Title: Diabetes Management in Adults Medical Directive

Number: C-FHT 01

Activation Date: *Review due by:*

Sponsoring/Contact Person(s):
(Name, position, contact particulars)

Kathleen Whittaker, Program Manager
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Order and/or Delegated Procedure:	Appendix Attached: Yes No Title(As listed below)

The medical directive of Diabetes Management in Adults is relevant to the adult diabetes patient population under the medical responsibility of family physicians of the Caroline Family Health Team.

The Registered Nurse (RN) and Registered Dietitian (RD) have authorizations as outlined in this medical directive and are authorized to implement the following directives when all the conditions in the attached companion appendices/directives are met:

1. Perform Controlled Acts and Procedures (Appendix I)
2. Requisition of Laboratory Investigations (Appendix IV)
3. Prescribe diabetes supplies and performance of capillary blood glucose monitoring at the point of care (Appendix V)

Recipient Patients	Appendix Attached: Yes No Title(As listed below)

1. Caroline Family Health Team Physicians have signed their approval for use of the Diabetes Management in Adults Medical Directive
2. Patients are rostered to Caroline Family Health Team Physicians
3. Patients have been diagnosed with diabetes or pre-diabetes
4. Patients have given informed consent

Implementer Approval Form

Title and Number of Directive/Delegation: Diabetes Management in Adults – C-FHT 01

Name of Implementers	Signature	Date
Christina Demirkok, MHSc, RD		May 22, 2019
Kim Walsh		May 23'19
CHRIS WILLIAMS		MAY 23.2019
DANA PINTEA		May 23/2019
Alicia Gallarello		May 28/19
STEPHEN DUNCAN		23/5/19
Robert Tohn		23/05-/19
Rebecca Stallwood		May 23/19
DAVID WALLIK		24/5/19
LORI CHALKLIN		24/5-/19.
HIRA JAMSHAID		~~May~~ 13, 2019 June
Helena Lin		Sept. 12, 2019
Lauren MacDonald, RD, CDE		Oct 15/19

Authorizer Approval Form

Title and Number of Directive/Delegation: Diabetes Management in Adults – C-FHT 01

Name of Implementers	Signature	Date

Authorized Implementers:	Appendix Attached: Yes No Title Appendix 2 Authorized Implementers – C-FHT DEP Registered RN and RD

1. DEP RN and DEP RD working with C-FHT Family Physicians who have agreed to the Medical Directive
2. Health Care Professionals (HCP) stated above have authorization from Caroline Family Health Team Physicians, who have signed off approval for use of the Diabetes Management in Adults Medical Directive, and competencies to fulfill this Medical Directive
3. All HCP applying the Medical Directive are members of the C-FHT
4. All HCP practice according to the most current Canadian Diabetes Clinical Practice Guidelines
5. All HCP must complete a certification process to determine competencies in diabetes management. HCP will only have authority to implement controlled acts and performances applicable to their level of certification.

