



**Measure Abbreviation:** Opioid Equivalency

**Data Collection Method:** This informational measure (there is no threshold or target) is calculated based on data extracted from the electronic medical record combined with administrative data sources such as professional fee and discharge diagnoses data. This measure is explicitly not based on provider self-attestation.

**Description:** Cases are grouped by surgical site using CPT groupings (see below). Opioid equivalents are calculated using conversions derived from literature and given between anesthesia start and anesthesia end for each case. This value is normalized to patient weight (kg) and duration of anesthetic (anesthesia end – anesthesia start, hours as a decimal).

**NQS Domain:** Patient Safety

**Measure Type:** Process

**Scope:** Calculated on a per case basis

**Measure Summary:** The opioid equivalency measure examines opioid administration for patients who undergo a surgical procedure.

**Rationale:** Understanding opioid administration is important to help improve perioperative care. There has been a dedicated focus on understanding opioid use within and outside the hospital and an equivalency is often used to compare opioid consumption. As Oral Morphine Equivalent (OME) conversions are limited to medications routinely used outside of the operating room (OR) and omit some critical medications and routes used in the OR, a new algorithm was developed to incorporate medications used intraoperatively. This equivalency is intended as an informational tool to help understand opioid use in the operating room.

**Inclusions:** All patients undergoing a procedure within the following primary anesthesia CPT groupings:

#### Cardiac

- Cardiac surgery with pump and > 1 year old (CPT: 00562)
- Cardiac surgery with hypothermic arrest (CPT: 00563)
- CABG with pump (CPT: 00567)
- Heart Transplant (CPT: 00580)
- CABG without pump (CPT: 00566)

#### Spine

- Cervical spine and cord; not otherwise specified (CPT: 00600)
- Cervical spine and cord; patient in sitting position (CPT: 00604)
- Thoracic spine and cord; not otherwise specified (CPT: 00620)
- Thoracic spine and cord; thoracolumbar sympathectomy (CPT: 00622)

- Thoracic spine and cord, via an anterior transthoracic approach; not utilizing 1 lung ventilation (CPT: 00625)
- Thoracic spine and cord, via an anterior transthoracic approach; utilizing 1 lung ventilation (CPT: 00626)
- Lumbar region; not otherwise specified (CPT: 00630)
- Lumbar region; lumbar sympathectomy (CPT: 00632)
- Lumbar region; diagnostic or therapeutic lumbar puncture (CPT: 00635)
- Extensive spine and spinal cord procedures (eg, spinal instrumentation or vascular procedures) (CPT: 00670)

Upper Abdomen

- Intraperitoneal - upper abdomen including laparoscopy; not otherwise specified (CPT: 00790)
- partial hepatectomy or management of liver hemorrhage (excluding liver biopsy) (CPT: 00792)
- Intraperitoneal - upper abdomen including laparoscopy; pancreatectomy, partial or total (eg, Whipple) (CPT: 00794)
- Intraperitoneal - upper abdomen including laparoscopy; gastric restrictive procedure for morbid obesity (CPT: 00797)

Lower Abdomen

- Procedures in lower abdomen including laparoscopy; not otherwise specified (CPT: 00840)
- Procedures in lower abdomen including laparoscopy; abdominoperineal resection (CPT: 00844)
- Procedures in lower abdomen including laparoscopy; pelvic exenteration (CPT: 00848)

Hysterectomy

- Intraperitoneal procedures in lower abdomen including laparoscopy; radical hysterectomy (00846)
- Vaginal procedures (including biopsy of labia, vagina, cervix or endometrium); vaginal hysterectomy (00944)

Knee/Popliteal

- Open or surgical arthroscopic procedures on knee joint; total knee arthroplasty (01402)

Hip

- Open procedures involving hip joint; total hip arthroplasty (01214)

**Exclusions:** Any procedure not listed in one of the inclusion categories above.

**MPOG Concept IDs Required:**

MPOG Medication Concept IDs	
10008	BUPIVACAINE W/ HYDROMORPHONE 0.1% / UNSPECIFIED
10020	ALFENTANIL
10077	BUPIVACAINE W/ FENTANYL 0.0625% / 3mcg/ml
10079	BUPIVACAINE W/ FENTANYL 0.08% / 2 MCG/ML

