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University Hospital of Northern British Columbia

Preoperative Non-emergency Colon Resection Orders

PATIENT LABEL

Allergies: ☐ None known ☐ Unable to obtain
List with reactions: _____

Admit to: ☐ Ward ☐ Surgical Step Down Unit ☐ ICU

Consults: ☐ Anesthesia ☐ Ostomy ☐ Other: _____

Intensive preoperative patient information facilitates postoperative recovery and pain relief. A patient's Individualized Risk stratification is also important to make informed decisions. It is shown that this information reduces the patient's anxiety and facilitates compliance of the program, including ostomy management and appropriate location for it. (7,13,25)

Diet

- Patient to bring sugar free chewing gum to hospital
- Fasting as per protocol
  and
  ☐ 800 mL apple or cranberry juice evening before surgery
  ☐ 400 mL apple or cranberry juice 2 hours before arrival to hospital

☐ Other: _____

Chewing gum is a useful intervention to shorten the time to first passage of flatus and feces as well as to reduce the time to tolerance of oral fluid. (11)

Fasting is required to reduce the risk of aspiration during a general anaesthesia. The duration of preoperative fasting is two hours for liquids and six hours for solids. (13,15,25)

Major surgery is associated with postoperative insulin-resistance. Non-diabetic patients receive carbohydrate loading pre-operatively because they increase glycerol deposits, reduce thirst, hunger and postoperative insulin resistance, reducing protein catabolism, postoperative ileus and loss of lean muscle mass. (26)

Bowel prep: ☐ No prep ☐ Prep: _____

Skin prep: chlorhexidine gluconate 2% wipes as

Mechanical bowel preparation causes dehydration and fluid and electrolyte abnormalities, particularly in elderly patients, increasing morbidity and post-operative ileus. Bowel preparation is essential in selected patients who require intraoperative colonoscopy. (7,25)

Investigations

- Pre-op blood work and testing as per protocol (**10-200 6110** Pre-operative Diagnostic Testing)

☐ Other: _____

Skin preparation reduces risks of infection. Once absorbed by the microbial cell walls, chlorhexidine destroys cell membranes, which prevents the development of bacteria. (20)

VTE

☐ Hold **ASA** ____ days pre-op
☐ Hold antiplatelets ____ days pre-op (see revers
☐ Hold **warfarin** ____ days pre-op. Consider bridg
☐ Hold direct oral anticoagulants ____ days pre-op (e.g., **dabigatran**, **rivaroxaban**, **apixaban**). Bridging therapy **not** recommended.

Different tests determine general state of health, whether the patients are healthy enough to undergo an operation. Presence of anemia, infection, renal deficiency, malnutrition, electrolyte imbalance, dehydration, clotting abnormalities can all be addressed early and some even reversed prior to surgery. Early detection decreases risk of MI, stroke, intra-operative hypoxia, and delayed healing. (8,31)

Management is based on patient-specific risk assessment for thromboembolism and bleeding. Open-abdominal procedures are associated with a higher risk of VTE. ASA, anti-platelets, and warfarin interfere with platelet aggregation. Decisions regarding bridging therapy are based on thromboembolic risk. (2,5,9,14,18)

Diabetes management

- Continue medications as per usual home regimen
- Hold oral medication on day of surgery
- Hold bolus and correction (sliding scale) insulin (insulin regular, lispro, aspart) on day of surgery
- Reduce morning basal insulin by 50% (insulin NPH, glargine, detemir) on day of surgery
- Continue basal rate on insulin pump on day of surgery

Management of glycemic levels in the perioperative setting is critical. Surgical stress and anaesthesia can cause abnormal glucose balance. Careful management can minimize impaired wound healing, post-op sepsis, and diabetic ketoacidosis; associated with decreased mortality. (26)

Physician signature: _____ **College ID:** _____ **Date:** _____ **Time:** _____

11-111-5255 (LC - RPD/COS - Appr. - 07/16) **Review by December 2019**

2. AK, J. (2009). Perioperative management of warfarin and antiplatelet therapy. *CLEVELAND CLINIC JOURNAL OF MEDICINE*, 37-44.