Indications/Contraindications	Appendix Attached: Yes No Title

1. In general, each action/procedure under each directive will be implemented in the context of the existing physician-patient relationship and as part of the medical diagnosis and plan of care established by the physician. These actions/procedures will be implemented without specific prior discussion (but as part of the plan of care) as per the indications and contraindications for each of the directives.
2. In implementing the directives, the RN and RD will:
    a. Ensure that a C-FHT physician is available for consultation at all times.
    b. Clinical considerations for oral anti-hyperglycemic agents/insulin adjustment.
    Ensure the following is assessed and taught prior to adjusting, holding or discontinuing oral anti-hyperglycemic agents or insulin (if applicable):
        i. Proper use of glucose meter (coding of meter, proper meter technique, proper storage of strips, use of high/low solutions, and monitoring of expiring meter strips) and frequency of Capillary Blood Glucose Monitoring (CBGM). The patient must agree to comply with the frequency of CBGM and its documentation in order to establish pattern management
        ii. If applicable, ensure that the patient is taught the proper dose and administration timing for taking the prescribed oral anti-hyperglycemic agent(s)
        iii. If applicable, the proper storage of insulin, injection site rotation, assessment of lipodystrophy, monitoring of appropriate timing of insulin injection, insulin action, and expiry of insulin. Proper use of insulin pens and tips (changing, depth and priming)
        iv. Individualized diet regarding carbohydrate consistency or appropriate carbohydrate flexability (i.e. appropriate use of basal/bolus), meal balance (i.e. effect of macronutrients, glycemic index, fibre on blood glucose) and alcohol consumption, or need for revision of the diet if gastrointestinal issues exist (i.e. gastroparesis)
        v. Effect of activity (type, medications, duration and timing) on blood glucose.
        vi. Effect of other medications such as Beta-blockers, clonidine, guanethidine and reserpine which may alter hypoglycemia awareness of symptoms of hypoglycemia.
        vii. Patient's understanding of hypoglycemia such as signs and symptoms, appropriate treatment and carrying fast-acting carbohydrate. Individual blood glucose targets may be necessary for those individuals who have hypoglycemia unawareness, the elderly or those who are professional drivers
        viii. Patient's knowledge re: sick day management, ketone testing (Type 1DM), effect of stress on blood glucose.
    c. Sick Day Management: The primary goal is to prevent hospitalization. Sick day management should be discussed at diagnosis and reviewed on an ongoing basis, either individually and/or in group sessions. Patients should be instructed to :
        i. Continue to take insulin and/or oral anti-hyperglycemic agent(s) unless otherwise instructed by the physician or health care provider.
        ii. For Type 1 diabetes, take bolus insulin in relation to carbohydrate intake and/or blood sugar and/or ketone readings (refer to Table shown below)
        iii. For Type 1 diabetes, test blood sugars every 4 hours
        iv. For Type 1 diabetes, test ketones if blood sugars are above 13 or symptoms of diabetic ketoacidosis are present (abdominal pain, nausea) (refer to table 3)
        v. If unable to eat the usual carbohydrates consumed, substitute carbohydrate containing fluid

approximately 10-15 grams of carbohydrate every 1-2 hours and encourage the consumption of non-carbohydrate containing fluids

vi. Avoid exercise if blood glucose is high (14mMol/L) and ketones are present, as vigorous activity may cause blood glucose levels to rise even further.

vii. If concerned, see a physician, and/or contact the on-call physician if any of the following persist.
- Elevated pre-prandial blood glucose (14mMol/L) that is not responding to sick day management interventions
- Ketones (moderate-large)
- Persistent diarrhea
- Vomiting
- Fever above 37.5°C (100°F)

viii. Seek immediate medical attention by going to the Emergency Department if there is a clinical deterioration which may include shortness of breath/respiratory difficulty

Table 1: Recommended Targets for Glycemic Control (Canadian Diabetes Association CDA, 2008, S.30)

A1C (%)	FPG/preprandial PG	2-hour postprandial PG
<7.0*	4.0 – 7.0	5.0 – 10.0 (5.0 – 8.0, if A1C target not being met)

- A target A1C of ≤6.5% may be considered in some patients with type 2 diabetes to further lower the risk of nephropathy, but this must be balanced against the risk of hypoglycemia and increased mortality in patients who are at significantly elevated risk of cardiovascular disease.

A1C=glycosylated hemoglobin, FPG= fasting plasma glucose, PG=plasma glucose

Table 2: Suggested algorithm for Sick day management with blood ketone testing in Type 1 Diabetes (Leadership Centre for Diabetes, 2002)

Blood Glucose (mMol/L)	Blood Ketones (mMol/L)	Action Needed
Less than 3.9	None	No extra insulin. Instruct to decrease dose of pre-meal insulin as directed. If vomiting, instruct to contact health care team.
4.0-16.0	Less than 0.6	Use usual insulin dose (and scale) as for non-sick days.
4.0-16.0	Greater than 0.6	Take a 10% of total daily dose supplement of rapid/fast acting insulin in addition to usual baseline insulin doses.
Greater than 16.0	Less than 0.6	Take a 10% of total daily dose supplement of rapid/fast acting insulin in addition to usual baseline insulin doses.
Greater than 16.0	Greater than 0.7-1.4	Take a 15% of total daily dose supplement or rapid or fast acting insulin, in addition to usual baseline insulin doses.
Greater than 16.0	Greater than 1.5-3.0	Take a 20% of total daily dose supplement of rapid or fast acting insulin, in addition to usual baseline insulin doses SEEK MEDICAL ATTENTION

Table 3: Factors that Affect Glycemic Levels (adapted from Mertig, 2007)

