Vancouver CoastalHealth
VA: VGH / UBCH / GFS
VC: BP / Purdy / GPC

ORDERS

COMPLETE OR REVIEW ALLERGY STATUS PRIOR TO WRITING ORDERS

COLON RESECTION POST-OP – ENHANCED RECOVERY AFTER SURGERY

(items with check boxes must be selected to be ordered)

Time Processed RN/LPN Initials Comments

Date: _____ Time: _____

Weight: _____ kg ☐ Actual ☐ Estimate

DIET: Encourage gum chewing for 15 minutes PO TID (when awake until day of discharge)
Post-op day 0: full fluid diet
Post-op day 1 and onwards: full fluid diet to Diet as Tolerated with Boost Plus Tetra BID
☐ NPO
☐ Other: _____

ACTIVITY: Activity progression as per clinical pathway
☐ Other: _____

CONSULTS: Dietitian Consult
☐ Pharmacist - for LMWH teaching and obtaining Pharmacare coverage (for patients who have undergone major surgery for cancer and are going home on LMWH)
☐ Enterostomal Therapist
☐ Other: _____

MONITORING: Initiate ERAS clinical pathway for colon resection
Initiate ICOUGH protocol
Monitor vital signs as per protocol (Notify physician if new fever greater than 38.5^{0}C)
Capillary blood glucose (glucometer) TID and at HS x 24 hours if non-diabetic and blood glucose levels are normal

LABORATORY: Upon arrival to PACU – capillary blood glucose (inform anaesthesiologist with result greater than 10 mmol/L)
POD # 1 and 3: CBC with differential, electrolytes, serum creatinine, Urea
☐ Other: _____

TREATMENTS: Leave dressings to primary closed wounds until POD # 2 (reinforce PRN). Change if saturated.
☐ Remove NG tube before patient leaves PACU
☐ Dressing: _____
☐ Check stoma Q shift for CWR (colour, warmth, raised)
☐ Approximate time frame for ostomy nurse to remove rod_____
☐ NO SUPPOSITORIES
☐ NO ENEMAS
☐ Temporary ostomy
☐ Permanent ostomy
☐ Remove staples and steri-strip incision POD# _____
☐ Other _____

INTRAVENOUS:
☐ IV dextrose 5% - sodium chloride 0.45% (D5W-½NS) at 100 mL/h *OR*
☐ _____ at _____ mL/h
☐ add potassium chloride 20 mmol/L on post-op day _____
Post-op Day 1: Saline lock IV when drinking well
If CVC *in situ*, remove and insert a saline lock.

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_____ _____ _____
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FLUID BALANCE (Ins & Outs):

Foley: Indications for Foley:

- ☐ Close monitoring of output
- ☐ Difficult catheterization or obstruction
- ☐ To protect surgical area/wound
- ☐ Other: _____

☐ Foley to straight drainage. Remove Foley catheter on POD # 1
☐ Remove Foley catheter on POD # 3 for rectal patients
Measure urinary output Q4H until catheter discontinued;
☐ Call physician if urinary output less than 120 mL per 4 hours.

Drain(s): ☐ None (N/A)
☐ Hemovac Record Q6H
Hemovac strip Q1H x 4 hours, then Q6H PRN
Discontinue hemovac as per MD orders
☐ Discontinue hemovac drain when drainage less than _____mL in 24 hours

MEDICATIONS:

ondansetron 4 mg IV Q8H x 24 hours (approved by POPS)
☐ pantoprazole 40 mg PO DAILY

Analgesia and Antiemetics

☐ See POPS orders

Glycemic control:

☐ As per completed "Insulin Subcutaneous Basal, Nutritional & Correction Orders, For patients who are eating meals or are NPO (complete page 4)

Antibiotic use:

Antibiotic prophylaxis is provided and completed pre-op.
There is no indication to continue antibiotic prophylaxis into post-op period

Other: _____

DISCHARGE INSTRUCTIONS:

See ERAS clinical pathway for discharge criteria
See surgeon in _____days after discharge
☐ Patient going home on LMWH. Discharge prescription may be for either ☐ dalteparin *OR* ☐ enoxaparin for total duration of 28 days from start date of dalteparin in hospital. Patient/family to be taught how to inject LMWH using dalteparin (start POD #2), and to be given Sharps Container and appropriate LMWH teaching sheet.

