***Supplemental Materials Figure S1 – CPT and ICD-10 codes connection to colorectal surgery***

*Common procedural codes (CPT) for colorectal surgeries*

*Colectomy*

*Open procedures (44140-44160)*

*44140 Colectomy, partial; with anastomosis*

*44141 Colectomy, partial; with skin level cecostomy or colostomy*

*44143 Colectomy, partial; with end colostomy and closure of distal segment (Hartmann type procedure)*

*44144 Colectomy, partial; with resection, with colostomy or ileostomy and creation of mucofistula*

*44145 Colectomy, partial; with coloproctostomy (low pelvic anastomosis)*

*44146 Colectomy, partial; with coloproctostomy (low pelvic anastomosis), with colostomy*

*44147 Colectomy, partial; abdominal and transanal approach*

*44150 Colectomy, total, abdominal, without proctectomy; with ileostomy or ileoproctostomy*

*44151 Colectomy, total, abdominal, without proctectomy; with continent ileostomy*

*44155 Colectomy, total, abdominal, with proctectomy; with ileostomy*

*44156 Colectomy, total, abdominal, with proctectomy; with continent ileostom*

*44157 Colectomy, total, abdominal, with proctectomy; with ileoanal anastomosis, includes loop ileostomy, and rectal mucosectomy, when performed*

*44160 Colectomy, partial, with removal of terminal ileum with ileocolostomy*

*Laproscopic procedures (44204-44346)*

*44188 Laparoscopy, surgical, colostomy or skin level cecostomy*

*44204 Laparoscopy, surgical; colectomy, partial, with anastomosis*

*44205 Laparoscopy, surgical; colectomy, partial, with removal of terminal ileum with ileocolostomy*

*44206 Laparoscopy, surgical; colectomy, partial, with end colostomy and closure of distal segment (Hartmann type procedure)*

*44207 Laparoscopy, surgical; colectomy, partial, with anastomosis, with coloproctostomy (low pelvic anastomosis)*

*44208 Laparoscopy, surgical; colectomy, partial, with anastomosis, with coloproctostomy (low pelvic anastomosis) with colostomy*

*44210 Laparoscopy, surgical; colectomy, total, abdominal, without proctectomy, with ileostomy or ileoproctostomy*

*44211 Laparoscopy, surgical; colectomy, total, abdominal, with proctectomy, with ileoanal anastomosis, creation of ileal reservoir (S or J), with loop ileostomy, includes rectal mucosectomy, when performed*

*44212 Laparoscopy, surgical; colectomy, total, abdominal, with proctectomy, with ileostomy*

*44213 Laparoscopy, surgical, mobilization (take-down) of splenic flexure performed in conjunction with partial colectomy (to be listed separately in addition to primary procedure*

*44320 Colostomy or skin level cecostomy*

*44346 Revision of colostomy; with repair of paracolostomy hernia (separate procedure)*

*Rectal procedures (45110-45550)*

*45110 Proctectomy; complete, combined abdominoperineal, with colostomy*

*45111 Proctectomy; partial resection of rectum, transabdominal approach*

*45112 Proctectomy, combined abdominoperineal, pullthrough procedure (eg, colo-anal anastomosis) 45113 Proctectomy, partial, with rectal mucosectomy, ileoanal anastomosis, creation of ileal reservoir (S*

*or J), with or without loop ileostomy*

*45114 Proctectomy, partial, with anastomosis; abdominal and transsacral approach*

*45116 Proctectomy, partial, with anastomosis; transsacral approach only (Kraske type)*

*45119 Proctectomy, combined abdominoperineal pullthrough procedure (eg, colo-anal anastomosis),*

*with creation of colonic reservoir (eg, J-pouch), with diverting enterostomy when performed*

*45120 Proctectomy, complete (for congenital megacolon), abdominal and perineal approach; with pull-through procedure and anastomosis (eg, Swenson, Duhamel, or Soave type operation)*

*45121 Proctectomy, complete (for congenital megacolon), abdominal and perineal approach; with subtotal or total colectomy, with multiple biopsies*

*45123 Proctectomy, partial, without anastomosis, perineal approach*

*45126 Pelvic exenteration for colorectal malignancy, with proctectomy (with or without colostomy),*