Factors that increase Glycemic levels	***Factors that decrease Glycemic levels***
Inadequate dose of oral antihyperglycemic agents	***Elevated dose of oral antihyperglycemic agents***
Lifestyle Factors • Overeating, especially carbohydrates • Significant weight gain • Decreased physical activity • Caffeine (high dose)	Lifestyle Factors • Skipping a meal or decreasing carbohydrate intake after taking oral antidiabetic agent(s) • Significant weight loss • Increased physical acitivty, hypoglycemia can occur even several hours later
Medications • Corticosteriods • Danazol • Diuretics • Sympathomimetic agents (i.e epinephrine, salbutamol, terbutaline) • Isoniazid • Beta blockers • Phenothiazine derivatives • Somatropin • Estrogens • Progestrogens (i.e. oral contraceptives) • Niacin (high dose) • Quinolones Chemotherapy or steroids, nephropathy, postoperative recovery, infection, PEG feeds, TPN or end of honeymoon stage (transient remission)	Medications • Oral antidiabetic medications • ARB's • ACE inhibitors • Disopyramide • Fibrate • Fluoxetine • MAO inhibitors • Propoxyphene • Salicylates (high doses) • Somatostatin analog (i.e. octreotide) • Sulfonamide antibiotics • Beta Blockers • Quinolones Newly diagnosed Type 1 in the honeymoon stage
Hormones • Stress hormones (adrenaline) • Growth hormone • Cortisol • Pregnancy hormones (2^{nd} and 3^{rd} trimesters • Hormones during menses • Estrogen	Hormones • Pregnancy hormones (1^{st} trimester)
Emotions • Anger • Depression • Fear • Panic • Stress	Emotions • Stress management
Other • Excessive sleeping	Other • Alcohol (without food) • Heat and humidity • High altitude • Intense brain activity • New and unusual surroundings • Socializing • Stimulation environment

Consent

1. Patients of C-FHT Family Physicians
2. HCP obtains verbal patient consent prior to the implementation of care
3. HCP fully explains risks, benefits and insulin regimen alternatives prior to initiating insulin

Guidelines for implementing the Order/Procedure:
As per attached directives

Documentation to be included in the medical records includes:

1. Patient's BG pattern, current medications, self-management skills and learning needs, eyes, feet, driving guidelines, referrals, blood pressure, weight, diet, activity, fluids, hypoglycemia, samples, medication considerations and changes, insulin injection technique recommendations, as well as other pertinent objective, subjective, assessment and plan information related to managing blood sugars, clinical findings and the plan of care. Documentation and communication between physician and DEP Team with patient will also be included. Response to the procedure or directions provided by the RN or RD will also be documented
2. The physician will refer to the documentation in the medical record by the RN or RD

Review and Quality Monitoring Guidelines:

1. The following processes will be used to address appropriate, untoward or unanticipated outcomes resulting from implementation of the medical directive
   a. The staff member is working towards a Certified Diabetes Educator (CDE) certification (i.e. completing the hours required to be eligible)
   b. The staff member who identifies any inappropriate, untoward or unanticipated outcomes resulting from directive implementation will immediately notify the most responsible physician and his/her Program Manager. The Program Manager , in collaboration with the signing physician/authorizing HCP, will immediately trigger an ad hoc review
   c. The medical directive will be reviewed routinely one year after initial activation and annually thereafter.
   d. This medical directive can be placed on hold if routine review processes are not completed, or if indicated for and ad hoc review. During the hold, staff cannot perform the procedure under authority of the directive and must obtain direct, patient specific orders for the procedure (s) until it is renewed. The Program Manager will notify staff of any hold on the directive.
   e. Upon renewal of the directive, the RN and RD will be authorized to implement the directive upon and in accordance with the renewed directive.
   f. The inability for the RN or RD to successfully complete the CDE certification process will mean that the staff person does not have the authority to function under this directive.

Administrative Approvals (as applicable)

Approving Physician(s)/Authorizer(s)

Appendix I: Performed Controlled Acts and Procedures (CAPs)

CAPs will be performed by the RN or RD. The staff member will implement these as part of the medically established plan of care, without specific discussion with the physician.

Clinical reasoning process will be applied to each patient presentation to guide the appropriateness of the procedure. When the patient's condition is unstable, immediate physician involvement is required

Table 1: List of CAPs Implemented Under this Directive

List of Controlled Act and Procedures
Requisition of Laboratory Investigations (Appendix IV)
Prescribe diabetes supplies (glucometer, glucometer strips, needles for insulin pens and lancets) (Appendix V)
Perform Capillary Blood Glucose Monitoring (BG) (Appendix V)
*See note in documentation for details

Appendix II: Oral Antihyperglycemic Agents

CAP's under this directive will be implemented by the RN or RD

Appendix IV: Requisition of Laboratory Investigations

CAPs under this directive will be implemented by the RN or RD. The RN or RD can implement these investigations as part of the medically established plan of care, without specific discussion with the physician.

