulin dose adjustment.¹ As noted by the BCCNM, there are four levels of control of nurses' practice, one of them being employer policies ² ([Diagram 1](#))

Furthermore, employers and RNs are responsible for implementing a process for RNs to develop and maintain competencies for IDA. This document provides an education record and competency framework to assist with competency development and maintenance.

While every effort has been made to ensure the accuracy, comprehensiveness and relevance of information, data or material contained in this document, the developers and reviewers assume no legal liability or responsibility for the completeness, accuracy or usefulness of any of the information.

This DST is not intended to replace the RN's professional responsibility to exercise independent clinical judgment and use evidence to support competent, ethical care.

¹ British Columbia College of Nurses and Midwives. (2021). *Scope of Practice for Registered Nurses: Standards, Limits and Conditions*. Vancouver, BC: British Columbia College of Nurses and Midwives, p. 72.

² British Columbia College of Nurses and Midwives (2021). *Scope of Practice for Registered Nurses: Standards, Limits and Conditions*. Vancouver, BC: British Columbia College of Nurses and Midwives, p. 8.



Diagram 1: Levels of Control of Nurses' Practice.

Reproduced with permission from: British Columbia College of Nurses and Midwives. (2021). *Scope of Practice for Registered Nurses: Standards, Limits and Conditions*. Vancouver, BC: British Columbia College of Nurses and Midwives, p. 8.

Introduction

Purpose:

This document has been prepared to serve as a resource to RNs and their employers in British Columbia. It provides information relevant to IDA as part of the scope of practice of RNs.

This DST is intended for use in outpatient and ambulatory care settings.

Although this Decision Support Tool and Competency Framework has been prepared for Registered Nurses where appropriate, it is recognized as a relevant resource that may be useful for other disciplines and professions which include insulin dose adjustments in their scope of practice.

Background:

IDA and teaching clients/patients to self-adjust insulin are necessary components of diabetes management and education. Under the Health Professions Act (HPA) RNs in British Columbia are authorized to perform IDA within their scope of practice.

IDA within limits and conditions set out by BCCNM has been part of Registered Nurses' scope of practice since 2006. This document includes parameters for when it is appropriate for RNs to independently perform IDA, identifies the competencies required to perform IDA, and outlines the educational requirements to support IDA.

Definition of Insulin Dose Adjustment

As noted by BCCNM insulin dose adjustment is defined as:

Determining the dose and timing of insulin to achieve glycemic control and advising the client/patient. Changing the type of insulin is not included in IDA. IDA occurs only in clients/patients who are on insulin therapy; that is to say, diabetes has already been diagnosed and insulin ordered. IDA considers many factors including but not limited to diet, exercise and blood glucose and/or sensor glucose levels.³

Client/patient education regarding IDA is also an important component of nursing practice. Registered Nurses who are qualified to do IDA are also expected to provide timely, learner centred education to develop clients'/patients' knowledge, confidence and problem solving skills for safe self-adjustment of insulin.⁴ Many clients/patients will require support from RNs while learning to self-adjust their insulin dosage. This support may involve direct recommendations or advice from RNs regarding appropriate IDA and/or feedback to clients/patients as they learn to self-adjust insulin.

BCCNM Limits and Conditions

The British Columbia College of Nurses and Midwives (BCCNM) has placed a limit/condition on this practice that states:

“Registered nurses who carry out insulin dose adjustment must possess the competencies and follow the decision support tools set out by Fraser Health Authority.”

³ British Columbia College of Nurses and Midwives. (2021). *Scope of Practice for Registered Nurses: Standards, Limits and Conditions*. Vancouver, BC: British Columbia College of Nurses and Midwives, p. 72.

⁴ Cleave B, Gorecki K, Hamilton C, et al. (2018). *Building Competency in Diabetes Education: The Essentials* (5th ed.). Toronto: Canadian Diabetes Association.

Eligibility

Registered Nurses teaching and/or assisting clients/patients with IDA must:

- have a minimum of 800 hours experience in direct diabetes education and management **OR** hold current CDECB certification as a Certified Diabetes Educator (CDE) <http://www.cdec.ca> **AND**
- complete and satisfy the following educational criteria:
 - Meet all eligibility criteria for IDA **AND**
 - Complete recommended reading as well as on-line / web-based learning activities as outlined in [Appendix A](#) **AND**
 - Complete a course of *self-study* and *mentored learning* that covers information and experiences outlined in the Competency Framework & Experience Record for Insulin Dose Adjustment by the Registered Nurse (see [Appendix B](#)). Note: [Appendix B](#) provides a template for tracking experience; other documentation may also be used

Note: Nurses who have previously been performing IDA according to their agency policies (e.g. as a transfer of function or delegated medical act) will complete a self-assessment of competencies as outlined in the Competency Framework in [Appendix B](#), and will confirm these competencies with a physician or RN with experience in IDA.

Scope of Practice

The following section outlines situations that are considered appropriate for IDA by RNs with prerequisite experience, education and demonstrated competencies. Situations that require orders from a Physician or a Nurse Practitioner (NP) and/or which require that a Physician or a NP be notified or consulted are also specified.

IDA by RNs is applicable only when insulin doses are given subcutaneously by syringe, insulin pen or insulin infusion pump.

Scope of Practice

Registered Nurses can adjust insulin, and/or assist clients/patients with IDA in the following situations:

- Blood glucose and/or sensor glucose (BG/SG) outside of the goal range, including hyperglycemia and hypoglycemia
- proactively for changes in physical activity
- proactively for changes in food / carbohydrate
- during illness
- for travel across time zones
- for shift work
- for conventional insulin therapy, basal-bolus insulin with insulin therapy with multiple daily injections (MDI) or insulin infusion pumps
- for pregnant clients/patients
- for pediatric patients
- in situations that have immediate implications for client/patient safety (e.g. missed insulin dose or took wrong type or dose of insulin.)
- while teaching clients/patients to self- adjust insulin doses.