*with removal of bladder and ureteral transplantations, and/ or hysterectomy, or cervicectomy, with or without removal of tube(s), with or without removal of ovary(s), or any combination thereof*

*45130 Excision of rectal procidentia, with anastomosis; perineal approach*

*45135 Excision of rectal procidentia, with anastomosis; abdominal and perineal approach*

*45136 Excision of ileoanal reservoir with ileostomy*

*45150 Division of stricture of rectum*

*45160 Excision of rectal tumor by proctotomy, transsacralortranscoccygeal approach*

*45171 Excision of rectal tumor, transanal approach; not including muscularis propria (ie, partial*

*thickness)*

*45172 Excision of rectal tumor, transanal approach; including muscularis propria (ie, full thickness)*

*45190 Destruction of rectal tumor (eg, electrodesiccation, electrosurgery, laser ablation, laser resection, cryosurgery) transanal approach*

*45395 Laparoscopy, surgical; proctectomy, complete, combined abdominoperineal, with colostomy*

*45397 Laparoscopy, surgical; proctectomy, combined abdominoperineal pull-through procedure (eg,*

*colo-anal anastomosis), with creation of colonic reservoir (eg, J-pouch), with diverting enterostomy, when performed*

*45400 Laparoscopy, surgical; proctopexy (for prolapse)*

*45402 Laparoscopy, surgical; proctopexy (for prolapse), with sigmoid resection*

*45540 Proctopexy (eg, for prolapse); abdominal approach*

*45541 Proctopexy (eg, for prolapse); perineal approach*

*45550 Proctopexy (eg, for prolapse); with sigmoid resection, abdominal approach*

*Robotic-assisted procedures*

*S2900 Surgical techniques requiring use of robotic surgical system (list separately in addition to*