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IF YOU RECEIVED THIS FACSIMILE IN ERROR, PLEASE CALL 604-875-4077 IMMEDIATELY

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COLON RESECTION POST-OP – ENHANCED RECOVERY AFTER SURGERY

(items with check boxes must be selected to be ordered) **(Page 3 of 4)**

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Date: _____ Time: _____

VTE Prophylaxis Refer to VTE Risk Assessment And Thromboprophylaxis Recommendations on reverse

RISK ASSESSMENT (see over for VTE Risk Assessment Groups):

LOW RISK:

☐ Early ambulation; no anticoagulant or mechanical prophylaxis

MODERATE OR HIGH RISK: Order anticoagulant prophylaxis unless contraindicated (indicate reason):

Contraindication(s) to Anticoagulant prophylaxis:

☐ Active bleeding of clinical significance requiring intervention
☐ High risk of serious bleeding or bleeding into a critical site (e.g. intracranial, intraspinal, pericardial, intraocular, retroperitoneal, intra-articular)
☐ Known major bleeding disorder or acquired coagulopathy (consider Hematology consult)
☐ Platelet count less than 50 x 10^9/L (consider Hematology consult)
☐ History of heparin-induced thrombocytopenia (HIT) see Footnotes and Precaution 7 on reverse
☐ Patient already receiving therapeutic anticoagulation

Other contraindication (specify): _____

Reassess daily to start anticoagulant prophylaxis when contraindication resolves

ANTICOAGULANT PROPHYLAXIS: see Footnotes and Precautions 6 to 9 on reverse

Give first post-op dose at (time): _____ on (date): _____

☐ dalteparin 5000 units subcutaneous daily at 10:00 until discharge ∗OR∗

☐ for patients with severe renal impairment, heparin 5000 units subcutaneous Q12H until discharge ∗OR∗

Other: _____

Reason: _____

Monitor patients with epidural catheter receiving anticoagulant prophylaxis for symptoms and signs of spinal hematoma

Epidural catheter should not be removed within 18 hours of a dose of dalteparin or 10 hours of a dose of heparin. After epidural catheter removal, dalteparin or heparin should not be given for at least 2 hours

MECHANICAL PROPHYLAXIS: (only when anticoagulant prophylaxis contraindicated)

☐ Sequential compression device (SCD)

Apply to lower limb(s) continuously until anticoagulant prophylaxis starts or discharge
Interrupt for skin care, assessments, toileting and ambulation only

_____ _____ _____

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VTE RISK ASSESSMENT AND THROMBOPROPHYLAXIS RECOMMENDATION

Patient Risk Groups (satisfaction of any one or more of the listed criteria)	Thromboprophylaxis Recommended
Low Risk Group • Day surgery[1] without any VTE risk factors (see below) • No reduction in mobility compared to usual state • Surgical procedure with a total anesthetic and surgical time of less than 60 minutes with no risk factors for VTE (see below)	Early ambulation
Moderate or High Risk Group • Any medical or surgical patient having had or are expected to have significantly reduced mobility for 3 days or more[2,3] • Medical patients with ongoing reduced mobility (compared to their usual state) AND have one or more risk factors for VTE (see below)[2,3] • Surgical procedure with a total anesthetic and surgical time of 60 minutes or longer[3-6] • Acute surgical admission with an inflammatory or intra-abdominal condition[3-6] • Surgical patients with one or more risk factors for VTE (see below)[3-6]	LMWH (heparin if eGFR less than 10 mL/min)[4-9]

Obstetrical Patients with Increased Risk
• Having one or more risk factors for VTE (see below)
• Pregnancy-related risk factors:
  • Ovarian hyperstimulation
  • Hyperemesis gravidarum
  • Multiple pregnancy
  • Preeclampsia
  • Emergency caesarean section
	Consider LMWH (heparin if eGFR less than 10 mL/min)[4-9]

RISK FACTORS FOR VTE

- Age 60 years or over
- Active cancer and cancer treatment
- Previous VTE
- Critical Care admission
- Obesity (BMI over 30 kg/m^2)
- Known thrombophilia
- First degree relative with VTE
- Varicose veins with phlebitis
- Estrogen-containing oral contraception
- Hormone replacement therapy

One or more significant medical conditions:

- Sepsis or severe acute infection
- Heart disease
- Respiratory pathology
- Inflammatory condition
- Rheumatological disease
- Nephrotic syndrome
- Antiphospholipid syndrome
- Acute stroke

CONTRAINDICATIONS FOR MECHANICAL PROPHYLAXIS

- Acute stroke with immobility (unable to walk independently to the toilet)
- Peripheral vascular disease with absent pedal pulses
- Severe peripheral neuropathy
- Skin breakdown, ulcers, gangrene, cellulitis, or dermatitis
- Skin grafting within last 3 months
- Allergy to stocking or compression cuff materials
- Unable to size or apply properly due to deformity, recent surgery or trauma