Note: Client/patient education regarding IDA is an important component of nursing practice. If a client/patient does not demonstrate the potential for, or interest in, safe self-adjustment of insulin, the RN will provide advice on a reasonable dose of insulin, including if appropriate, a scale or correction factor. A plan will also be made, in collaboration with the attending Physician or NP, to reassess the client/patient's insulin dosage, learning needs and potential for learning insulin adjustment.

Physician or Nurse Practitioner Order Required

An order from a Physician or a NP is required for insulin doses in the following situations:

- Insulin initiation - A Physician or NP order is required for initiation of insulin doses in all insulin-naive clients/patients.
- Change in type of insulin
- Initiation of insulin pump therapy
- Intravenous (IV) insulin
- Diabetic Ketoacidosis (DKA)
- Hyperosmolar Hyperglycemic Syndrome (HHS)
- Surgery (pre, intra or post operatively)
- Medical or dental procedures requiring fasting of greater than 12 hours and / or general anesthesia
- Labour & delivery
- Peritoneal dialysis or hemodialysis
- Inpatient hospitalization - Physicians or Nurse Practitioners are responsible for insulin orders and IDA for inpatients.
- In any situation that exceeds the RNs level of competency

Physician or Nurse Practitioner Consultation Required

Physician or Nurse Practitioner must be notified or consulted when performing IDA in the following situations:

- Insulin requirements or doses dropping with no apparent cause
- Recurrent or severe hypoglycemia with no apparent cause
- Glycemic control is not improving or is deteriorating despite adjustments made to insulin or other components of the treatment plan
- Total daily dose exceeds what is generally expected for age / body type
- Moderate, large or persistent small ketones
- Signs/symptoms of DKA, dehydration or other serious illness
- Recurring / persistent vomiting or diarrhea
- Disordered eating pattern

- Significant error in dose or timing of insulin administered by patient or caregiver
- Situations requiring prolonged fasting (e.g. for religious or medical purposes)
- Change to different regimen such as changing from BID or TID therapy to MDI
- For clients/patients with additional complex medical or endocrine conditions that may influence insulin requirements or client/patient safety.
- For clients/patients on steroids or medications that can significantly impact BG readings
- If an alternate RN is not available to do IDA in the RN's absence.
- In all situations that are beyond the RN's competency level

Competencies

Prior to including IDA in their practice, RNs must complete an extensive self-learning/ educational process (see [Appendix A](#)), engage in mentored, supervised practice (see sample Competency Framework & Experience Record in [Appendix B](#)). Any requirements for examination are in accordance with the policies identified by the employer.

The following list outlines basic and advanced level competencies required for IDA. RNs have a legal and professional responsibility to practice at their level of competency. Please refer to [Appendix B: Competency Framework & Education Record](#) for a detailed list of indicators for each competency.

Note: Competency statements included in this document provide general descriptions of the desired / requisite “knowledge, skills, attitudes and judgment” for a RN⁵ to perform IDA. While general statements of competency can be used to guide professional development and practice, more detailed indicators such as those shown in [Appendix B](#), may be needed to assess performance and determine mastery of a competency by an individual nurse.

Basic Competencies

- Works within professional and organization standards for IDA by RNs.
- Demonstrates current clinical and pharmacokinetic knowledge relevant to IDA.
- Understands meal planning principles and carbohydrate counting in relation to insulin and uses these in assessment, education, and recommendations for IDA.
- Assesses blood glucose and appropriately interprets information to make changes to insulin dose(s) or other components of diabetes treatment plan.
- Assesses sensor glucose and appropriately interprets information to make changes to insulin dose(s) or other components of diabetes treatment plan.
- Understands various insulin schedules and principles for IDA for conventional therapy.
- Understands various insulin schedules and principles for IDA for intensive therapy for basal-bolus insulin using multiple daily injections (MDI).
- Assesses and addresses diabetes self-care learning needs and readiness to learn IDA.
- Communicates with the client/patient and other team members toward the goal of appropriate IDA.

⁵ British Columbia College of Nurses and Midwives, (2020). *Professional Standards for Nurse Practitioners and Registered Nurses: Accountability, Knowledge, Service, Ethics*. Vancouver, BC: British Columbia College of Nurses and Midwives.

Advanced Competencies

In addition to demonstrating **all of the above** basic competencies, RNs performing IDA are required to demonstrate the following advanced competencies:

- Recognizes and responds appropriately to high risk situations requiring IDA.
- Plans for travel across time zones by clients/patients using insulin.
- Assesses and implements an alternate insulin schedule for shift work.
- Understands principles for IDA basal-bolus insulin using continuous subcutaneous insulin infusion (CSII).
- Recognize and responds appropriately to care needs of pediatric clients/patients.
- Recognize and responds appropriately to care needs pregnant clients/patients (including pre-conception care).

Summary Outcomes of IDA

Intended Outcomes

- Clients/patients will achieve improved time in range (TIR)/target BG/SG and A1C levels.
- Clients/patients will achieve improved time in range (TIR)/target BG/SG and A1C levels without unacceptable hypoglycemia.
- Within their capacity, clients/patients will use BG/SG levels to modify lifestyle behaviours and appropriately adjust insulin dose.
- Optimal glycemic control will prevent or delay the long-term complications of diabetes.
- Pregnancy outcomes for women with diabetes will approximate those of women who do not have diabetes.
- Enhanced diabetes related quality of life.