10080	BUPIVACAINE W/ FENTANYL 0.125% / 2 MCG/ML
10081	BUPIVACAINE W/ FENTANYL 0.125% / 3 MCG/ML
10082	BUPIVACAINE W/ HYDROMORPHONE 0.0625% / 5mcg/ml
10083	BUPIVACAINE W/ HYDROMORPHONE 0.0625% / 10 mcg/ml
10089	BUTORPHANOL
10103	BUPIVACAINE W/ FENTANYL 0.125% / 5 MCG/ML
10186	FENTANYL
10219	HYDROMORPHONE
10279	MEPERIDINE
10290	METHADONE
10306	MORPHINE
10311	NALBUPHINE
10341	OXYCODONE
10378	PROPOFOL W/ REMIFENTANIL 10 MG/ML + 5 MCG/ML
10390	REMIFENTANIL
10408	BUPIVACAINE W/ FENTANYL 0.0625% / 5 MCG/ML
10414	SUFENTANIL
10439	BUPIVACAINE W/ SUFENTANIL W/ EPINEPHRINE 100MG / 100MCG / 0.42MG
10475	BUPIVACAINE W/ HYDROMORPHONE 0.125% / 5 MCG/ML
10476	BUPIVACAINE W/ HYDROMORPHONE 0.125% / 10 MCG/ML
10478	LIDOCAINE W/ HYDROMORPHONE 2% / 10 MCG / ML
10479	LIDOCAINE W/ FENTANYL W/ EPINEPHRINE W/ BICARBONATE 2% / 5 MCG/ML / 1:200,000
10481	OXYCODONE / ACETAMINOPHEN 5 MG / 325 MG
10482	HYDROCODONE / ACETAMINOPHEN 5 MG / 325 MG
10483	HYDROCODONE / ACETAMINOPHEN 7.5 MG / 500 MG

10484	CODEINE / ACETAMINOPHEN 12 MG / 120 MG
10485	CODEINE / ACETAMINOPHEN 30 MG / 300 MG
10486	BUPIVACAINE W/ FENTANYL 0.5% / 3 MCG/ML
10488	BUPIVACAINE W/ FENTANYL 0.5% / 10 MCG/ML
10518	BUPIVACAINE W/ HYDROMORPHONE 0.5% / 10 MCG/ML
10519	BUPIVACAINE W/ FENTANYL 0.05% / 3 MCG/ML
10522	BUPIVACAINE W/ MORPHINE 0.75% W/0.2 MG
10534	BUPIVACAINE W/ FENTANYL 0.0625% / 2 MCG/ML
10536	BUPIVACAINE W/ FENTANYL 0.0625% / 10 MCG/ML
10554	BUPIVACAINE W/ FENTANYL 0.1% / 2 MCG/ML
10583	BUPIVACAINE W/ FENTANYL 0.0625% / 4 MCG/ML
10585	BUPIVACAINE W/ FENTANYL 0.125% / 4 MCG/ML
10587	CODEINE
10597	PROPOFOL W/ ALFENTANIL 10 MG/ML + 50 MCG/ML
10603	BUPIVACAINE W/ HYDROMORPHONE 0.05% / 10 mcg/ml
10620	BUPIVACAINE W/ FENTANYL 0.125% / 10MCG/ML
10633	ROPIVACAINE W/ FENTANYL 0.125% / 2 MCG/ML
10639	PROPOFOL W/ REMIFENTANIL 10 MG/ML + 10 MCG/ML
10649	PROPOFOL W/ REMIFENTANIL 10 MG/ML + 20 MCG/ML
10669	BUPIVACAINE W/ FENTANYL 0.25% / 10 MCG/ML
11020	TRAMADOL
11080	BUPRENORPHINE
11120	BUPIVACAINE W/ FENTANYL 0.05% / 5 MCG/ML
11130	BUPIVACAINE W/ FENTANYL 0.25% / 2.5 MCG/ML
11140	BUPIVACAINE W/ FENTANYL 0.05% / 2 MCG/ML

MPOG Route Concept IDs	
2001	IV
2004	INTRATHECAL
2005	EPIDURAL
2008	ORAL
2013	TOPICAL
2014	TRANSDERMAL
2026	CAUDAL
2998	OTHER - NOT SPECIFIED
MPOG Unit of Measure Concept IDs	
1005	MG
1007	MG/ML
1010	MCG
1011	MCG/KG
1012	MCG/ML
1015	GM
1020	UNITS
1025	ML
1030	MILLIEQUIVALENTS
1037	NANOGRAM
1100	ML/HR
1103	MEQ/HR
1105	MG/HR
1110	UNITS/HR
1115	GM/HR
1120	MCG/HR