FOOTNOTES AND PRECAUTIONS

1. Day surgery includes patients admitted and discharged within 24 hours for an elective surgical or invasive procedure.
2. In medical patients receiving anticoagulant prophylaxis, the NNT to prevent symptomatic DVT is 212 and non-fatal PE is 300; the NNH for major bleed is 430. There is no evidence for mechanical thromboprophylaxis in medical patients.
3. In surgical patients receiving anticoagulant prophylaxis, the NNT to prevent symptomatic DVT is 20-106 and non-fatal PE is 110-150; the NNH for major bleed is 70-100. There is weak evidence for using mechanical thromboprophylaxis alone and weaker evidence for combining anticoagulant and mechanical prophylaxis to improve efficacy.
4. First post-op dose of anticoagulant should be given after hemostasis is achieved and as soon as it is safe to do so (usually 12 -24 hours after surgery). This should take into account the risks of bleeding, thrombosis and timing of subsequent surgery.
5. Prophylaxis for up to 30 days after surgery is recommended in those having hip replacement or hip fracture surgery, and up to 14 days after total knee replacement. Consider prophylaxis for up to 30 days after abdominal or pelvic surgery for cancer and in patients with multiple risk factors for VTE.
6. Heparin 5000 units subcutaneous Q12H should be used if patient is awaiting urgent surgery and is a candidate for neuroaxial blockade. Refer to Peri-operative Pain Service or Anesthesia regarding timing of epidural catheter insertion and removal.
7. LMWH and heparin should not be given in patients with HIT. Consider consulting Hematology/Internal Medicine regarding the use of alternative agents (e.g. fondaparinux or argatroban).
8. If eGFR is 10 to 30 mL/min AND expected LOS is longer than 10 days, consider using heparin instead of dalteparin.
9. Suggested dosing for dalteparin and heparin in patients with extremes of weight and/or severe renal impairment:

Weight range	dalteparin (if eGFR 10 mL/min or above)	heparin (if eGFR less than 10 mL/min)
40 kg or less	2500 units subcutaneous once daily	2500 units subcutaneous Q12H
41 kg to BMI 40 kg/m^2	5000 units subcutaneous once daily	5000 units subcutaneous Q12H
BMI over 40 kg/m^2	5000 units subcutaneous Q12H	5000 units subcutaneous Q8H

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ADDRESSOGRAPH

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Date:_____ Time:_____ Weight:_____

GLYCEMIC CONTROL: INSULIN SUBCUTANEOUS BASAL, NUTRITIONAL & CORRECTIONAL ORDERS - For patients who are eating meals or are NPO

If patient is on continuous feeds, use orders "For patients receiving TPN or continuous 24 hour enteral feed" ****** Insulin dosing MUST be reviewed daily by the physician *****

MONITORING: Capillary blood glucose (CBG) TID and at HS. If HS correction insulin administered, repeat CBG at 03:00; do NOT give any insulin at 03:00, call physician if CBG is above 18 mmol/L
If diet changes to "unable to eat" or "NPO", HOLD nutritional insulin only and call physician for orders

MEDICATIONS:

Discontinue all previous insulin orders
☐ Discontinue the following oral diabetic medications: _____

BASAL Insulin (Longer acting): Can be ordered and given even if NPO; may reduce dose by 25% if NPO / poor intake / glycemia well controlled

☐ insulin NPH _____ units subcutaneous at breakfast (08:00 if NPO)
_____ units subcutaneous at ☐ bedtime *OR* ☐ dinner (17:00 if NPO)
∗OR∗
☐ insulin GLARGINE (LANTUS) _____ units subcutaneous at ☐ bedtime *OR* at ☐ _____

NUTRITIONAL Insulin (Shorter acting): HOLD IF NPO

	Breakfast	Lunch	Dinner
☐ insulin REGULAR subcutaneous (give 30 minutes before meal)	_____units	_____units	_____units
∗OR∗ ☐ insulin LISPRO subcutaneous (give at mealtime)	_____ units	_____ units	_____ units

CORRECTION/SLIDING SCALE (Shorter acting): Can be ordered and given even if NPO

☐ insulin REGULAR TID before meals and HS
∗OR∗
☐ insulin LISPRO TID with meals and HS

CBG (mmol/L)	TID Dosing ☐ Low Less than 40 units/day*	☐ Medium 40 to 99 units/day*	☐ High 100 units/day or more*
Below 4	Follow hypoglycemia protocol and call MD		
4 to 8	No correction; give only nutritional insulin as ordered		
8.1 to 10	1 unit	2 unit	3 units
10.1 to 12	2 unit	3 units	4 units
12.1 to 14	3 units	4 units	6 units
14.1 to 16	4 units	6 units	8 units
16.1 to 18	5 units	8 units	10 units
Above 18	6 units; call MD	10 units; call MD	14 units; call MD

*Total daily insulin requirement from all sources. See guidance on reverse for selection of low, medium or high dosing.

