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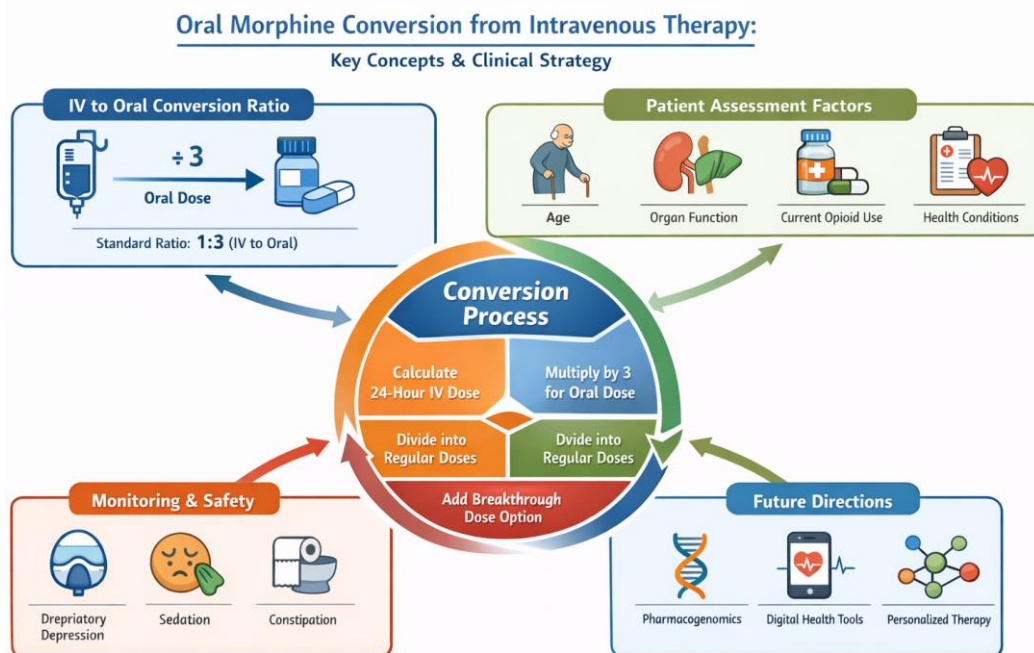
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**Article Information**Received: 22<sup>nd</sup> Dec., 2025Accepted: 26<sup>th</sup> Jan., 2026Published: 19<sup>th</sup> Feb., 2026**ORAL MORPHINE CONVERSION FROM INTRAVENOUS  
THERAPY: CLINICAL IMPLICATIONS AND PERSONALIZED  
DOSING STRATEGIES****Dr. Rehan Haider, PhD<sup>1</sup>, Dr. Zameer Ahmed, PhD<sup>2</sup>, Dr. Hina Abbas, FCPS<sup>2</sup>, Prof. Dr. Shabana Naz Shah, PhD<sup>3</sup>, Dr. Geetha Kumari Das, PhD<sup>4</sup> & Dr. Sambreen Zameer, PhD<sup>2</sup>**<sup>1</sup> Head of Marketing and Sales, Riggs Pharmaceuticals, Karachi; Department of Pharmacy, University of Karachi, Pakistan<sup>2</sup> Assistant Professor, Department of Pathology, Dow University of Health Sciences, Karachi, Pakistan<sup>3</sup> Professor of Pharmaceutical Chemistry, Faculty of Pharmacy, SBB Dewan University, Karachi, Pakistan<sup>4</sup> GD Pharmaceutical Inc.; OPJS University, Rajasthan, India**Email:** [rehan\\_haider64@yahoo.com](mailto:rehan_haider64@yahoo.com)<sup>1</sup>, [ahmed@duhs.edu.pk](mailto:ahmed@duhs.edu.pk)<sup>2</sup>, [hina.abbas@duhs.edu.pk](mailto:hina.abbas@duhs.edu.pk)<sup>2</sup>, [shabana.naz.shah@gmail.com](mailto:shabana.naz.shah@gmail.com)<sup>3</sup>, [dasgeetha342@gmail.com](mailto:dasgeetha342@gmail.com)<sup>4</sup>, [sambreenzameer@duhs.edu.pk](mailto:sambreenzameer@duhs.edu.pk)<sup>2</sup>**D.O.I:** 10.5281/zenodo.18770171**ABSTRACT**