*code for primary procedure)*

*ICD-10-PCS PROCEDURE CODE PROCEDURE CODE DESCRIPTION*

*PARTIAL EXCISION OF COLON*

*0DBE0ZZ Excision of large intestine, open approach*

*0DBF0ZZ Excision of right large intestine, open approach*

*0DBG0ZZ Excision of left large intestine, open approach*

*0DBH0ZZ Excision of cecum, open approach*

*0DBK0ZZ Excision of ascending colon, open approach*

*0DBL0ZZ Excision of transverse colon, open approach*

*0DBM0ZZ Excision of descending colon, open approach*

*0DBN0ZZ Excision of sigmoid colon, open approach*

*0DBE4ZZ Excision of large intestine, percutaneous endoscopic approach*

*0DBF4ZZ Excision of right large intestine, percutaneous endoscopic approach*

*0DBG4ZZ Excision of left large intestine, percutaneous endoscopic approach*

*0DBH4ZZ Excision of cecum, percutaneous endoscopic approach*

*0DBK4ZZ Excision of ascending colon, percutaneous endoscopic approach*

*0DBL4ZZ Excision of transverse colon, percutaneous endoscopic approach*

*0DBM4ZZ Excision of descending colon, percutaneous endoscopic approach*

*0DBN4ZZ Excision of sigmoid colon, percutaneous endoscopic approach*

*TOTAL EXCISION OF COLON*

*0DTE0ZZ Resection of large intestine, open approach*

*0DTF0ZZ Resection of right large intestine, open approach*

*0DTG0ZZ Resection of left large intestine, open approach*

*0DTH0ZZ Resection of cecum, open approach*

*0DTK0ZZ Resection of ascending colon, open approach*

*0DTL0ZZ Resection of transverse colon, open approach*

*0DTM0ZZ Resection of descending colon, open approach*

*0DTN0ZZ Resection of sigmoid colon, open approach*

*0DTE4ZZ Resection of large intestine, percutaneous endoscopic approach*

*0DTF4ZZ Resection of right large intestine, percutaneous endoscopic approach*

*0DTG4ZZ Resection of left large intestine, percutaneous endoscopic approach*

*0DTH4ZZ Resection of cecum, percutaneous endoscopic approach*

*0DTK4ZZ Resection of ascending colon, percutaneous endoscopic approach*

*0DTL4ZZ Resection of transverse colon, percutaneous endoscopic approach*

*0DTM4ZZ Resection of descending colon, percutaneous endoscopic approach*

*0DTN4ZZ Resection of sigmoid colon, percutaneous endoscopic approach*

*COLOSTOMY*

*0D1K0Z4 Bypass ascending colon to cutaneous, open approach*

*0D1L0Z4 Bypass transverse colon to cutaneous, open approach*

*0D1M0Z4 Bypass descending colon to cutaneous, open approach*

*0D1N0Z4 Bypass sigmoid colon to cutaneous, open approach*

*0D1K4Z4 Bypass ascending colon to cutaneous, percutaneous endoscopic approach*

*0D1L4Z4 Bypass transverse colon to cutaneous, percutaneous endoscopic approach*

*0D1M4Z4 Bypass descending colon to cutaneous, percutaneous endoscopic approach*

*0D1N4Z4 Bypass sigmoid colon to cutaneous, percutaneous endoscopic approach*

*ILEOSTOMY*

*0D1B0Z4 Bypass ileum to cutaneous, open approach*

*0D1B4Z4 Bypass ileum to cutaneous, percutaneous endoscopic approach*

***Supplemental Materials Figure S2 –*** ***REDCap data collection tool*** *Page 1*

# ERCPC Data Collection Instrument Perioperative Care PRN

Please enter your hospital or health system.

Barnes-Jewish Hospital

OhioHealth - Grant Medical Center

University of Cincinnati Medical Center

University of Chicago Hospitals

University of Kentucky Medical Center

Good Samaritan Medical Center

Trinity Health Ann Arbor Hospital

West Virginia University Medicine / Ruby Memorial

Hospital

Beaumont Hospital - Troy

Saint Francis Hospital / Emory

## Patient demographics and parameters

What was the patient's age (in years)?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(

numbers only

)

What was the patient's gender?

Female

Male

What was the patient's race?

Indigenous (American Indian/Alaska Native/First

Nations/Inuit/Metis)

Asian

Native Hawaiian or Other Pacific Islander

Black or African American

White

Hispanic

More Than One Race

Unknown / Not Reported

|  |  |
| --- | --- |
| What was the patient's weight on admission to the hospital (in kg)? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(numbers only) |
| What was the patient's pre-operative eGFR on admission from lab data? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(numbers only) |

How many ethanol-containing beverages does the patient

none

regularly consume on a weekly basis?

1-7

 drinks

8-14

 drinks

greater than 14 drinks

(

Code as NONE for less than 1 drink per week

)

At the time of this encounter, did the patient have a

documented drug allergy?

Yes

No

To which drug does the patient have an allergy?

non-penicillin/non-cephalosporin

penicillin

cephalosporin

|  |  |
| --- | --- |
| What was the primary International Classification of Diseases (ICD) 10 code for this admission? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| What was the second listed InternationalClassification of Diseases (ICD) 10 code for this admission? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| What was the third listed International Classification of Diseases (ICD) 10 code for this admission? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Did the patient have a cancer diagnosis?

Yes

No

What neoadjuvant therapy did the patient receive?

none

radiation

chemotherapy

Which type of surgical technique was used?

Laparoscopic - manual

Converted to open - manual

Open - manual

Laparoscopic - robotic

Converted to open - robotic

Open - robotic

On what segment(s) of the colon was the procedure

small intestine

performed?

appendix

cecum

ascending colon (including right hepatic flexure)

transverse colon

descending colon (including left splenic flexure)

sigmoid colon

rectum

(

multiple entries allowed

)

What type of intraoperative anesthesia was used for

Epidural

the procedure?

General

IV lidocaine continuous infusion

IV midazolam

IV propofol

IV short-acting opioid

Spinal - opioid

Spinal - opioid / LA

TAP block - Long acting LA

Wound infiltration - liposomal bupivacaine

Wound infiltration - non-liposomal bupivacaine /

no epinephrine

Wound infiltration - non-liposomal bupivacaine /

with epinephrine

Wound infiltration - bupivacaine / meloxicam

(

multiple answers allowed

)

What was the estimated blood loss (in mLs) during

surgery? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(numbers only)

What intravenous fluids were administered during hospitalization?

(multiple entries allowed)

 saline-containing lactated ringer's albumin packed red blood cells

On what day was intravenous fluid stopped?