Unintended Outcomes

- Treatment results in hyperglycemia
- Treatment results in hypoglycemia

References

- Fraser Health. (2012). Decision Support Tool for Insulin Dose Adjustment (IDA) by Registered Nurses. Surrey: Fraser Health
- Cleave B, Gorecki K, Hamilton C, et al. (2018). *Building Competency in Diabetes Education: The Essentials* (5th ed.). Toronto: Canadian Diabetes Association.
- Diabetes Canada Clinical Practice Guidelines Expert Committee. (2018). *Diabetes Canada 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada*. Can J Diabetes, 42(Suppl 1):S1-S325. Retrieved from <http://guidelines.diabetes.ca/cpg>
- International Society for Pediatric and Adolescent Diabetes. (2018). Clinical Practice Consensus Guidelines. Retrieved from <https://www.ispad.org/page/ISPADGuidelines2018>.
- British Columbia College of Nurses and Midwives. (2020). *Professional Standards for Nurse Practitioners and Registered Nurses: Accountability, Knowledge, Service, Ethics*. Vancouver, BC: British Columbia College of Nurses and Midwives. Retrieved from <https://www.bccnm.ca/RN/ProfessionalStandards/Pages/Default.aspx>
- British Columbia College of Nurses and Midwives. (2021). *Scope of Practice for Registered Nurses: Standards, Limits and Conditions*. Vancouver, BC: British Columbia College of Nurses and Midwives. Retrieved from <https://www.bccnm.ca/RN/ScopePractice/Pages/Default.aspx>

APPENDIX A

Recommended Reading List

Diabetes educators are encouraged to use a core text or reference as well as additional supplemental readings when learning about IDA. The following list identifies references to develop foundational knowledge and competencies for IDA. Additional recommended readings are also listed to advance knowledge for basic and advanced competencies. RNs may also need to pursue additional resources to supplement their personal knowledge and confidence for IDA. The competency framework in [Appendix B](#) should be used to help guide reading and other learning activities.

Recommended Reading for Basic and Advanced Competencies

American Diabetes Association. (2019). *Practical Insulin: A Handbook for Prescribing Providers (2nd ed.)*. Alexandria, VA: Author.

BC Children's Hospital. (2015). Insulin Dose Adjustment. Retrieved from <http://www.bcchildrens.ca/health-info/coping-support/diabetes/insulin-dose-adjustment>.

Note: The reference above is a series of self-learning modules regarding insulin dose adjustment and carbohydrate counting relevant to children with diabetes. It includes IDA for conventional insulin therapy, basal-bolus with multiple daily injections (MDI), and insulin pump therapy.

Cleave B., Gorecki K., Hamilton C., et al. (2018). *Building Competency in Diabetes Education: The Essentials* (5th ed.). Toronto: Canadian Diabetes Association.

Diabetes Canada Clinical Practice Guidelines Expert Committee. (2018). Diabetes Canada 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. *Can J Diabetes*, 42(Suppl 1):S1-S325. Retrieved from <http://guidelines.diabetes.ca/cpg>

Diabetes Care Program of Nova Scotia. (2016). Insulin Dose Adjustment Policies and Guidelines Manual. Retrieved from <https://www.cdha.nshealth.ca/system/files/sites/documents/insulin-dose-adjustment-policies-guidelines-manual-2016.pdf>

Saskatchewan Health. (2016). Saskatchewan Insulin Dose Adjustment Module. Retrieved from <https://www.ehealthsask.ca/services/resources/Resources/September%202016%20SK%20IDA%20Module%20UPDATED.pdf>

Note: Much of the content in the above reference supports knowledge development for competencies outlined in [Appendix B](#) of this Decision Support Tool. The policies included in the document for insulin doses adjustment are specific to Saskatchewan and not applicable to nursing practice in BC but the learning content and exercises included in the document are relevant to competency development.

Walsh J., Roberts R., Varma C., Bailey T. (2003). *Using Insulin: Everything You Need for Success with Insulin*. San Diego, CA: Torrey Pines Press.

Additional Recommended Reading for Advanced Competencies

Saskatchewan Health. (2010). Saskatchewan Advanced Insulin Dose Adjustment Module. Retrieved from <https://www.ehealthsask.ca/services/resources/Resources/advanced-insulin-dose-adjustment-module.pdf>

Older Adults:

Meneilly G., Knip A., Miller D., Sherifali D., et al. (2018). Diabetes Canada 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada: Diabetes in Older People. *Can J Diabetes*, 42(Suppl 1):S283-S295. Retrieved from: <http://guidelines.diabetes.ca/cpg/chapter37>

Insulin Pump Therapy:

Bolderman, K.M. (2013). *Putting Your Patients on the Pump: Initiation and Maintenance Guidelines* (2nd ed.). American Diabetes Association: Author.

Kaufman, F.R. (2012). *Insulin Pumps and Continuous Glucose Monitoring: A Users Guide to Effective Diabetes Management* (1st ed.). American Diabetes Association: Author.

Walsh, J., & Roberts, R. (2017). *Pumping insulin: everything for success on an insulin pump and CGM*. San Diego: Torrey Pines Press.

Exercise:

Adolfsson, P., Riddell, M.C., Taplin, C. E., Davis, E. A., et al. (2018). Exercise in children and adolescents with diabetes. *Pediatric Diabetes*, 19(Suppl 27):205-226

Chetty, T., Shetty, V., Fournier P.A., Adolfsson, P., Jones, T.W., Davis, E.A. (2019). Exercise management for young people with type 1 diabetes: a structured approach to the exercise consultation. *Frontiers in Endocrinology*, 10:326.

Sansum Diabetes Research Institute. Excarbs. Retrieved from <https://excarbs.sansum.org>.

Riddell, M. (2015). *Getting Pumped! An Insulin Pump Guide for Active Individuals with Type 1 Diabetes*. Glue Inc: Author.

Riddell, M., Gallen, I., Smart, C., Taplin, C, et al. Exercise management in type 1 diabetes: consensus statement. *The Lancet: Diabetes and Endocrinology*, 5(5): 377-390. Retrieved from [https://doi.org/10.1016/S2213-8587\(17\)30014-1](https://doi.org/10.1016/S2213-8587(17)30014-1)

Sigal R., Armstrong M., Bacon S., Boule N., et al. (2018). Guidelines for the Prevention and Management of Diabetes in Canada: Physical Activity and Diabetes. *Can J Diabetes*, 42(Suppl 1):S554-S63.