5. Douketis, J., Crowther, M., & Kovacs, M. (2009). *Perioperative management of patients who are receiving warfarin or antiplatelet therapy.* Canada: THROMBOSIS INTEREST GROUP OF CANADA.

7. Fearon, K., O.Ljungqvist, Meyenfeldt, M. V., Revhaug, A., Dejong, C., Lassen, K., et al. (2005). Enhanced recovery after surgery: a consensus review of clinicl care for patients undergoing colonic resection. *CLINICAL NUTRITION*, 468-470.

8. FNP-C, J. W. (2009/rev 2016). Blood work tests before surgery. *TESTS PERFORMED BEFORE SURGERY. STANFORD HOSPITAL AND CLINICS*, para. 4.

9. Gordon H. Guyatt, M. F., Elie A. Akl, M. P., Mark Crowther, M., Holger J. Schünemann, M. P., David D. Gutterman, M. F., & Sandra Zelman Lewis, P. (2012). Update on venous thromboembolism prophylaxis. *INTRODUCTION TO THE NINTH EDITION: ANTITHROMBOTIC THERAPY AND PREVENTION OF THROMBOSIS, 9th ED: AMERICAN COLLEGE OF CHEST PHYSICIANS EVIDENCE-BASED CLINICAL PRACTICE GUIDLINES*, power point slide 3.

11. Hong, J. W., Jang, H. J., & Ju, S. O. (2015). Effects of chewing gum on recovery of bowel motility among patients after laparoscopic colorectal surgery. *ADVANCED SCIENCE AND TECHNOLOGY LETTERS*, 34-37.

13. J. Nygren a, j., J. Thacker b, k., F. Carli c, k., K.C.H. Fearon d, k., S. Norderval e, k., D.N. Lobo f, k., et al. (2012). Guidelines for perioperative care in elective rectal/pelvic surgery: Enhanced. *CLINICAL NUTRITION*, 801-816.

14. JD, D., AC, S., FA, S., M, M., AK, J., MH, E., et al. (2012). Perioperative management of antithrombotic therapy: antithrombotic therapy and prevention of thrombosis, 9th ed. *AMERICAN COLLEGE OF CHEST PHYSICIANS EVIDENCE-BASED CLINICAL PRACTICE GUIDELINES*, 118, 141.

15. JL, A., RA, C., RT, C., BS, E., DG, N., & MA, W. (2011). *Practice guidelines for preoperative fasting and the use of pharmacologic agents to reduce the risk of pulmonary aspiration: application to healthy patients undergoing elective procedures*. American Society of Anesthesiologists Committee on Standards and Practice Parameters.

18. Michael K. Gould, M. F., David A. Garcia, M., Sherry M. Wren, M., Paul J. Karanicolas, M. P., Juan I. Arcelus, M. P., John A. Heit, M., et al. (2012). Prevention of vte in nonorthopedic surgical patients: antithrombotic therapy and prevention of thrombosis, 9th ed: american college of chest physicians evidence-based clinical practice guidelines. *CHEST JOURNAL OFFICIAL PUBLICATION OF THE AMERICAN COLLEGE OF CHEST PHYSICIANS*, 3.1.1 para.1, pg 1 .

20. Patricia O'Malley, P. R. (2008). Chlohexidine Wipes The New Weapon Against Surgical Site Infections? *CLINICAL NURSE SPECIALIST: THE JOURNAL FOR ADVANCED NURSING PRACTICE*, volume 22-issue 2, pp61-62.

25. Sanchez-jimenez, R., Alvarez, A. C., Lopez, J. T., Jimenez, A. S., Conde, F. G., & Saez, J. A. (2014). *Eras (enhanced recovery after surgery) in colorectal surgery*. spain: cc by 3.0 license.

