Supplementary Material 1 Common opioid medications available in India, typical starting dose, and considerations

	Typical starting dose[a]	Considerations
IR opioid		
Morphine IR (oral)	10 mg every 4–6 h	Do not use in patient with CKD stages 4–5
Tapentadol	50 mg every 12 h	Avoid concomitant serotonin products
Tramadol	25 mg oral once daily	- Poor efficacy at doses >400 mg - Low potency opioid - Avoid concomitant serotonin products
ER/LA opioid		
Buprenorphine (transdermal)	5 µg/h patch every 7 d	Should be off other opioids for at least 5–7 d and not taking >30 mg MED
Fentanyl (transdermal)	12 µg/h patch every 72 h	Use only in opioid-tolerant patients taking >60 mg MED for a week or longer
Methadone	2.5 mg TID	- Start at low doses, individualized based on prior opioid exposure. Obtain baseline ECG due to QTc prolongation risk - Chronic pain in opioid-naïve adults (or <40–60 mg MED) - Starting dose 2.5 mg TID - Dose increases no more than 5 mg/d every 5–7 d - Should not be started for opioid use disorder outside of an opioid treatment program
Morphine ER/LA	15 mg every 12 h	Do not use in patient with CKD stage 4–5
Tapendatol ER	50 mg every 12 h	Avoid concomitant serotonin products
Tramadol ER	100 mg once daily	- Poor efficacy at doses >400 mg - Low potency opioid - Avoid concomitant serotonin products

Abbreviation: CKD, chronic kidney disease; ECG, electrocardiogram; ER, extended release; IR, immediate release; LA, long-acting.
[a]May be lower in patients with renal failure, hepatic failure, or age >65 years.

Supplementary Material 2 Opioid conversion table

Calculating total daily doses of opioids is important to prescribe, manage, and taper opioid medications appropriately and effectively. There are several conversion charts available, so caution is needed when performing calculations. As with all medications, consulting the package insert for dose titration instructions and safety information is recommended. Treatment should be individualized and begin with lower doses and gradual increases to manage pain.[20]

Once the dose is calculated, the new opioid should not be prescribed at the equivalent dose. The starting dose should be reduced by 25 to 50% to avoid unintentional overdose due to incomplete cross-tolerance and individual variations in opioid pharmacokinetics. This dose can then be gradually increased as needed.

To calculate the total daily dose:

1. Determine the total daily doses of current opioid medications (consult patient history and health record).
2. Convert each dose into morphine milligram equivalents (MMEs) by multiplying the dose by the conversion factor.
3. If more than one opioid medication, add together.
4. Determine equivalent daily dose of new opioid by dividing the calculated MMEs of current opioid by new opioid's conversion factor. Reduce this amount by 25 to 50% and then divide it into appropriate intervals.

Calculating MME[a]			
Opioid	**Conversion factor (convert to MMEs)**	**Duration (h)**	**Dose equivalent morphine sulfate (30 mg)**
Codeine	0.15	4–6	200 mg
Fentanyl (μg/h)	2.4		12.5 μg/h[b]
Morphine	1	3–6	30 mg
Methadone[c]			
1–20 mg/d	4		7.5 mg
21–40 mg/d	8		3.75 mg
41–60 mg/d	10		3 mg
≥61 mg/d	12		2.5 mg

Abbreviation: MME, morphine milligram equivalent.
[a]The dose conversions listed above are an estimate and cannot account for an individual patient's genetics and pharmacokinetics.
[b]Fentanyl is dosed in μg/h instead of mg/d, and absorption is affected by heat and other factors.
[c]Methadone conversion factors increase with increasing dose.

Sample Case

The patient is a 43-year-old man who is taking morphine 20 mg four times a day for chronic cancer pain. He is an appropriate candidate for a long-acting regimen and decide to convert him to fentanyl patch.

1. Total daily dose of morphine = 20 mg × four times/d = 80 mg/d
2. Convert to MMEs (morphine conversion factor = 1) = 80 × 1 = 80 MME
3. Determine MMEs of fentanyl (fentanyl conversion factor = 2.4) = 80/2.4 = 33.3 μg/h.*
4. Decrease dose by 25%, that is, 25% of 33.3 = 8.3, which results in 33.3 − 8.3 = 25.3 μg/h.

The starting dose of fentanyl patch is 25 μg/h every 3 days and can use morphine 5 to 10 mg every 4 hours as need for break through pain.

*Note change in unit.

Supplementary Material 3 Opioid safety

The judicious prescription and utilization of opioids warrant meticulous attention, driven by several pivotal factors, such as potential drug interactions, varied responses, and preventing misuse. It is, however, essential to acknowledge that not every opioid user becomes ensnared in addiction or misuse. Responsible, prescribed usage can ensure their safe administration. For those prescribed opioids, it is paramount to maintain secure storage, adherence to prescription, maintaining medical communication with the prescriber, following a nonsharing policy, awareness of concomitant substance uses such as alcohol, tranquilizers, or other sedatives, and following safe disposal protocol for expired or unused opioids. Certain medical conditions, benzodiazepine usage, past overdose incidents, illegal drug consumption, or medication for opioid use disorders amplify overdose susceptibility. Opioid overuse can compromise breathing, manifesting as small pupils, unconsciousness, or respiratory distress. Naloxone (Narcan) is a counteractive remedy for opioid overdose. In some cases, increased opioid doses become imperative due to heightened pain or drug tolerance. This is a physiological adaptation and not indicative of addiction. Side effects include drowsiness, constipation, nausea, vomiting, dizziness, itchiness, mental alterations, shallow breathing, and urination difficulties. Open communication with health care providers can help manage side effects effectively. Initial opioid usage might induce sleepiness. Strategies to address this include gradual acclimatization, assessing other medications for contributing factors, dose adjustments, or changing to extended-release opioids. Opioids commonly lead to constipation. Countermeasures involve stool softeners, laxatives, or other interventions as suggested by health care professionals. Initial nausea and vomiting tend to subside over time. Allergic reactions might involve rashes or itching along with these symptoms. Abrupt cessation of opioids is discouraged. A tapered approach minimizes withdrawal symptoms.[20]