Travel:

Diabetes Care Program of Nova Scotia. (2016). Insulin Dose Adjustment Policies and Guidelines Manual. Retrieved <https://www.cdha.nshealth.ca/system/files/sites/documents/insulin-dose-adjustment-policies-guidelines-manual-2016.pdf>

Pinsker, J.E., Becker, E., Mahnke, C. B., Ching, M., et al. (2013). Extensive clinical experience: a simple guide to basal insulin adjustments for long-distance travel. *Journal of Diabetes & Metabolic Disorders*, 12:59. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7962589/>

Shift work:

Diabetes Care Program of Nova Scotia. (2016). Insulin Dose Adjustment Policies and Guidelines Manual. Retrieved from <https://www.cdha.nshealth.ca/system/files/sites/documents/insulin-dose-adjustment-policies-guidelines-manual-2016.pdf>

Continuous Glucose Monitoring and Flash Glucose Monitoring:

Aleppo, G., Laffel, L. M., Ahmann, A. J., Hirsch, I. B., Kruger, D. F., Peters, A., Harris, D. R. (2017). A Practical Approach to Using Trend Arrows on the Dexcom G5 CGM System for the Management of Adults with Diabetes. *Journal of the Endocrine Society*, 1(12), 1445-1460.

Kudva, Y.C., Ahmann, A.J., Bergenstal, R.M., Gavin, J.R. III., et al. (2018). Approach to Using Trend Arrows in the FreeStyle Libre Flash Glucose Monitoring Systems in

Adults, *Journal of the Endocrine Society*, 2(12): 1320-1337. Retrieved from <https://doi.org/10.1210/js.2018-00294>

Laffel, L. M., Aleppo, G., Buckingham, B. A., Forlenza, G. P., Rasbach, L. E., Tsalikian, E., & Harris, D. R. (2017). A Practical Approach to Using Trend Arrows on the Dexcom G5 CGM System to Manage Children and Adolescents with Diabetes. *Journal of the Endocrine Society*, 1(12): 1461-1476.

Scheiner, G. (2015). *Practical CGM A Guide to Improving Outcomes through Continuous Glucose Monitoring*. American Diabetes Association: Author.

Wysham, C.H., & Kruger, D.F. (2021). Practical Considerations for Initiating and Utilizing Flash Continuous Glucose Monitoring in Clinical Practice, *Journal of the Endocrine Society*. Retrieved from <https://doi.org/10.1210/jendso/bvab064>

Pediatrics:

Type 2 Diabetes in Children and Adolescents. *Can J Diabetes*, 42(Suppl 1): S247-S254. Retrieved from <http://guidelines.diabetes.ca/cpg/chapter35>

International Society of Pediatric and Adolescent Diabetes (2018). *Clinical Practice Consensus Guidelines*. Retrieved from <https://www.ispad.org/page/ISPADGuidelines2018>

Wherrett D., Ho J., Huot C., Legault L., et al. (2018). *Diabetes Canada 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada: Type 1 Diabetes in Children and Adolescents*. *Can J Diabetes*, 42(Suppl 1): S234-S246. Retrieved from <http://guidelines.diabetes.ca/cpg/chapter34>

Pregnancy:

Feig D., Berger H., Donovan L., Godbout A., et al. (2018). *Diabetes Canada 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada: Diabetes in Pregnancy*. *Can J Diabetes*, 42(Suppl 1): S255-282. Retrieved from: <http://guidelines.diabetes.ca/cpg/chapter36>

Feig D., Berger H., Donovan L., Godbout A., et al. (2018). *Diabetes Canada 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada*.

Saskatchewan Health (2012). Saskatchewan Gestational Diabetes Advanced Insulin Dose Adjustment Module. Retrieved from <https://pubsaskdev.blob.core.windows.net/pubsask-prod/108846/108846-advanced-insulin-dose-adjustment-module-gestational-diabetes.pdf>.

Appendix B

Competency Framework & Experience Record for Insulin Dose Adjustment (IDA) by Registered Nurses

The purpose of the competency framework and experience record is to help guide RNs in developing their competence related to IDA as defined by BCCNM. The framework is intended for use within British Columbia by RNs authorized under the Nurse (Registered) and Nurse Practitioner Regulation⁶ and BCCNM to perform IDA within limits and conditions.

This framework and experience record provide a template that can be customized to:

1. suit the needs and policies of practice settings / organizations and
2. assist RNs and organizations with assessing, developing and / or tracking RN competencies for IDA.

Space is included for making notes relevant to each competency.

Competencies in this framework are organized according to the main, overarching competencies required for IDA. Each main competency is accompanied by indicators which will enable individual(s) or organizations to observe and track competency. The competencies and indicators can also serve as a guide for self study, professional development, and may assist individuals preparing to write an IDA competency exam.

Competencies for IDA are either basic or advanced level competencies. All RNs doing IDA are required to have basic competencies. Only those with advanced competencies can perform IDA at an advanced level.

Note: Advanced competencies are 1) highlighted and marked with an asterisk * in this document and 2) identified under the title “Advanced Competency Area”.

Assessment of IDA competencies include *knowledge* and *application* competencies. RNs must develop and maintain both types of competencies in order to perform IDA as part of their nursing practice. Knowledge competencies can be acquired through self-study, which includes but is not limited to the reading material and learning activities outlined in [Appendix A](#), completing relevant web-based / e-learning programs, and / or attending relevant workshops. Application competencies require clinical experience, including observation of a competent practitioner (RN/NP or Physician), supervised / joint practice, and independent practice.