26. Sivakumar, S., & Surani, S. R. (2015). Guidelines for perioperative management of the diabetic patient. *SURGRESPRACT*.

31. Willacy, D. H., & Henderson, D. R. (2016). Examination and tests. *PRE-OPERATIVE ASSESSMENT*, para.7.

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Day of Surgery Non-emergency Colon Resection Orders

Allergies: ☐ None known ☐ Unable to obtain
List with reactions: _____

Confirms the patient's coagulation is optimal at time of surgery, decisions for plan of care intra-operatively are confirmed or modified accordingly. Preoperative factors in patients with impaired renal function include fluid & electrolyte issues, bleeding, and dialysis issues. These are considered simultaneously to decrease morbidity and mortality. (17)

Investigations on arrival to Day Surgery: ☐ INR ☐ Dialysis pat

Pain management

• **acetaminophen** 1000 mg PO 30 to 60 minutes pre-op

Acetaminophen is a safe and effective agent that helps deal with the biochemical pain process in combination with intraoperative pain management. The patient will have less postoperative pain, need fewer analgesics, require analgesics less frequently, and doesn't interfere with bowel function. (27)

VTE

• **heparin** 5000 units subcutaneous to be given in OR

Heparin is intended to minimize the time the patient is not anti-coagulated, thereby minimizing the risk for perioperative thromboembolism. (32)

Diabetes management

• CBGM on arrival
• Hold oral medication
• Hold bolus and correction insulin (insulin regular, lispro, aspart)
• Reduce morning basal insulin by 50% (insulin NPH, glargine, detemir)

The stress of general anaesthesia and surgery predisposes patients to severe hyperglycemia by inducing insulin resistance. Adequate control of blood glucose concentration is established and maintained until oral feeding is resumed postoperative. Careful attention is done through close monitoring. (7,12,26)

Antibiotic prophylaxis (to be given in OR by anesthesia)

☐ **ceFAZolin** 2 g IV 30 to 60 minutes pre-op
and
metroNIDAZOLE 500 mg IV 30 to 60 minutes pre-op

or

☐ If severe penicillin allergy (i.e., anaphylaxis):
tobramycin 4.5 mg/kg IV 30 to 60 minute's pre-op (round to nearest 20 mg)
and
clindamycin 900 mg IV 30 to 60 minutes pre-op
Infuse both tobramycin and clindamycin over 30 minutes.

Antibiotics are precisely timed so that effective tissue concentration is present at and after time of incision. It is used to decrease the microbial load of intraoperative contamination to a level that does not overwhelm the patient's immune defense. This reduces the risk of postoperative surgical wound infection by as much as 75%. (21,22)

Physician signature: _____ **College ID:** _____ **Date:** _____ **Time:** _____

7. Fearon, K., O.Ljungqvist, Meyenfeldt, M. V., Revhaug, A., Dejong, C., Lassen, K., et al. (2005). Enhanced recovery after surgery: a consensus review of clinicl care for patients undergoing colonic resection. *CLINICAL NUTRITION*, 468-470.
12. Hoogwerf, B. (2006). Perioperative management of diabetes mellitus: how should we act on limited evidence? *CLEVELAND CLINIC JOURNAL OF MEDICINE*, para1.
21. Peter A Ongom, S. C. (2013). Antibotic prophylaxis in colorectal surgery: evolving trends. *J. MUL PHARM ORG PROCESS RES.*
22. RL, N., E, G., & M, B. (2014). Antimicrobial prophylaxis for colorectal surgery. *COCHRANE DATABASE*, para 7.
26. Sivakumar, S., & Surani, S. R. (2015). Guidelines for perioperative management of the diabetic patient. *SURGRESPRACT*.
27. Sivrikaya, G. U., & Racz, D. G. (2012). *Multimodal analgesia for postoperative pain management-current issues and opinions. Instanbul*, Turkey: InTech.
32. Zambouri, A. (2007). Preoperative evaluation and preparation for anesthesia and surgery. *HIPPOKRATIA*, pp13-21.