1135	ML/MIN
1140	MG/MIN
1150	MCG/MIN
1200	MG/KG/HR
1205	MCG/KG/HR
1210	UNITS/KG/HR
1220	MG/KG/MIN
1225	MCG/KG/MIN
1999	OTHER

**Data Diagnostics Affected:**

- Percentage of medications with a Meaningful Medication Mapping
- Percentage of medications with a Meaningful Route Mapping
- Percentage of medications with a Meaningful Unit Mapping
- Percentage of cases with Bolus Medications
- Percentage of Cases with Infusion Medications

**Collations Used:**

- Anesthesia Duration
- Weight
- Oral Morphine Equivalent
- Oral Morphine Equivalent (Normalized)

**Other Measure Build Details:**

Medication combinations are calculated using the medication concept IDs, route of delivery, and unit of measure as listed above. Not all possible combinations are used as some routes or units are not used for certain medications in medical practice. Remifentanyl is not included in the opioid equivalency calculation due to its short duration of action and low context-sensitive half-time. Opioid equivalency is still calculated for these cases that use remifentanyl but the cases are flagged as having “Remi”. When an opioid dose cannot be calculated for a medication due to inadequate documentation, the opioid equivalency is returned for the remaining medications and the case is also flagged as having an opioid given with an “Unknown” dose.

If weight and/or anesthesia duration is missing for the case, the opioid equivalency is returned as NULL.

The following conversions were used for opioid equivalency conversions:

<u>Opioid</u>	<u>Route</u>	<u>Measure Table</u>
Morphine <sup>1,2</sup>	Oral	30.00
MS Contin (controlled release)	Oral	30.00
Codeine <sup>1,2</sup>	Oral	200.00
Hydromorphone (Dilaudid) <sup>1,2</sup>	Oral	7.50
Hydrocodone <sup>2</sup>	Oral	30.00
Oxycodone <sup>1,2</sup>	Oral	20.00
Oxymorphone <sup>1,2</sup>	Oral	10.00
Meperidine <sup>1</sup>	Oral	300.00
Levorphanol <sup>1</sup>	Oral	2.00
Tramadol <sup>1</sup>	Oral	120.00
Tapentadol <sup>1</sup>	Oral	100.00
Methadone <sup>8</sup>	Oral	6.00
Fentanyl <sup>2</sup>	transdermal	12.50
Buprenorphine (Suboxone) <sup>3</sup>	Sublingual	0.40
Morphine <sup>1</sup>	IV	10.00
Codeine <sup>1</sup>	IV	100.00
Fentanyl <sup>1</sup>	IV	0.10
Hydromorphone (Dilaudid) <sup>1</sup>	IV	1.50
Oxymorphone <sup>1</sup>	IV	1.00
Meperidine <sup>1</sup>	IV	100.00
Tramadol <sup>1</sup>	IV	100.00
Buprenorphine (Suboxone) <sup>1</sup>	IV	0.40
Nalbuphine <sup>1</sup>	IV	10.00
Butorphanol <sup>1</sup>	IV	2.00
Alfentanil <sup>7</sup>	IV	0.50
Sufentanil <sup>5</sup>	IV	0.01
Remifentanil	IV	0.00
Methadone <sup>3</sup>	IV	5.00
Hydromorphone <sup>6</sup>	epidural	0.30
Morphine <sup>4</sup>	epidural	1.00
Fentanyl <sup>6</sup>	epidural	0.03
Fentanyl <sup>6</sup>	IT	0.01
Morphine <sup>4</sup>	IT	0.10
Hydromorphone <sup>6</sup>	IT	0.06

**Success:** Success is not defined for these measures.

**Threshold:** There are no thresholds for these measures.

**Risk Adjustment (for outcome measures):** Not applicable.

**Responsible Provider:** Provider signed in for largest portion of case using Case Duration.

Algorithm for determining Case Duration:

Case Start:

1. Anesthesia Induction End. If not available, then
2. Anesthesia Induction Begin. If not available, then
3. Procedure Start. If not available, then
4. Patient in Room. If not available, then
5. Anesthesia Start

Case End:

1. Patient Extubated. If not available, then
2. Procedure End. If not available, then
3. Patient Out of Room. If not available, then
4. Anesthesia End.



**References:**

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