POD #1

POD #2

POD #3

POD #4

POD #5

POD #6

POD #7

POD > #7

unknown

What was the American Society of Anesthesiologists

)

ASA) score? (I-V

(

I

II

III

IV

V

Within the last 6 months, was iron supplementation

given to the patient prior to surgery?

Yes

No

If iron supplementation was given, what kind of iron

oral ferrous sulfate

and/or erythropoetin/biosimilar was prescribed?

oral ferrous gluconate

intravenous iron dextran

intravenous ferric derisomaltose

intravenous ferric carboxymaltose

intravenous ferric gluconate

intravenous ferumoxytol

intravenous iron sucrose

erythropoetin or biosimilar

(

multiple answers allowed

)

## Antibiotic Surgical Site Infection (SSI) Prophylaxis

Was a pre-operative antibiotic administered?

Yes

No

Was more than one IV antibiotic SSI prophylaxis agent

administered?

Yes

No

What, if any, type of oral mechanical bowel

preparation was administered?

None

laxatives

antibiotics

Which oral antibiotic(s) were administered prior to surgery?

ciprofloxacin

clindamycin

erythromycin

metronidazole

neomycin

Which IV antibiotic for SSI prophylaxis was

ampicillin/sulbactam

administered FIRST?

cefazolin

cefotetan

cefoxitin

ceftriaxone

cefuroxime

ciprofloxacin

clindamycin

ertapenem

gentamicin

levofloxacin

meropenem

metronidazole

piperacillin/tazobactam

tobramycin

vancomycin

ampicillin

What was the dose of first IV antibiotic administered?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(in milligrams - number only)

What was the time difference between the first IV antibiotic administration and surgical incision (in minutes)

Unknown

0-15

 minutes

 minutes

16-30

 minutes

31-45

 minutes

46-60

>

 60 minutes

Which IV antibiotic(s) for SSI prophylaxis was

ampicillin/sulbactam

administered in combination with the first antibiotic?

cefazolin

cefotetan

cefoxitin

ceftriaxone

cefuroxime

ciprofloxacin

clindamycin

ertapenem

gentamicin

levofloxacin

meropenem

metronidazole

piperacillin/tazobactam

tobramycin

vancomycin

ampicillin

(

please enter second and third antibiotics here

)

What was the IV dose of the second and/or third

antibiotic administered?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(in milligrams - numbers only. Enter second and

third doses without a space in between.)

Were IV antibiotics administered post-operatively?

Yes

No

How many post-operative IV antibiotic DOSES (single or

in combination) were administered?

0

1

2

3

4

>4

Was there any order change in the record that the

antibiotic dose was adjusted for the patient's weight?

Yes

No

If an order change for weight-adjusted antibiotic

manual entry by pharmacist

prophylaxis was in the record, how was the notation

automated entry by computer

generated? (Use manual entry by pharmacist for pharmacy to

dose order changes)

Was an intra-operative re-dose given?

Yes

No

Which topical skin preparation was applied prior to

the incision?

povidone-iodine

chlorhexidine

none

Did the patient receive any type of insulin during

hospitalization?

Yes

No

If the patient was administered insulin, what regimen

regular insulin by sliding scale (Aspart, Lyspro,

was given?

or Glulisine)

regular insulin by correction method (Aspart,

Lyspro, or Glulisine)

insulin glargine

insulin determir

NPH insulin

premixed insulin (70/30, 75/25)

regular insulin intravenous (bolus or infusion)

(

multiple entries allowed

)

What level of SSI was diagnosed post-operatively during hospitalization?

Incisional

Deep

Organ space

Multiple sites

None

## Venous Thromboembolism (VTE) Prophylaxis

Was any pre-operative assessment method used to Yes No determine whether the patient was at-risk for post-operative venous thromboembolism?

Calculate the patient's risk for post-operative VTE risk using the embedded website. If your CPOE system calculated the Caprini score, please enter that value into the question below.

Enter the patient's Caprini score (calculated above or

computer-generated).

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Was pre-operative pharmacologic VTE prophylaxis

prescribed?

Yes

No

Which pre-operative VTE prophylaxis agent was

dalteparin

administered?

enoxaparin

tinzaparin

unfractionated heparin

|  |  |
| --- | --- |
| What was the pre-operative VTE prophylaxis dose (in mg)? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(numbers only) |
| What was the pre-operative VTE prophylaxis dose (in units)? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(numbers only) |

How many pre-operative VTE prophylaxis doses were

administered?