⁶B.C. Government. Ministry of Health. (2020). Health Professions Act: Nurses (Registered) and Nurse Practitioners Regulation. Retrieved from http://www.bclaws.ca/civix/document/id/complete/statreg/284_2008

PROFESSIONAL STANDARDS

Competency: Works within professional and organization standards for insulin dose adjustment (IDA) by Registered Nurses

Competency Indicator	Observe or Complete Self-Study	Practice with Mentor	Practice with Mentor	Independent Practice	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
Accepts responsibility for performing IDA and understands the professional & legal implications of doing so.					
Identifies and works within the scope of practice for Registered Nurses as defined by the BCCNM and the employing health agency/organization.					
Identifies limits of own knowledge and skill and works within them.					
Demonstrates initiative to advance and maintain knowledge and skills needed for safe IDA.					
Performs IDA often enough to maintain confidence and competence.					
Documents accurate, clear and timely clinical notes of IDA and related patient education or advice.					

Confirmation of learning activities and experience that incorporate the above competencies	
Date:	Signature of RN:
Date:	Signature of Mentor:
Date:	Signature of Mentor:

CLINICAL AND PHARMACOKINETIC KNOWLEDGE

Competency: Demonstrates current clinical and pharmacokinetic knowledge relevant to insulin dose adjustment (IDA)

Competency Indicator	Observe or Complete Self-Study	Practice with Mentor	Practice with Mentor	Independent Practice	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
Describes the major types of diabetes including basic pathophysiology, distinguishing characteristics, and rationale for different treatment plans according to type of diabetes.					
Identifies non-pharmacological and pharmacological approaches to treating different types of diabetes.					
Describes the pharmacokinetics and action time of all insulins available in Canada including onset, peak, duration and how these may be altered (e.g. by lipohypertrophy, age, pregnancy, renal impairment etc.).					
Identifies drugs that may inhibit or potentiate the action of insulin.					
Identifies potential side effects of insulin therapy and how to avoid / minimize and manage them (e.g. hypoglycemia, lipohypertrophy, weight gain, in rare cases allergy).					
Describes basic physiologic insulin requirements in type 1 & type 2 diabetes in adults as well as usual starting doses based on age, weight, diagnosis etc.					
Advanced Competencies					
* For each of the above indications, identifies unique and additional considerations for pediatric patients.					

Competency Indicator	Observe or Complete Self-Study	Practice with Mentor	Practice with Mentor	Independent Practice	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
* For each of the above indications, identifies unique and additional considerations for diabetes management in pregnancy, including pre-conception care.					

Confirmation of learning activities and experience that incorporate the above competencies	
Date:	Signature of RN:
Date:	Signature of Mentor:
Date:	Signature of Mentor:

MEAL PLANNING, CARBOHYDRATE COUNTING AND INSULIN DOSES

Competency: Understands meal planning principles and carbohydrate counting in relation to insulin and uses these in assessment, education, and recommendations for insulin dose adjustment (IDA)

Competency Indicator	Observe or Complete Self-Study	Practice with Mentor	Practice with Mentor	Independent Practice	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
Describes glycemic responses to different food groups/types.					
Describes the purposes of meal planning and / or carbohydrate counting and identifies potential advantages/disadvantages of each, according to the client/patient's situation.					
Applies and teaches dietary guidelines for periods of illness.					
Identifies age appropriate dietary, activity, and/or insulin adjustments that can be made to improve blood glucose and/or sensor glucose (BG/SG) excursions associated with food.					
Identifies dietary and/or insulin adjustments for physical activity.					
Identifies effect of alcohol consumption on BG/SG and provides education and advice to minimize risk and prevent hypoglycemia.					
Works collaboratively with dietitians and makes appropriate referrals for nutrition education & support.					
Advanced Competencies					
* For each of the above indications, identifies unique and additional considerations for pediatric patients.					
* For each of the above indications, identifies					

Competency Indicator	Observe or Complete Self-Study	Practice with Mentor	Practice with Mentor	Independent Practice	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
unique and additional considerations for diabetes management in pregnancy, including pre-conception care.					

Confirmation of learning activities and experience that incorporate the above competencies	
Date:	Signature of RN:
Date:	Signature of Mentor:
Date:	Signature of Mentor:

ASSESSMENT & INTERPRETATION: BLOOD GLUCOSE

Competency: Assesses blood glucose and appropriately interprets information to make changes to insulin dose(s) or other components of diabetes treatment plan

Competency Indicator	Observe or Complete Self-Study	Practice with Mentor	Practice with Mentor	Independent Practice	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
Identifies age appropriate blood glucose goals & rationale for these.					
Identifies situations in which standard blood glucose goals may need to be modified.					
Performs a comprehensive assessment of the patient's / client/patient's blood glucose: <ul style="list-style-type: none"> • reviews recorded blood glucose values and evaluates their validity; • obtains pertinent information and analyzes relationships regarding factors that may be influencing blood glucose levels (e.g. insulin, meals /snacks, exercise/ activity, other medications, illness, etc.). 					
Identifies frequency and times to check blood glucose to make informed decisions regarding insulin dose adjustment (IDA).					
Identifies patterns of hyperglycemia or hypoglycemia, or changes in routines which require adjustment of insulin and/or other components of treatment plan.					
Identifies the increased risk of hypoglycemia in older adults using insulin and slowly adjusts dose in a manner to avoid hypoglycemia.					
Identifies when, why and how to assess for nocturnal hypoglycemia and potential rebound hyperglycemia					

Competency Indicator	Observe or Complete Self-Study	Practice with Mentor	Practice with Mentor	Independent Practice	Notes
	Date/Initial	Date/Initial	Date/Initial	Date/Initial	
Interprets assessment data and plans appropriate intervention(s)/course of action based on data.					
Provides age appropriate, family centred education regarding BG data interpretation.					
Communicates assessment findings, plan and advice to relevant team members as appropriate.					
Advanced Competencies					
* For each of the above indications, identifies unique and additional considerations for pediatric patients.					
* For each of the above indications, identifies unique and additional considerations for diabetes management in pregnancy, including pre-conception care.					