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Postoperative Non-emergency Colon Resection Orders

Allergies: ☐ None known ☐ Unable to obtain
List with reactions: _____

Surgical procedure: _____

Consults: • Dietitian ☐ Physiotherapy ☐ Occupational Thera

Diet

• Chew gum tid, start in PACU
• May have ice chips to clear fluids immediately post-op
• Post-op day 0: Regular diet as tolerated 4 to 6 hours post-op
• High calorie supplement 60 mL PO qid with medications

☐ Other: _____

Activity

• Post-op day 0: Sit at edge of bed dangling legs **and** start leg
• Post-op day 1: Mobilize out of bed 1 to 2 times **and** sit in chair for meals
• Post-op day 2: Mobilize out of bed 2 to 3 times **and** sit in chair for meals
• Post-op day 3: Mobilize out of bed 3 or more times **and** sit in chair for meals

If patient unable to mobilize and safe transfer method not indicated, initiate priority one assessment with Physiotherapy.

Respiratory

• Incentive spirometry 5 to 10 times per hour while awake
☐ CPAP while asleep with continuous monitoring of oxygen saturations, for obstructive sleep apnea

Vital signs: ☐ Routine ☐ q ____ h and PRN

Drains

• Drain type: _____ (Jackson Pratt drains to
• Record output q ____ h
• Discontinue drain as per surgeon's order

Urinary catheter

• Monitor output q ____ h
• Remove foley catheter: ☐ Post-op day 1 ☐ Post-op day 2
• In and out catheterization if unable to void **and** bladder scan is greater th
• Notify surgeon if persistent inability to void

Multidisciplinary care helps the patient be informed and included in own recovery, with emphasis on early oral nutrition, early mobilization and care of ostomies. Support from many resources increases success of compliance, healing, decreased emotional anxiety and decrease of postoperative complications. (16,28)

Early resumption of diet is critical to the return of intestinal tract function. Chewing gum is safe and beneficial in restoring gut activity. Postoperative pulmonary, cardiovascular, and muscle function are improved when a normal oral intake of energy and protein are consumed. Early enteral nutrition is associated with reduced complications and mortality. (11,16,19)

Early mobilization decreases risk of thromboembolism, increases muscle strength, and decreases risk of pulmonary atelectasis. (19)

Attention to regular hyperinflation using deep breathing & coughing exercises, patient's CPAP, incentive spirometry, and chest physiotherapy are keys to preventing respiratory complications. (30)

Regular monitoring is very useful in detecting medical problems, tracking trends, and recognizing early signs of deterioration in patients. (30)

Drains are used to divert secretions and to decompress structures. Drain discharge is recorded to allow large volumes lost to be replaced when indicated. Once the drain has served its purpose, it is removed thereby decreasing risk of infection. (30)

Monitors kidney function, fluid loss, and reduces urinary retention related to anaesthesia or epidural analgesics. Early removal, once no longer required, facilitate patient mobility, and reduce risk of developing UTI's. Non- invasive bladder scans are used to monitor and manage urinary retention. (19)