See Table 2 for detailed indications, contraindications and notes.

Table 1: List of Investigations Implemented Under this Directive.

Laboratory Investigations *The following investigations are all CAPs	
Creatinine	CK
Glucose, Fasting	Sodium
Glucose, Random	Potassium
75 g 2h oral GTT	eGFR/serum creatinine
Vitamin B12	Celiac Screen (serum IgA + tissue transglutaminase)
TSH, Free T4	Lipids (Cholesterol, Triglycerides, HDL-Cholesterol, LDL-Cholesterol)
Urea	CBC & Differential
A1C	Urine ACR
ALT	

*Costs of investigations will also be considered as part of the decision making process.
*Limit to numbers of investigations ordered per year

Table 2: Detailed Indications/Contraindications

Indications for Laboratory Investigations *All investigations listed below are CAPs
Chemistry
Creatinine(eGFR)/Urea Annual or q 3 months screening Before initiating Metformin
Plasma Glucose (Fasting/Random) q 3 months Baseline annually If concerned re: accuracy of glucose meter
Thyroid levels (TSH and T4) Annually for Type 1 diabetes or as indicated (i.e. physician monitoring) Every 3 months if Type 1 within the first year of postpartum period
A1C Completed approximately every three months
ALT – prior to starting a statin
Monitored yearly if prescribed HMG-CoA Reductase Inhibitor or Fibrate therapy
Creatinine Kinase Patient reporting symptoms suspicious of rhabdomyolysis
Electrolytes (Sodium, Potassium, Chloride) Before initiating or increasing diuretic therapy Only Potassium needed before initiating or increasing ACE inhibitor or ARB + 6 weeks after starting/increasing dose of ACEi/ARB Annual screening Previously high levels – repeat in 4-6 weeks If diabetic ketoacidosis is suspected
CBC and Diff As indicated for anemia
Vitamin B12 Baseline for Metformin use in pre or type 2 diabetes, repeat to monitor (i.e. recommended a supplement) Repeat annually if on metformin
Celiac Screen As indicated for unexplained anemia, weight loss, osteoporosis, GI symptoms Serum IgA + tissue transglutaminase Ab (not covered by OHIP)
Lipids
Lipid Panel (Cholesterol, Triglycerides, HDL, LDL fasting)
3 months after lipid medication change or if elevated to monitor Annually if indicated or over the age of 40 years

Urinalysis
uACR+/- MICROALBUMIN Annually if indicated for Type 2 diabetes or if elevated to monitor
Contraindications for CAPs
Do not perform investigations under authority of this medical directive if: · The indications noted above are not fulfilled
Process for Implementing the Procedure
1 Assess and review previous blood work. 2 Explain to the patient the need for the test and obtain verbal consent. 3 Generate a requisition for the specimens required. 4 Document in the medical record that tests have been requisitioned, and the indications for the requisition. 5 Document that the results were reviewed once available. Management of Untoward Outcomes: 1 If following up with the patient prior to patient's next physician visit, review the results of the diagnostic and blood tests and notify the PHYSICIAN of any abnormal or unexpected test results.

Appendix V Prescription of Diabetic Supplies and Performance of Capillary Blood Glucose Monitoring at Point of Care

CAPs under this directive will be implemented by the RN or RD. The RN or RD can implement these investigations as part of the medically established plan of care, without specific discussion with the physician.

Table 1: Indications/Contraindications for Prescription of Diabetes Supplies

Controlled Act and Procedures	Indications	Contraindications/Considerations/Process for Implementing Procedure
Prescribing diabetes supplies including glucometers (including continuous glucose monitoring system/device and flash glucose monitoring device), lancets, test strips for glucometers or sensors, and needles for insulin pens	· To assess Glycemic control in response to oral antihyperglycemic agents, insulin and lifestyle management quality control activities and patient teaching. · The results are used to determine if a patient is euglycemic, hyperglycemic or hypoglycemic so appropriate interventions and education can occur. · Needles for patients injecting insulin.	· The patient or substitute decision maker refuses to monitor capillary blood glucose. · The patient is unable to monitor capillary blood glucose due to physical or cognitive limitations · Consideration should be given to patients who are unable to monitor due to financial constraints · The length of the needle should be the smallest one available (currently the 4mm/5mm needles) as studies have shown that insulin is better absorbed, there is less pain and bruising leading to better compliance and they are just as effective if not more so than the larger needles. Unless patients has an adverse reaction to smaller needle, it should always be the first choice.