Confirmation of learning activities and experience that incorporate the above competencies	
Date:	Signature of RN:
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Date:	Signature of Mentor:

ASSESSMENT & INTERPRETATION: CONTINUOUS GLUCOSE MONITORING AND/OR FLASH GLUCOSE MONITORING

Competency: Assesses sensor glucose and appropriately interprets information to make changes to insulin dose(s) or other components of diabetes treatment plan

Competency Indicator	Observe or Complete Self-Study	Practice with Mentor	Practice with Mentor	Independent Practice	Notes
These competencies are in addition to BGM competencies	Date/Initial	Date/Initial	Date/Initial	Date/Initial	
Describe the basic physiology of sensor glucose (SG) technology.					
Identify potential challenges of interstitial glucose accuracy during rapidly changing glucose levels or hypoglycemia.					
Recognize when it is or not appropriate to use SG in replacement of blood glucose.					
Identify appropriate priorities and sequences for adjusting insulin(s).					
Identifies device specific alerts/alarms and optimal use to prevent hypo or hyperglycemia.					
Identifies age appropriate SG goals & rationale for these.					
Identifies situations in which standard SG goals may need to be modified.					
Performs a comprehensive assessment of the client/patient's SG using company compatible software: <ul style="list-style-type: none"> • reviews calibration reports to assess reliability of data; • obtains pertinent information and analyzes relationships regarding factors that may be influencing SG levels (e.g. insulin, diet, activity, other medications, illness, etc.). 					

Competency Indicator	Observe or Complete Self-Study	Practice with Mentor	Practice with Mentor	Independent Practice	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
Identifies patterns of hyperglycemia or hypoglycemia, or changes in routines which require adjustment of insulin and/or other components of treatment plan.					
Identifies when, why and how to assess for nocturnal hypoglycemia and potential rebound hyperglycemia.					
Interprets assessment data and plans appropriate intervention(s)/course of action based on data.					
Communicate assessment findings with client/patient and educate on assessment and interpretation of SG data.					
Communicates assessment findings, plan and advice to relevant team members as appropriate.					

Confirmation of learning activities and experience that incorporate the above competencies	
Date:	Signature of RN:
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Date:	Signature of Mentor:

INSULIN SCHEDULES AND DOSE ADJUSTMENTS-CONVENTIONAL THERAPY

Competency: Understands various insulin schedules and principles for insulin dose adjustment (IDA) for conventional therapy.

Competency Indicator	Observe or Complete Self-Study	Joint Practice	Joint Practice	Independent	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
Uses established principles and guidelines for insulin dose adjustment (IDA) based on patterns					
Identifies situations when an insulin scale or correction dose needs to be used and/or adjusted.					
Uses pattern management principles to establish, adjust and evaluate baseline doses for conventional insulin schedules: <ul style="list-style-type: none"> ▪ Single dose insulin (e.g. type 2), ▪ BID or TID insulin with a combination of intermediate acting and rapid or short acting insulins. 					
Identifies when a change in the time of insulin administration would be appropriate and consults with MD/NP as required by organization's policy.					
Applies exercise / activity guidelines appropriate to the client/patient's insulin schedule and method of insulin delivery.					
Applies sick day guidelines, including but not limited to IDA & provides related client/patient-centered education.					
Advanced Competencies					
* For each of the above indications, identifies unique and additional considerations for pediatric patients.					
* For each of the above indications, identifies unique and additional considerations for diabetes					

Competency Indicator	Observe or Complete Self-Study	Joint Practice	Joint Practice	Independent	Notes
	Date/Initial	Date/Initial	Date/Initial	Date/Initial	
management in pregnancy, including pre-conception care.					
*Also refer to advanced competencies for continuous subcutaneous insulin infusion.					

Confirmation of learning activities and experience that incorporate the above competencies	
Date:	Signature of RN:
Date:	Signature of Mentor:
Date:	Signature of Mentor:

INSULIN SCHEDULES AND DOSE ADJUSTMENTS-BASAL BOLUS WITH MULTIPLE DAILY INJECTIONS (MDI)

Competency: Understands various insulin schedules and principles for IDA for intensive therapy for basal-bolus insulin using MDI

Competency Indicator	Observe or Complete Self-Study	Joint Practice	Joint Practice	Independent	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
Describes principles & concepts of basal-bolus insulin therapy & identifies differences and similarities between basal-bolus with MDI & continuous subcutaneous insulin infusion (CSII).					
Identifies and uses age appropriate blood glucose and /or sensor glucose (BG/SG) goals to calculate correction doses and adjust basal doses.					
Identifies priorities and sequence for adjusting insulin, when there is more than one out of range BG/SG pattern.					
Calculates, uses, evaluates and adjusts insulin: carbohydrate ratios.					
Calculates, uses, evaluates and adjusts insulin sensitivity factor (ISF), correction doses and / or insulin scales.					
Uses pattern management to adjust basal and bolus doses.					
Integrates pattern management principles with correction and supplemental doses for intensive therapy.					
Identifies risk of hypoglycemia with insulin stacking.					
Understands how to use Insulin on Board [IOB] / active insulin information.					
Applies exercise / activity guidelines to client/patient's and MDI plan.					
Applies principles of basal-bolus therapy with MDI to					

optimize blood/sensor glucose control and/or quality of life (e.g. increased flexibility).					
Provides family centered and age-appropriate communication and education for insulin dose adjustment with MDI.					
Advanced Competencies					
* For each of the above indications, identifies unique and additional considerations for pediatric clients/patients.					
* For each of the above indications, identifies unique and additional considerations for older adult clients/patients.					