Physician signature: _____ **College ID:** _____ **Date:** _____ **Time:** _____

11-111-5257 (LC - RPD/COS - Appr. - 07/16) **Review by December 2019**

1. Agnelli, G. (2004). Prevention of venous thromboembolism in surgical patients. *PREVENTION OF VENOUS THROMBOEMBOLISM*, para 2,3,4.
3. David E. Beck, M. F., David A. Margolin, M. F., Sheena Farragut Babin, P., & Christine Theroit Russo, P. (2015). Benefits of a multimodal regimen for post surgical pain management in colorectal surgery. *THE OCHSNER JOURNAL*, pp408-412.
4. Dolan, R., Jae Huh, N. T., Sproat, T., & Camilleri-breman, J. (2016). A prospective analysis of sleep deprivation and disturbance in surgical patients. *ANNALS OF MEDICINE AND SURGERY*, pp1-6.
8. FNP-C, J. W. (2009/rev 2016). Blood work tests before surgery. *TESTS PERFORMED BEFORE SURGERY. STANFORD HOSPITAL AND CLINICS*, para. 4.
10. Gregory YH Lip, M. F., & James D Douketis, M. F. (2016). Perioperative management of patients receiving anticoagulants. *UPTODATE*, bridging anticoagulants heading.
11. Hong, J. W., Jang, H. J., & Ju, S. O. (2015). Effects of chewing gum on recovery of bowel motility among patients after laparoscopic colorectal surgery. *ADVANCED SCIENCE AND TECHNOLOGY LETTERS*, 34-37.
12. Hoogwerf, B. (2006). Perioperative management of diabetes mellitus: how should we act on limited evidence? *CLEVELAND CLINIC JOURNAL OF MEDICINE*, para1.
16. Kirchhoff, P., Clavien, P.-A., & Hahnloser, D. (2010). Complications in colorectal surgery: risk factors and preventive strategies. *PATIENT SAFETY IN SURGERY*, all para.
19. Mr. Shakeeb Khan, M. M., Mr. Marcel Gatt, M. F., Mr Alan Horgan, M. F., Mr. Iain Anderson, M. F., & Professor John MacFle, M. F. (2009). Guidelines for implementation of enhanced recovery protocols. *ISSUES IN PROFESSIONAL PRACTICE*, pp5-20.
23. Rosenberg-Adamsen, S., Kehlet, H., Dodds, C., & Rosenberg, J. (1996). Postoperative sleep disturbances: mechanisms and clinical implications. *BRITISH JOURNAL OF ANAESTHESIA*, pp552-559.
27. Sivrikaya, G. U., & Racz, D. G. (2012). *Multimodal analgesia for postoperative pain management-current issues and opinions*. Instanbul, Turkey: InTech.
28. Smith, J. (2015). Advice following bowel surgery. *ADVICE FOLLOWING BOWEL SURGERY*, para 1.
29. Wikipedia. (2016). Postoperative nausea and vomiting. *CREATIVE COMMONS ATTRIBUTION*, para 9.
30. Wiley-Blackwell. (2012). Postoperative management. *ANZ JOURNAL OF SURGERY*, para 4,10,23,24,25.
31. Willacy, D. H., & Henderson, D. R. (2016). Examination and tests. *PRE-OPERATIVE ASSESSMENT*, para.7.

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Postoperative Non-emergency Colon Resection Orders

Intravenous fluids

☐ 0.9% sodium chloride: ☐ 75 mL/h ☐ 100 mL/h ☐ 1 _____

☐ Ringer's lactate: ☐ 75 mL/h ☐ 100 mL/h ☐ 125 mL/h ☐ Other: ____ mL/h

☐ 5% dextrose/0.45% sodium chloride: ☐ 75 mL/h ☐ 100 mL/h ☐ 125 mL/h ☐ Other: ____ mL/h

☐ Add ____ mEq KCL/L

☐ Saline lock IV when drinking well

Intravenous fluids are required until adequate oral fluid intake is achieved and/or while epidural catheters are insitu. The patient's ability to get rid of accumulated sodium is greatly reduced postoperatively, balanced IV solutions are prescribed to avoid sodium overload, hyperchloremic acidosis, and delayed return of gut function. (19)

☐ Other: _____

Venous thromboprophylaxis (VTE): Complete **10-111-5162** Adult Venous Thromboembolism Risk Assessment and Prophylaxis in Acute Care Patients

Based on patient-specific risk assessment, prophylaxis followed through postoperatively reduces risk of VTE by 60%. (1,10)

Pain management (as per anesthesia)