0

1

2

Was post-operative in hospital pharmacologic VTE

Yes

No

prophylaxis prescribed?

Which post-operative in-hospital VTE prophylaxis agent

apixaban

was administered?

dabigatran

dalteparin

edoxaban

enoxaparin

rivaroxaban

tinzaparin

unfractionated heparin

warfarin

fondaparinux

What was the post-operative in-hospital VTE dose? If

two or more anticoagulants were administered during

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

the hospitalization, enter both without a space (numbers only. Enter first and second doses without

between the doses.

a space in between.)

What was the frequency of post-operative in-hospital

VTE prophylaxis administration?

daily

q12h

q8h

How many post-operative in-hospital VTE prophylaxis

doses were administered?

0

1

2

3

4

5

6

7

>7

Was post-discharge (at home) pharmacologic VTE

prophylaxis prescribed?

Yes

No

Which post-discharge (at-home) VTE prophylaxis agent

apixaban

was prescribed?

dabigatran

dalteparin

edoxaban

enoxaparin

rivaroxaban

tinzaparin

unfractionated heparin

warfarin

fondaparinux

What was the post-discharge VTE prophylaxis dose?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

)

numbers only

(

What was the prescribed frequency of post-discharge

(

at-home) VTE prophylaxis administration?

daily

q12h

q8h

For how many days was post-discharge (at-home) VTE prophylaxis prescribed?

 - 7 days

1

8

 - 14 days

15

 - 21 days

22

 - 28 days

>28

 days

What non-pharmacologic VTE prophylaxis used during hospitalization?

none

patient ambulation

compression stockings

sequential compression device (SCD)

Was there any order change in the record that the

patient's weight was used to adjust the dose of any

VTE prophylaxis agent at any time?

Yes

No

|  |  |  |
| --- | --- | --- |
| Was there any order change in the record that the patient's renal function was used to adjust the dose of any VTE prophylaxis agent at any time? |  Yes  | No |

If there was any order change in the record that the patient's weight manual entry by pharmacist

or renal function was used to adjust the dose of any VTE automated entry by computer

|  |  |
| --- | --- |
| prophylaxis agent, how was the notation generated? |  (Use manual entry by pharmacist for pharmacy to |
|   | dose order changes) |
|  |  |

What was the time difference between the first VTE prophylaxis dose administration and surgical incision (in hours)?

Unknown

<

 6 hours

6-12

 hours

>

 12 hours

Was post-operative VTE present at any time after the procedure?

None

Brain

Peripheral limb

Pulmonary

Renal

## Post-operative Nausea and Vomiting (PONV) Prophylaxis

Was any pre-operative or intra-operative anti-emetic

agent(s) for PONV prophylaxis administered?

Yes

No

Was any post-operative (PACU and ward) anti-emetic

agent(s) for PONV prophylaxis administered?

Yes

No

Which, if any, of the following medication was

None

administered during hospitalization?

acetaminophen, intravenous

alvimopan

dexmedetomidine

famotidine

gabapentin

ketamine bolus

ketamine continuous infusion

magnesium sulfate for pain management

naloxegol

neostigmine

pregabalin

prucalopride

propofol

sugammadex

What non-pharmacologic modalities were used to prevent

nausea and vomiting?

none

acupuncture

essential oils

wrist band

Which anti-emetic agent(s) were administered prior to

NONE

induction? (multiple entries if additional agents

amisulpride

used)

aprepitant

dexamethasone

dolasetron

domperidone

droperidol

granisetron

haloperidol

metoclopramide

ondansetron

palonosetron

prochlorperazine

promethazine

scopolamine patch

perphenazine

hydroxyzine

diphenhydramine

How many pre-operative anti-emetic dose(s) (single or

in combination) were administered?

0

1

2

Which anti-emetic agent(s) were administered prior to

NONE

extubation? (multiple entries if additional agents

amisulpride

used)

aprepitant

dexamethasone

dolasetron

domperidone

droperidol

granisetron

haloperidol

metoclopramide

ondansetron

palonosetron

prochlorperazine

promethazine

scopolamine patch

trimethobenzamide

perphenazine

hydroxyzine

Excluding aprepitant and scopolamine patch, what was the time difference between IV pre-operative anti-emetic agent administration and the surgical incision? (in minutes)

unknown

<

 60 minutes

60-120

 minutes

>

 120 minutes

not applicable

What dose of aprepitant was administered?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What route was aprepitant administered?