Table 2: Indications/Contraindications for Performing Capillary Blood Glucose Monitoring at point-of-care

Controlled Acts and Procedures (CAPS)	Indications	Contraindications/Considerations/Process for Implementing Procedure
Perform Capillary Blood Glucose Monitoring point-of-care testing.	· To assess Glycemic control in response to oral antihyperglycemic agents, insulin and lifestyle management, quality control activities and patient teaching. · The results are used to determine if a patient is euglycemic, hyperglycemic or hypoglycemic so appropriate interventions and education can occur.	· The patient or substitute decision maker refuses to consent to the procedure. · The patient's fingers are sore or the skin on the fingertips is compromised or infected. · Gently apply pressure to the site with tissue/cotton ball until bleeding has subsided. Apply band aid if required.

Guidelines for Lancing Device Use for Capillary Blood Glucose Monitoring in Practices

Subject: Safety precautions to reduce risk of cross-contamination when using lancing devices.
Use of a Practice Demo Glucometer When a Practice glucometer is used to test blood sugars: 1. A single-use disposable lancing device must be used. 2. The lancing device and test strip must be disposed of in a sharps container. 3. The glucometer must be cleaned according to the manufacturer's directions between uses. 4. Gloves must be worn by the health care professional because there is a risk of contact with blood. We will provide single use disposable lancing devices. Reusable lancing devices are not acceptable for multi-person use due to the risk of cross contamination from improper sanitation or misuse.
Education of patient with a new glucometer kit When a patient is being taught with a new glucometer kit that has never been used: 1. The lancing device, lancets, test strips and glucometer may be used to instruct and demonstrate use if the kit will be given to the patient to take home. 2. The lancing device, lancets, test strips and glucometer may be shown to the patient, but may not be used to obtain capillary blood sample if this patient will not be taking the kit home.

1. *Health Care Professional(s) (HCPs) Authorizing Directive:*

Do the authorizing health professional(s) – both sponsoring the directive and those responsible for patients who may receive the procedure under authority of the directive – have the necessary scope of practice, authorization and competencies to authorize implementation of this directive in the family health team setting?
(Authorizing HCPs must be authorized and competent to order the procedure)

2. *Quality Monitoring Mechanisms*

What mechanisms and indicators will be used to conduct an evaluation and renewal of the directive? (e.g retrospective chart audit, literature review, user focus group; re-cert processes and/or annual performance reviews of implementing staff etc).

Regular reviews by RN and RD through their respective clinical programs as per their College criteria will be performed. The programs will monitor how practice under the directive is proceeding; accommodate evolving, evidence-based practice along with focused, recorded reviews conducted on the Implementation Proposal Renewal Form during routine renewal processes one year after initial implementation. Clinicians may be subject to annual or biannual random chart audits as deemed appropriate by their Program Manager or College.

3. *Education Plan (New hires only)*

RN or RDs eligible for this medical directive are in the process attaining hours to be eligible for the Certified Diabetes Educator certificate or have completed the Certified Diabetes Education process and will comply with the certification maintenance process that requires ongoing learning.

4. *Communication Plan:*

What is the communication plan for implementing the proposed Medical Directive?

- All staff in the area where the RN or RD practice needs to be aware of the activation of the directive.
- Implementation of this directive will align with the current interdisciplinary practice model of care so no changes are required.
- The Program Manager will notify all key staff, i.e. managers or designates who will in turn orient the staff as needed.
- Notification will occur via email, program meetings, and physician forum meetings.
- When full approval of the directive is accomplished.

5. *For new hires*

For new staff members wishing to become eligible to apply this medical directive, a probationary phase of approximately 3 months will occur. A preceptor will be assigned to the individual and job shadowing will occur. Upon successful completion of the probationary period, the clinician may apply to work under the medical directive and meet outlined criteria.

6. *How will competency be evaluated*

Maintenance of certification as a diabetes educator (CDE) or working towards certification