CBG (mmol/L)	HS Dosing
Below 4	Follow hypoglycemia protocol and call MD
4 to 8	0 units
8.1 to 10	0 units ∗OR∗ _____ units subcutaneous at HS
10.1 to 12	0 units ∗OR∗ _____ units subcutaneous at HS
12.1 to 14	0 units ∗OR∗ _____ units subcutaneous at HS
14.1 to 16	2 units ∗OR∗ _____ units subcutaneous at HS
16.1 to 18	3 units ∗OR∗ _____ units subcutaneous at HS
Above 18	Call MD

HS Dosing

_____ _____ _____ _____
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SEE INSULIN THERAPEUTIC GUIDELINE ON VCH AND PHC CONNECT FOR FURTHER DETAILS

GOAL OF THERAPY

- The goal of therapy is to use as little correction insulin as possible and to provide most of the insulin as regularly scheduled basal and nutritional insulin to maintain CBG between 4 mmol/L and 8 mmol/L

NOTES TO NURSES AND UNIT CLERK

Correction Scale

- For all patients, use Correction Insulin Scale to give additional shorter acting insulin if the CBG is above 8 mmol/L

NOTES TO PRESCRIBER

Basal insulin (longer acting insulin that targets hyperglycemia caused by body metabolism when not eating)

- Patients previously on insulin should receive scheduled basal insulin at all times regardless of nutritional status
- Patients with type 1 diabetes should have basal insulin ordered at all times to avoid developing ketosis
- Patients with Type 2 diabetes not previously on insulin can also be started on basal insulin if they are either:
  - poorly controlled on admission (i.e. HgB A1C above 9%) ✳OR✳
  - on two or more high doses of oral agents which are being held in hospital
- For patients on insulin NPH prior to admission: order insulin NPH BID (the second NPH dose may be given at bedtime instead of dinner to avoid nocturnal hypoglycemia)
- Well controlled Type 2 diabetes eating meals: consider 20% dose reduction if glucose is well controlled and dietary intake reduced.

Insulin Conversion Chart:

Pre-Admission Insulin	Conversion (Original→ New)	Insulin in hospital
glargine 20 units once daily	glargine → NPH = 1: 1 (1 unit glargine = 1 unit NPH)	NPH 10 units BID or glargine 20 units daily
detemir 20 units once daily	detemir → NPH = 1: 1 (1 unit detemir = 1 unit NPH)	NPH 10 units BID
aspart or lispro or glulisine 5 units TID	aspart = lispro = glulisine = regular = 1:1:1:1 (all are equivalent)	regular 5 units TID
insulin 30/70 20 units BID	30/70 insulin → regular 30 % and NPH 70 %	regular 6 units and NPH 14 units BID
humaLOG MIX 25 20 units BID	humaLOG MIX 25 → lispro 25 % and NPH 75 %	lispro 5 units and NPH 15 units BID
NOVOMIX 30 20 units BID	NOVOMIX 30 → lispro 30 % and NPH 70 %	lispro 6 units and NPH 14 units BID

Nutritional insulin (shorter acting insulin that targets hyperglycemia caused by meals)

- Patients should receive scheduled nutritional insulin if taking approximately 80% of caloric requirement
- Regular insulin should be administered 30 minutes before a meal and lispro insulin should be administered at mealtime

Correction Scale – selection of low, medium or high insulin dose

- The correction scale insulin is designed to be given occasionally in addition to the scheduled nutritional dose to correct for unexpected hyperglycemia; it should not be given routinely.
- Add up all insulin over 24 hours from all components of pre-admission regimen and choose the appropriate dose scale according to the 24-hour insulin use. Consider starting at low dose for patients at high risk of hypoglycemia such as patients with renal dysfunction, or hypoglycemia unawareness, insulin naïve patients and the elderly.

Nocturnal feeds:

- For patients on nocturnal feeds, please consult endocrinology

Daily review of blood glucose results

- Basal, nutritional, and correction dose should be reviewed and adjusted every 1 to 3 days to achieve glucose between 4 and 8 mmol/L
- Basal insulin: assess basal insulin daily and adjust as needed every 1to 3 days by targeting the morning (pre-breakfast) glucose.
- Nutritional insulin: assess nutritional insulin doses daily and adjust as needed every 1 to 3 days by targeting glucose level at next CBG.
- Correction insulin: If correction insulin is being given frequently, the basal and nutritional insulin doses should be reassessed.
- During initiation of the insulin regimen, the basal dose for the next day can also be increased by carefully adding 50% of correction doses used the previous day (do not include the nutritional component), and moving to high, medium ,or low based on response to correction doses.

Ensure appropriate discharge insulin and diabetic medications

- If a previously insulin naïve patient requires more than 10 units of insulin daily in hospital, they will likely require insulin after discharge.
- If the fasting glucose is elevated, consider starting with insulin NPH 10 units HS and engage early follow-up with the family doctor.