Intravenously

Orally

What was the time difference between aprepitant administration and the surgical incision (in minutes)?

(in minutes)

unknown

<

 90 minutes

90-180

 minutes

>

 180 minutes

How many hours before surgery was scopolamine patch

applied to the skin? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Was scopolamine patch left on the skin

post-operatively?

Yes

No

Excluding aprepitant and scopolamine patch, how many

post-operative anti-emetic dose(s) (single or in

combination) were administered?

0

1

2

3

4

5

6

7

>7

What was the scheduled frequency for post-operative

anti-emetic administration?

none

around the clock

as needed

If as needed (PRN) anti-emetic agents were prescribed,

amisulpride

which one was administered for rescue?

dimenhydrinate

diphenhydramine

dolasetron

domperidone

droperidol

granisetron

haloperidol

metoclopramide IV

metoclopramide PO

ondansetron IV

ondansetron PO

palonosetron

prochlorperazine IV

prochlorperazine PO

prochlorperazine PR

promethazine IV

promethazine PO

promethazine PR

trimethobenzamide IV

trimethobenzamide PO

perphenazine IV

perphenazine PO

hydroxyzine IV/IM

hydroxyzine PO

dexamethasone

(

multiple entries allowed

)

## Multi-modal pain management

Which non-opioid multi-modal pain management agent(s) acetaminophen PO

were prescribed post-operatively?acetaminophen IV

celecoxib PO diclofenac PO diclofenac topical ibuprofen PO ketorolac PO ketorolac IV lidocaine IV lidocaine patch meloxicam PO meloxicam IV naproxen ibuprofen IV gabapentin pregabalin methocarbamol

NONE

## Non-opioid multi-modal pain management agent frequency at a standard adult dose



Use the calculator (CLICK ON WATCH VIDEO BELOW) to convert the PARENTERAL (IV/IM/SC) AND/OR ORAL (PO) opioid administered to ORAL (PO) morphine milligram equivalents (MME) and add the amount to the MME in the boxes provided for each of the next 2 MME questions for procedural /PACU and ward total doses. Select the "converting to" for Morphine (oral chronic).

NOTES: TRAMADOL IS CONVERTED TO MME USING THE FOLLOWING CONVERSION: MULTIPLE DOSE TOTAL BY 0.1 AND ENTER WITH OTHER MMEs FROM THE CONVERTER.

For sufentanil and alfentanil conversion to MME, MULTIPLY THE TOTAL DOSE BY 5, AND ENTER THAT VALUE AS FENTANYL (IN MCG).

For remifentantil conversion to MME, MUTLIPLY THE TOTAL DOSE BY 0.5 AND ENTER THAT VALUE AS FENTANYL,

|  |  |
| --- | --- |
| How much intraoperative morphine milligram equivalents (MME) were administered ORALLY & PARENTERALLY during | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| the procedure and in the PACU? | (use the MME calculator provided) |
| How much post-operative morphine milligram equivalents (MME) were administered by ORALLY & PARENTERALLY  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| after PACU discharge and before hospital discharge (i.e. on the ward or unit)? | (use the MME calculator provided) |

Was any risk stratification scoring system for PONV Yes No used to assess this patient PRE-OPERATIVELY?

Please use the calculator to enter the Apfel scoring system for PONV risk. If your CPOE system calculated the value, please enter that value in the space below.

Enter the patient's Apfel Score.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(

Score of 0-4 numbers only - no % sign

)

Was PONV present at any time after procedure?

Yes

No

If PONV was present after the procedure, during what

in PACU

time period did it occur?

<

 12 hours on ward/unit

12-24

 hours on ward/unit

>24

 hours on ward/unit

(

multiple times can be entered

)

Use the following Clavien-Dindo Classification of complications scheme to rate the severity of POCs.