Confirmation of learning activities and experience that incorporate the above competencies	
Date:	Signature of RN:
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Date:	Signature of Mentor:

DIABETES SELF-CARE LEARNING NEEDS

Competency: **Assesses and addresses diabetes self-care learning needs and readiness to learn insulin dose adjustment (IDA)**

Competency Indicator	Observe or Complete Self-Study	Joint Practice	Joint Practice	Independent	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date /Initial	
Assesses knowledge, ability and readiness to learn principles/guidelines for: - basic IDA according to blood/sensor glucose patterns; - intensive therapy with multiple daily injection (MDI) or continuous subcutaneous insulin infusion (CSII).					
Identifies specific learning needs and formulates learning plan with client/patient to address - basic IDA and - advanced IDA.					
Evaluates learning and plans follow-up as appropriate to patient / family needs and circumstances.					
Advanced Competencies					
* For each of the above indications, identifies unique and additional considerations for pediatric patients.					
* For each of the above indications, identifies unique and additional considerations for diabetes management in pregnancy, including pre-conception care.					
*Also see: Advanced Competency Areas for CSII.					

Confirmation of learning activities and experience that incorporate the above competencies	
Date:	Signature of RN:
Date:	Signature of Mentor:
Date:	Signature of Mentor:

COMMUNICATION

Competency: Communicates with the client/patient and other team members toward the goal of appropriate insulin dose adjustment (IDA)

Competency Indicator	Observe or Complete Self-Study	Joint Practice	Joint Practice	Independent	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
Involves client/patient in reviewing & interpreting blood/sensor glucose values, to make informed decisions about adjustments to the treatment plan.					
Uses active listening to understand client/patient's questions, concerns and emotions and responds effectively.					
Assesses learning needs and provides clear, relevant instructions to the client/patient about their insulin and IDA (e.g. which insulin(s) to change, reasons, specific doses, and expected outcomes).					
Confirms client/patient's understanding of instruction or advice provided.					
Builds relationships with clients/patients to promote self-care and learning and does not encourage ongoing dependence on health professionals for IDA.					
Negotiates learning plan to assist clients/patients in developing knowledge, skills and confidence for self-adjusting insulin doses.					
Notifies and / or consults with other team members as appropriate.					
Records relevant data on the appropriate records/forms.					
Advanced Competencies					
* For each of the above indications, identifies unique					

Competency Indicator	Observe or Complete Self-Study	Joint Practice	Joint Practice	Independent	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
and additional considerations for pediatric patients					
* For each of the above indications, identifies unique and additional considerations for diabetes management in pregnancy, including pre-conception care.					

Confirmation of learning activities and experience that incorporate the above competencies	
Date:	Signature of RN:
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Date:	Signature of Mentor:

HIGH RISK SITUATIONS

Advanced Competency: Recognizes and responds appropriately to high risk situations requiring insulin dose adjustment (IDA)

Competency Indicator	Observe or Complete Self-Study	Joint Practice	Joint Practice	Independent	Notes
	Date/Initial	Date/Initial	Date/Initial	Date/Initial	
Provides client/patient with appropriate advice for IDA following severe hypoglycemia.					
Provides appropriate recommendations when a client/patient has made an error in their usual insulin dose.					
Provides appropriate advice for hyperglycemia and diabetic ketoacidosis prevention and recognition.					
Advanced Competencies					
* For each of the above indications, identifies unique and additional considerations for pediatric patients.					
* For each of the above indications, identifies unique and additional considerations for diabetes management in pregnancy, including pre-conception care.					

Confirmation of learning activities and experience that incorporate the above competencies	
Date:	Signature of RN:
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Date:	Signature of Mentor:

TRAVEL

Advanced Competency: Plans for travel across time zones by clients/patients using insulin

Competency Indicator	Observe or Complete Self-Study	Joint Practice	Joint Practice	Independent	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
Identifies situations that require adjustments to insulin dose, timing or type for travel across time zones.					
Identifies information needed to prepare a travel plan and advises client/patient accordingly.					
Provides information and advice on insulin dose adjustment (IDA) required for travel across time zones taking into account the client's/patient's current insulin regimen and delivery method, flight distance, length of travel and time changes for: <ul style="list-style-type: none"> • outbound trips, and/or • return trips. 					
Explains travel plan to client/patient and assesses understanding.					
Teaches clients/patients principles for traveling safely across time zones with insulin, taking into consideration their learning needs and level.					
Identifies when a change in the type, time or device (syringe/pen/continuous subcutaneous insulin infusion) of insulin administration would be appropriate and consults with MD/NP as required by organization's policy.					
Confirms client's/patient's understanding of instruction or advice provided.					
Advanced Competencies					
* For each of the above indications, identifies					

unique and additional considerations for pediatric clients/patients.					
* For each of the above indications, identifies unique and additional considerations for older adult clients/patients.					

Confirmation of learning activities and experience that incorporate the above competencies	
Date:	Signature of RN:
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Date:	Signature of Mentor:

SHIFT WORK

Advanced Competency: Assesses and implements an alternate insulin schedule for shift work

Competency Indicator	Observe or Complete Self-Study	Joint Practice	Joint Practice	Independent	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
Identifies high risk working situations that require alternative insulin schedule(s).					
Identifies times of greater hypoglycemia risk based on insulin action and switch over in sleep/wake pattern					
Uses pattern management principles to establish, adjust and evaluate baseline doses for different insulin schedules: <ul style="list-style-type: none"> ▪ single dose insulin (type 2); ▪ BID or TID insulin; ▪ multiple daily injections (MDI); ▪ continuous subcutaneous insulin infusion (CSII). 					
Analyzes relationship of matching insulin action with possible irregular timing of nutritional intake & activity levels and identifies appropriate adjustments / action.					
Assesses knowledge, ability and readiness to learn: <ul style="list-style-type: none"> ▪ basic insulin dose adjustment (IDA) according to blood/sensor glucose patterns; ▪ intensive therapy with MDI or CSII. 					
Identifies when a change in the type, time or device of insulin administration would be appropriate and consults with MD/NP as required by organization's policy.					
Identifies and discusses the need to introduce alternative insulin schedules if greater flexibility and/or improved glucose outcomes are required and subsequently describes principles & concepts of these					

Competency Indicator	Observe or Complete Self-Study	Joint Practice	Joint Practice	Independent	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
regimens.					
Confirms patient's understanding of instruction or advice provided.					
Identifies when and if shift work is a safety concern and notify MD/NP for alternative plan.					
Advanced Competencies					
* For each of the above indications, identifies unique and additional considerations for pediatric patients.					
* For each of the above indications, identifies unique and additional considerations for diabetes management in pregnancy, including pre-conception care.					