☐ **11-111-5070** Analgesia Orders
or
☐ **11-111-5026** Patient Controlled Analgesia Orders

Epidural analgesia significantly shortens the duration of postoperative ileus, pneumonia, improves pulmonary function, and increases arterial oxygenation. (3,16)

If no PCA or epidural (as per surgeon):

☐ **acetaminophen** 1000 mg PO qid until post-op day 4 then PRN (max 4 g/day)
or
☐ **acetaminophen/caffeine/codeine** 30 mg TAB (Tylenol #3 or equivalent) 1 to 2 TABs PO q4h PRN for pain (max **acetaminophen** 4 g/day)

Acetaminophen is safe for acute pain, is an antipyretic, and doesn't interfere with bowel function. (3,16,27)

☐ **morphine** _____ mg PO q ____ h PRN for pain

☐ **morphine** _____ mg subcutaneous q ____ h PRN for pain

☐ **morphine** _____ mg IV q ____h PRN for breakthrough pain

☐ **HYDROmorphone** _____ mg PO q ____ h PRN for pain

☐ **HYDROmorphone** _____ mg subcutaneous q ____ h PRN for pain

☐ **HYDROmorphone** _____ mg IV q ____h PRN for breakthrough pain

Multimodal pain management results in significantly lower pain scores, decreased opioid use, fewer opioid-related adverse effects, and decreased postoperative length of stay. (3,16)

☐ Other: _____

Antiemetics (as per order set)

☐ **11-111-5070** Analgesia Orders
or
☐ **11-111-5026** Patient Controlled Analgesia Orders

If no PCA or epidural:

☐ **ondansetron** 4 mg IV/PO q8h PRN for nausea
☐ **dimenhyDRINATE** 25 to 50 mg PO/IV/IM q4h PRN for nausea
☐ **metoclopramide** 10 mg PO/IV q6h PRN for nausea

Managing postoperative nausea decreases patient discomfort, reduces risk of aspiration of gastric contents, and electrolyte imbalances. (29)

Physician signature: _____ **College ID:** _____ **Date:** _____ **Time:** _____

1. Agnelli, G. (2004). Prevention of venous thromboembolism in surgical patients. *PREVENTION OF VENOUS THROMBOEMBOLISM*, para 2,3,4.
3. David E. Beck, M. F., David A. Margolin, M. F., Sheena Farragut Babin, P., & Christine Theroit Russo, P. (2015). Benefits of a multimodal regimen for post surgical pain management in colorectal surgery. *THE OCHSNER JOURNAL*, pp408-412.
4. Dolan, R., Jae Huh, N. T., Sproat, T., & Camilleri-breman, J. (2016). A prospective analysis of sleep deprivation and disturbance in surgical patients. *ANNALS OF MEDICINE AND SURGERY*, pp1-6.
8. FNP-C, J. W. (2009/rev 2016). Blood work tests before surgery. *TESTS PERFORMED BEFORE SURGERY. STANFORD HOSPITAL AND CLINICS*, para. 4.
10. Gregory YH Lip, M. F., & James D Douketis, M. F. (2016). Perioperative management of patients receiving anticoagulants. *UPTODATE*, bridging anticoagulants heading.
11. Hong, J. W., Jang, H. J., & Ju, S. O. (2015). Effects of chewing gum on recovery of bowel motility among patients after laparoscopic colorectal surgery. *ADVANCED SCIENCE AND TECHNOLOGY LETTERS*, 34-37.
12. Hoogwerf, B. (2006). Perioperative management of diabetes mellitus: how should we act on limited evidence? *CLEVELAND CLINIC JOURNAL OF MEDICINE*, para1.
16. Kirchhoff, P., Clavien, P.-A., & Hahnloser, D. (2010). Complications in colorectal surgery: risk factors and preventive strategies. *PATIENT SAFETY IN SURGERY*, all para.
19. Mr. Shakeeb Khan, M. M., Mr. Marcel Gatt, M. F., Mr Alan Horgan, M. F., Mr. Iain Anderson, M. F., & Professor John MacFle, M. F. (2009). Guidelines for implementation of enhanced recovery protocols. *ISSUES IN PROFESSIONAL PRACTICE*, pp5-20.
23. Rosenberg-Adamsen, S., Kehlet, H., Dodds, C., & Rosenberg, J. (1996). Postoperative sleep disturbances: mechanisms and clinical implications. *BRITISH JOURNAL OF ANAESTHESIA*, pp552-559.
27. Sivrikaya, G. U., & Racz, D. G. (2012). *Multimodal analgesia for postoperative pain management-current issues and opinions*. Instanbul, Turkey: InTech.
28. Smith, J. (2015). Advice following bowel surgery. *ADVICE FOLLOWING BOWEL SURGERY*, para 1.
29. Wikipedia. (2016). Postoperative nausea and vomiting. *CREATIVE COMMONS ATTRIBUTION*, para 9.
30. Wiley-Blackwell. (2012). Postoperative management. *ANZ JOURNAL OF SURGERY*, para 4,10,23,24,25.
31. Willacy, D. H., & Henderson, D. R. (2016). Examination and tests. *PRE-OPERATIVE ASSESSMENT*, para.7.

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Postoperative Non-emergency Colon Resection Orders

Alterations in sleep pattern occur during the first 1-6 nights after major abdominal surgery. Sleep deprivation produces a state of pronounced irritability, fatigue, anxiety, and increases patients stress level which leads to delayed wound healing. (4,23)

Sedative/hypnotic if no PCA or epidural:

☐ **oxazepam** 10 to 15 mg PO at bedtime PRN for sedation

☐ **zopiclone** 3.75 to 7.5 mg at bedtime PRN for sedation

☐ Other: _____

Postoperative tests determine present state of health. Abnormalities are addressed early and further complications avoided.

Investigations: ☐ CBC, E7 on POD: _____

Diabetes management

Patient's usual home regimen: _____

Postoperatively insulin requirements fluctuate depending on presence of pain, infection, and adequacy of oral intake. Careful consideration of diet and antidiabetic medication regimes provide good postoperative glucose control which improves clinical outcomes and shortens length of stay. (12)

a. Capillary blood glucose in PACU then qid

b. Oral antidiabetic medications as per medication reconciliation form

c. Basal insulin (= long acting = insulin NPH, glargine or detemir)

Note:
- **Order 50% of usual dose if NPO or significantly reduced diet.**
- **If oral anti-diabetic medications on hold and insulin naive, order insulin NPH 0.2 to 0.3 unit/kg/day divided bid** (see reverse for guidance)

☐ insulin NPH ____ units subcutaneous at breakfast or 0800 if NPO
____ units subcutaneous ☐ bedtime or ☐ supper or ☐ 1800 if NPO

☐ insulin glargine ____ units subcutaneous at breakfast or 0800 if NPO
____ units subcutaneous ☐ bedtime or ☐ supper or ☐ 1800 if NPO

(If patient on insulin detemir, insulin 30/70, Humalog Mix 25 or Novomix 30, refer to chart on reverse for conversion to insulin NPH)

☐ Continue insulin pump per patient's usual basal rate, initiate bolus insulin when eating well (80% of caloric requirements)

d. Bolus insulin (= nutritional = insulin R, lispro, aspart) (Only use if on insulin prior to admission**. Do not order if NPO or significantly reduced diet.)**

☐ insulin R ☐ insulin lispro

breakfast: ____ units lunch: ____ units dinner: ____ units

*If on insulin aspart at home, use insulin lispro on admission

e. Correction insulin (sliding scale): ☐ insulin R ☐ insulin lispro ☐ tid ☐ qid

Blood glucose	☐ **Low** (home total daily insulin less than 40 units/day)	☐ **Medium** (home total daily insulin 40 to 99 units/day)	☐ **High** (home total daily insulin 100 units/day or more)
Less than 4.0		**Follow hypoglycemia protocol**	
4.1 to 8.0	**0 units**	**0 units**	**0 units**
8.1 to 10	**0 units**	**0 units**	**2 units**
10.1 to 12	**2 units**	**2 units**	**5 units**
12.1 to 14	**3 units**	**4 units**	**8 units**
14.1 to 16	**4 units**	**6 units**	**12 units**
16.1 to 18	**5 units**	**8 units**	**16 units**
18.1 to 20	**6 units**	**10 units**	**20 units**
Greater than 20	**8 units and call physician**	**15 units and call physician**	**25 units and call physician**

Physician signature: _____ College ID: _____ Date: _____ Time: _____

1. Agnelli, G. (2004). Prevention of venous thromboembolism in surgical patients. *PREVENTION OF VENOUS THROMBOEMBOLISM*, para 2,3,4.
3. David E. Beck, M. F., David A. Margolin, M. F., Sheena Farragut Babin, P., & Christine Theroit Russo, P. (2015). Benefits of a multimodal regimen for post surgical pain management in colorectal surgery. *THE OCHSNER JOURNAL*, pp408-412.
4. Dolan, R., Jae Huh, N. T., Sproat, T., & Camilleri-breman, J. (2016). A prospective analysis of sleep deprivation and disturbance in surgical patients. *ANNALS OF MEDICINE AND SURGERY*, pp1-6.
8. FNP-C, J. W. (2009/rev 2016). Blood work tests before surgery. *TESTS PERFORMED BEFORE SURGERY. STANFORD HOSPITAL AND CLINICS*, para. 4.
10. Gregory YH Lip, M. F., & James D Douketis, M. F. (2016). Perioperative management of patients receiving anticoagulants. *UPTODATE*, bridging anticoagulants heading.
11. Hong, J. W., Jang, H. J., & Ju, S. O. (2015). Effects of chewing gum on recovery of bowel motility among patients after laparoscopic colorectal surgery. *ADVANCED SCIENCE AND TECHNOLOGY LETTERS*, 34-37.
12. Hoogwerf, B. (2006). Perioperative management of diabetes mellitus: how should we act on limited evidence? *CLEVELAND CLINIC JOURNAL OF MEDICINE*, para1.
16. Kirchhoff, P., Clavien, P.-A., & Hahnloser, D. (2010). Complications in colorectal surgery: risk factors and preventive strategies. *PATIENT SAFETY IN SURGERY*, all para.
19. Mr. Shakeeb Khan, M. M., Mr. Marcel Gatt, M. F., Mr Alan Horgan, M. F., Mr. Iain Anderson, M. F., & Professor John MacFle, M. F. (2009). Guidelines for implementation of enhanced recovery protocols. *ISSUES IN PROFESSIONAL PRACTICE*, pp5-20.
23. Rosenberg-Adamsen, S., Kehlet, H., Dodds, C., & Rosenberg, J. (1996). Postoperative sleep disturbances: mechanisms and clinical implications. *BRITISH JOURNAL OF ANAESTHESIA*, pp552-559.
27. Sivrikaya, G. U., & Racz, D. G. (2012). *Multimodal analgesia for postoperative pain management-current issues and opinions*. Instanbul, Turkey: InTech.
28. Smith, J. (2015). Advice following bowel surgery. *ADVICE FOLLOWING BOWEL SURGERY*, para 1.
29. Wikipedia. (2016). Postoperative nausea and vomiting. *CREATIVE COMMONS ATTRIBUTION*, para 9.
30. Wiley-Blackwell. (2012). Postoperative management. *ANZ JOURNAL OF SURGERY*, para 4,10,23,24,25.
31. Willacy, D. H., & Henderson, D. R. (2016). Examination and tests. *PRE-OPERATIVE ASSESSMENT*, para.7.