## Post-operative, in-hospital complications

None

I-II

IIIa

IIIb

IVa

IVb

V

Infection

Fistula/anastomotic leak

Bleeding/hematoma

Delayed gastric emptying / ileus

Nausea and/or vomiting

Cardiopulmonary

Liver insufficiency

Neurologic

Pain

Allergy

Other

Renal

Use the following Clavien-Dindo Classification of complications to rate the severity of complications experienced at home.

## Post-operative, post-discharge complications (frequency and severity)

 None I-II IIIa IIIb IVa IVb v

Infection

Fistula/anastomotic leak

Bleeding/hematoma

Delayed gastric emptying / ileus

Nausea and/or vomiting

Cardiopulmonary

Liver insufficiency

Neurologic

Pain

Allergy Pancreatitis other

Renal

Lost to follow up - answer not required - select V if lost

What was the Length of Hospital Stay (LOSH) related to

primary procedure? (in days) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(

in days

)

Was the patient re-admitted to hospital within up to 7

days post-operatively?

Yes

No

Was the patient re-admitted to hospital between 8 and

30

 days post-operatively?

Yes

No

***Supplementary Materials Table S1 –*** ***Surgical technique by anatomical location***

|  |  |
| --- | --- |
| Surgical technique (n) | Anatomical location (%) – multiple colonic segments included |
| Small intestine | Appendix | Cecum | Ascending colon | Transverse | Descending colon | Sigmoid | Rectum |
| Laparoscopic (243) | 26.5 | 1.2 | 18.1 | 36.6 | 32.5 | 30.0 | 53.9 | 30.5 |
| Open (137) | 33.8 | 3.7 | 16.0 | 25.6 | 19.0 | 30.7 | 42.3 | 30.7 |
| Robotic (96) | 13.5 | 8.3 | 9.4 | 22.9 | 14.6 | 31.2 | 55.2 | 35.4 |
| Totals (476) | 25.6 | 3.4 | 15.8 | 30.7 | 25.0 | 30.5 | 50.8 | 31.5 |

***Supplementary Materials Table S2 –*** ***Surgical technique by LOS, 7- and 30-day readmission***

|  |  |  |  |
| --- | --- | --- | --- |
| Surgical technique (n) | LOS | 7-day readmit rate (%) | 30-day readmit rate (%) |
|
| Laparoscopic (243) | 5.6 | 7.8 | 6.2 |
| Open (137) | 6.8 | 2.9 | 8.0 |
| Robotic (96) | 4.2 | 4.2 | 11.5 |
| Totals (476) | 5.7 | 5.7 | 7.8 |

***Supplementary Materials Table S3 –*** ***Anatomical location by LOS, 7- and 30-day re-admission***

|  |  |  |
| --- | --- | --- |
| Anatomical location (n) (multiple segments included) | Secondary outcomes | *p* value |
| LOS | 7-day readmit % | 30-day readmit % | LOS | 7-day readmit | 30-day readmit |
| Sigmoid (242) | 5.9 | 6.6 | 9.9 | 0.156 | 0.368 | 0.076 |
| Rectum (150) | 6.0 | 5.3 | 7.9 | 0.009\* | 0.828 | 0.900 |
| Ascending colon (146) | 6.1 | 7.5 | 7.5 | 0.528 | 0.243 | 0.897 |
| Descending colon (145) | 6.4 | 6.8 | 10.3 | 0.329 | 0.445 | 0.165 |
| Small intestine (121) | 6.2 | 8.1 | 7.3 | 0.032\* | 0.162 | 0.850 |
| Transverse (119) | 6.8 | 8.3 | 7.5 | 0.019\* | 0.137 | 0.921 |
| Cecum (75) | 5.3 | 2.6 | 6.6 | 0.964 | 0.685 | 0.072 |
| Appendix (16) | 7.7 | 0.0 | 5.9 | 0.284 | 0.318 | 0.817 |