Confirmation of learning activities and experience that incorporate the above competencies	
Date:	Signature of RN:
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Date:	Signature of Mentor:

BASAL BOLUS WITH CONTINUOUS SUBCUTANEOUS INSULIN INFUSION (CSII)

Advanced Competency: Understands principles for IDA basal-bolus insulin using CSII

Competency Indicator	Observe or Complete Self-Study	Joint Practice	Joint Practice	Independent	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
Describes principles & concepts of basal-bolus insulin therapy & identifies differences and similarities between basal-bolus with multiple daily injections (MDI) & CSII.					
Calculates, uses, evaluates and adjusts insulin: carbohydrate ratios.					
Calculates, uses, evaluates and adjusts insulin sensitivity factors, correction doses and / or insulin scales.					
Uses pattern management to adjust basal rates and bolus doses.					
Identifies priorities and sequence for adjusting insulin, when there is more than one out of range BG pattern.					
Identifies the appropriate BG/SG target or range for client/patient's pump.					
Identifies insulin on board [IOB]/active insulin time for client/patient's specific pump.					
Identify and consider the pump specific negative correction principles for client/patient's pump.					
Integrates pattern management principles with correction and supplemental doses for intensive therapy.					
Applies pump related exercise/activity guidelines to client/patient's situation.					
Applies principles of basal-bolus therapy with CSII to optimize blood/sensor glucose control and / or quality of life (e.g. increased flexibility).					
Identifies risk of diabetic ketoacidosis associated with					

Competency Indicator	Observe or Complete Self-Study	Joint Practice	Joint Practice	Independent	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
CSII & describes steps for prevention.					
Identifies how & when to use temporary basal rates for CSII.					
Identifies how and when to used extended bolus option.					
Teaches and / or appropriately uses temporary pump removal guidelines.					
Provides family centred and age-appropriate communication and education for insulin dose adjustment (IDA) with CSII.					
Advanced Competencies					
* For each of the above indications, identifies unique and additional considerations for pediatric patients.					
* For each of the above indications, identifies unique and additional considerations for older adult clients/patients.					
*Identifies clients/patients where use of automated insulin delivery (AID) may be beneficial and directs them to the appropriate resources.					

Confirmation of learning activities and experience that incorporate the above competencies	
Date:	Signature of RN:
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Date:	Signature of Mentor:

PEDIATRICS

Advanced Competency: Recognize and responds appropriately to care needs of pediatric clients/patients

Competency Indicator	Observe or Complete Self-Study	Joint Practice	Joint Practice	Independent	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
Identifies recommended blood/sensor glucose targets for children & adolescents, compares these to adults, explains rationale; and identifies situations in which these goals may need to be modified.					
Identifies insulin schedules that are appropriate to the unique schedules of children at different ages and developmental stages.					
Collaborates with family and multidisciplinary team in planning insulin schedules appropriate for home, community, and school settings.					
Identifies growth and developmental issues that may impact insulin requirements and glucose control and formulates appropriate plan of action and dose adjustments.					
Recognizes high risk situations, which have implications for safe use of insulin and insulin dosing in children (e.g. recurrent diabetic ketoacidosis, eating disorders).					
Identifies age appropriate amounts to adjust insulin and reasons for differences in insulin sensitivity.					
Provides family centered and age-appropriate communication and education for IDA.					

Confirmation of learning activities and experience that incorporate the above competencies	
Date:	Signature of RN:
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Date:	Signature of Mentor:

PREGNANCY

**Advanced Competency: Recognize and responds appropriately to care needs pregnant clients/patients
(including pre-conception care)**

Competency Indicator	Observe or Complete Self-Study	Joint Practice	Joint Practice	Independent	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
Differentiates between type 1, type2, Gestational Diabetes Mellitus (GDM) and Impaired Glucose Tolerance (IGT).					
Describes hormonal changes of pregnancy and postpartum period and expected changes in insulin requirements; identifies unexpected changes, their significance and when to notify Physician/Nurse Practitioner.					
Completes comprehensive assessment of learning needs re: diabetes management for pregnancy and provides timely, client/patient-centered education for IDA.					
Describes maternal, fetal and neonatal implications of suboptimal blood/sensor glucose control in pregnancy.					
Identifies recommended blood/sensor glucose goals for pregnancy and explains rationale; identifies situations in which these may need to be modified.					
Applies principles of intensive therapy to diabetes management in pregnancy.					
Identifies blood/sensor glucose monitoring and insulin schedules appropriate for pregnancy & describes rationale.					
Identifies appropriate amounts and frequency for					

Competency Indicator	Observe or Complete Self-Study	Joint Practice	Joint Practice	Independent	Notes
	Date/ Initial	Date/ Initial	Date/ Initial	Date/ Initial	
IDA during pregnancy and describes rationale					
Identifies situations where it may be more appropriate to adjust components of the treatment plan, other than the insulin dose					
Differentiates between starvation ketosis and ketosis as a sign of decompensated metabolic control					
Completes comprehensive assessment of learning needs re: diabetes management for pregnancy and provides timely, client/patient-centered education for IDA					

Confirmation of learning activities and experience that incorporate the above competencies	
Date:	Signature of RN:
Date:	Signature of Mentor:
Date:	Signature of Mentor: