

eAppendix 1: CONSORT Checklist

see attached checklist

eAppendix 2: Power calculation:

The power calculation was based on following calculations below:

α (two-tailed) =	0.05	Threshold probability for rejecting the null hypothesis. Type I error rate.
β =	0.20	Probability of failing to reject the null hypothesis under the alternative hypothesis. Type II error rate.
q_1 =	0.500	Proportion of subjects that are in Group 1 (exposed)
q_0 =	0.500	Proportion of subjects that are in Group 0 (unexposed); $1 - q_1$
P_0 =	0.15	Risk in Group 0 (baseline risk)

Enter any ONE of the following three parameters (the other two will be calculated automatically):

P_1 =	0.2500	Risk in Group 1 (exposed)
OR =	1.8889	Odds ratio ($P_1 / (1 - P_1) / (P_0 / (1 - P_0))$)
RR =	1.6667	Risk ratio (P_1 to P_0)

Calculate

The standard normal deviate for $\alpha = Z_\alpha = 1.9600$
 The standard normal deviate for $\beta = Z_\beta = 0.8416$
 Pooled proportion = $P = (q_1 * P_1) + (q_0 * P_0) = 0.2000$
 $A = Z_\alpha \sqrt{P(1-P)(1/q_1 + 1/q_0)} = 1.5680$
 $B = Z_\beta \sqrt{P_1(1-P_1)(1/q_1) + P_0(1-P_0)(1/q_0)} = 0.6680$
 $C = (P_1 - P_0)^2 = 0.0100$
 Total group size = $N = (A+B)^2/C = 500$
 Continuity correction (added to N for Group 0) = $CC = 1/(q_1 * |P_1 - P_0|) = 20$

Sample size (with continuity correction)

	N	Outcome+	Outcome-
Group 1:	270	68	202
Group 0:	270	41	229
Total:	540	109	431

Sample size (without continuity correction)

	N	Outcome+	Outcome-
Group 1:	250	63	187
Group 0:	250	38	212
Total:	500	101	399

Note: This calculator uses the normal distribution (with and without the continuity correction) as an approximation to the binomial distribution.

eAppendix 3: Electronic Health Record Intervention, Hard Stop Versus Prechecked

▼ Core Medications

▼ Opioid-Sparing Pain Medication Section

- 2020 Pain Order Set Education

Pain Medication for Patients able to take oral medication

- 2020 Pain Order Set Education

The patient will have only mild intermittent pain

The patient has or will have more than mild intermittent pain

! Step 1: Select acetaminophen approach appropriate for patient (must select one)

Acetaminophen Dose Limit 4 grams

Acetaminophen Dose Limit 2 grams

The patient cannot receive acetaminophen because of contraindications (e.g. monitoring for neutropenic fever, acetaminophen allergy)

! Step 2: Select NSAID, if appropriate

Patient cannot receive NSAIDs: Has contraindications (transplant patient, active bleeding, recent GI bleeding, CHF, eGFR<60, monitoring for neutropenic fever, on therapeutic anticoagulation where bleeding risk greater than benefit, documented allergy, or pregnancy)

Preferred : Ibuprofen (MOTRIN) tablet

Alternate for patients briefly not able to take PO: Ketorolac/Ibuprofen

The patient cannot receive NSAIDs - Has contraindications (see above)

The patient has or will have more than mild intermittent pain

Step 1: Select acetaminophen approach appropriate for patient (must select one)

Acetaminophen Dose Limit 4 grams

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The patient cannot receive acetaminophen because of contraindications (e.g. monitoring for neutropenic fever, acetaminophen allergy)

Step 2: Select NSAID, if appropriate (must select one)

Patient cannot receive NSAIDs: Has contraindications (transplant patient, active bleeding, recent GI bleeding, CHF, eGFR<60, monitoring for neutropenic fever, on therapeutic anticoagulation where bleeding risk greater than benefit, documented allergy, or pregnancy)

Preferred : Ibuprofen (MOTRIN) tablet

ibuprofen (ADVIL,MOTRIN) tablet 600 mg
600 mg, Oral, Every 8 Hours Scheduled, 15 doses, with the First Dose today at 1400, Last dose on Wed 2/16 at 0600

Alternate for patients briefly not able to take PO: Ketorolac/Ibuprofen

The patient cannot receive NSAIDs - Has contraindications (see above)

Step 3: Choose additional opioid sparing medication (optional)

Step 4: Consider adding oral opioids for pain not managed with approaches above (optional)

Step 5: Consider adding parenteral opioid for pain not managed with approaches above (optional)

eAppendix 4: Defining Clinical Harms**Gastrointestinal Bleed ICD-10 Codes**

'I85.01', 'K20.81', 'K20.91', 'K21.01', 'K22.11', 'K25.0', 'K25.2', 'K25.4', 'K25.6', 'K26.0', 'K26.2', 'K26.4', 'K26.6', 'K27.2', 'K27.4', 'K27.6', 'K28.0', 'K28.2', 'K28.6', 'K29.01', 'K29.21', 'K29.31', 'K29.41', 'K29.51', 'K29.61', 'K29.71', 'K29.81', 'K29.91', 'K31.811', 'K50.00', 'K52.81', 'K55.21', 'K92.2', 'K57.01', 'K57.11', 'K57.13', 'K57.21', 'K57.31', 'K57.33', 'K57.41', 'K57.51', 'K57.53', 'K57.81', 'K57.91', 'K57.93', 'K92.2'

Acute Kidney Injury ICD-10 Codes

'N17.0*', 'N17.8*', 'N17.9*', 'N19*'

eAppendix 5: Baseline characteristics of randomized clinicians admitting at least 1 qualifying patient

Clinician characteristics		Control Group N=536	Intervention Group N=534	p-value
Years at UCSF (mean (SD))		3.5 (3.2)	3.5 (3.1)	0.95
Surgeon (%)		257 (48)	251 (47)	0.80
Gender	Female	301 (57)	296 (58)	1
	Male	224 (43)	219 (43)	
	Non-binary or missing	11 (2)	19 (4)	
Department at Login (%)	Medicine	153 (36)	182 (42)	0.11
	Surgery	206 (49)	179 (42)	
	Other	65 (15)	69 (16)	
	Missing	112 (21)	104 (20)	
Clinician Type (%)	Attending	169 (32)	182 (34)	0.58
	APP	83 (16)	80 (15)	
	Resident	273 (51)	255 (48)	
	Medical Student	10 (2)	14 (3)	
	Other	1 (0.2)	1 (0.2)	