***Supplementary Materials Table S4 –*** ***Small versus large colon procedures, antibiotics, and SSI rate***

|  |
| --- |
| Small intestine and other colonic locations |
| Antibiotic / combination (n) | **SSI incidence (n)** | **SSI rate (%)** |
| Piperacillin/tazobactam (2) | 1 | 50.0 |
| Ciprofloxacin/metronidazole (3) | 1 | 33.3 |
| Cefoxitin (16) | 3 | 18.8 |
| Cefoxitin/ampicillin (9) | 1 | 11.1 |
| Cefazolin/metronidazole (30) | 3 | 10.0 |
| Cefotetan (15), ertapenem (10), clindamycin/gentamicin (3), cefazolin combinations (other) (3), gentamicin/metronidazole (2), cefazolin (1), levofloxacin (1), levofloxacin/metronidazole (1), none (1) | 0 |  |
| Sub-total (97) | 9 | 9.3 |
| Small intestine only |
| Cefazolin/metronidazole (4) | 1 | 25.0 |
| Cefoxitin (9), ertapenem (5), cefotetan (4), cefotetan (double dose) (1), none (1) | 0 |  |
| Sub-total (24) | 1 | 4.2 |
| Large intestine only |  |  |
| Cefazolin/metronidazole (124) | 3 | 2.4 |
| Cefoxitin (51) | 3 | 5.9 |
| Ertapenem (65), cefotetan (33), ampicillin/cefoxitin (30), gentamicin/metronidazole (7), cefazolin (6), metronidazole (5), piperacillin/tazobactam (4), ceftriaxone (3), cefazolin combinations (other) (2), clindamycin/gentamicin (2), ampicillin/sulbactam (1), cefotetan/metronidazole (1), cefotetan (double dose) (2), none (19) | 0 |  |
| Sub-total (355) | 6 | 1.7 |
| Total (476) | 16 | 3.4 |

***Supplementary Materials Table S5 –*** ***Common postoperative complications by severity – in-hospital (Clavien-Dindo scale)***

|  |  |
| --- | --- |
| Postoperative complication diagnosed during hospitalization in 476 patients | Grade (seriousness) |
| I-II | IIIa | IIIb | IV | V |
| Pain (277; 58.1%) | 274 | 3  |  |  |  |
| Nausea and/or vomiting (228; 47.9%) | 227  | 1  |  |  |  |
| Delayed gastric emptying/ileus (68; 14.6%) | 56  | 10 | 2  |  |  |
| Bleeding/hematoma (35; 7.4%) | 28  | 4 | 2  | 1  |  |
| Infection (32; 6.7%) | 27  | 3  | 2 |  |  |
| Cardiopulmonary (27; 5.7%) | 21  | 2  | 1 | 2  | 1  |
| Renal (23; 4.8%) | 22  |  | 1  |  |  |
| Other (16; 3.4%) | 11  | 1  | 3  |  | 1  |
| Fistula/anastomotic leak (12; 2.5%) | 6  | 2  | 4  |  |  |
| Neurologic (5; 1.1%) | 4  | 1  |  |  |  |
| Liver insufficiency (1; 0.2%) | 1  |  |  |  |  |
| Totals (714 POCs in 476 patients) | 677 (94.8) | 27 (3.8) | 15 (2.1) | 3 (0.4) | 2 (0.3) |

***Supplementary Materials Table S6 -*** ***Common postoperative complications by severity – post-discharge (Clavien-Dindo scale)***

|  |  |
| --- | --- |
| Postoperative complication diagnosed after discharge in 476 patients | Grade (seriousness) |
| I-II | IIIa | IIIb | IV | V |
| Pain (105; 22.0%) | 105  |  |  |  |  |
| Infection (40; 8.4%) | 30  | 5  | 5  |  |  |
| Nausea and/or vomiting (28; 5.9%) | 24  | 3  |  1  |  |  |
| Other (23; 4.8%) | 18  | 1  |  3  | 1  |  |
| Delayed gastric emptying/ileus (18; 3.4%) | 12  | 5  | 1  |  |  |
| Cardiopulmonary (12; 2.5%) | 8  | 1 | 1  | 1  | 1  |
| Fistula/anastomotic leak (10; 2.1%) | 5  | 1  | 4  |  |  |
| Bleeding/hematoma (9; 1.9%) | 8  | 1  |  |  |  |
| Renal (4; 0.8%) | 4  |  |  |  |  |
| Neurologic (3; 0.6%) | 3  |  |  |  |  |
| Allergy (1; 0.2%) | 1  |  |  |  |  |
| Totals (253) | 213 (84.9) | 26 (10.3) | 15 (5.9) | 2 (0.8) | 1 (0.4) |
| Lost to follow-up (7; 1.5%) |