*Morphine continues to serve as the primary opioid medicine that doctors use to treat both moderate and severe pain during acute medical situations and throughout ongoing medical treatment. Doctors use intravenous (IV) treatment to deliver fast pain relief, but permanent IV treatments become difficult to manage because of their high expenses and the need for patients to remain in one place and receive hospital treatment. The medical team requires immediate IV to oral morphine conversion because it enables continuous pain relief and allows patients to receive home treatment while enhancing their overall health. The narrative review compiles research about IV to oral morphine conversion, which focuses on the basic pharmacokinetic and pharmacodynamic principles, conversion ratio guidelines, and safety measures for individual patients. The researchers performed a complete literature search through PubMed, Scopus, and Web of Science to find articles that used keywords about morphine conversion and opioid analgesia and dose equivalence that were published from 2010 to 2025. The research included clinical trials together with observational studies and international guidelines that studied adult populations. The research findings establish an intravenous-to-oral morphine conversion ratio that approximates 1:3 because morphine exhibits limited oral bioavailability, which ranges between 30 and 40 percent. Healthcare professionals must create customized dose plans that use age, kidney function, liver function, opioid resistance, and existing health conditions to decrease the risk of respiratory depression and sedation, nausea, and constipation. The new methods, which use pharmacogenomic-based dosing and digital clinical decision-support tools, demonstrate potential to enhance conversion accuracy. The combination of evidence-based IV-to-oral morphine conversion and patient-specific evaluations enables healthcare professionals to provide secure and successful pain relief solutions that maintain continuous patient care while decreasing hospital needs and improving patient compliance.*

**Keywords:** *Morphine; Intravenous-to-Oral Conversion; Opioid Analgesia; Pain Management; Dose Equivalence; Personalized Medicine; Pharmacokinetics.*

## Graphical Structure



## INTRODUCTION

Morphine serves multiple medical fields as a standard treatment option, which provides relief from moderate to severe pain that occurs in postoperative situations, cancer-related cases, and palliative care settings [1,2]. Healthcare providers face rising expenses, which limit patient movement and increase the likelihood of developing catheter-related issues because they need to keep infusing morphine through intravenous methods for extended periods [3]. The process of switching patients from intravenous morphine to its oral form represents a fundamental step toward achieving continuous pain relief throughout their medical treatment.

The body metabolizes oral morphine through first-pass hepatic metabolism, which results in unpredictable bioavailability levels that range from 30% to 40%, thus requiring patients to take higher oral doses to experience the same pain relief effects as other medications [4–6]. Opioid dose conversion needs precise execution because improper conversion results in both insufficient pain relief and dangerous opioid side effects, which especially affect elderly individuals and patients with kidney or liver problems [7,8]. The review provides an overview of existing research and clinical protocols that explain how to convert patients from intravenous morphine to oral morphine while ensuring both practical application and patient safety.

## Introduction

The medical field uses morphine as an essential opioid analgesic to treat patients with moderate to severe pain in multiple clinical situations that include postoperative care, treating trauma, oncology, and palliative medicine needs [1,2]. The medical field uses morphine as a standard reference point to which all other analgesics are evaluated because of its effective performance, consistent drug effects, and widespread availability. Healthcare professionals prefer to use intravenous (IV) morphine in acute care situations because it delivers immediate pain relief, which they can control through precise dose adjustments for patients with intense or variable discomfort [3].

The practice of using IV morphine for extended periods creates multiple challenges that affect both practical operations and medical outcomes. The practice of continuous IV medication delivery raises health system expenses while disabling patients from moving freely and extending their time in medical facilities, and bringing dangers of using venous access, which include bloodstream infections and thrombophlebitis [3,4]. The process of moving patients from intravenous (IV) treatment to oral morphine treatment stands as a vital component of managing their pain, which especially applies to patients who need ongoing pain relief and will move to outpatient treatment or home care after their hospital stay.

The administration of oral morphine provides various advantages, which include simple usage and better patient comfort, greater independence, and decreased need for medical assistance [5]. The process of first-pass hepatic metabolism causes major interindividual differences in oral morphine bioavailability, which leads to different absorption patterns. Research studies have shown that the oral bioavailability of the drug falls within a range of 30% to 40%, which requires patients to take higher oral doses than they would need for intravenous treatment to reach the same level of pain relief [6–8]. The results of pain management will be impacted when practitioners overlook this difference in how drugs move through the body.

### **Research Methodology**

The research team conducted their literature review through narrative analysis, which used PubMed, Scopus, and Web of Science as their database sources to find studies published between 2010 and 2025. The researchers searched with the following terms: "intravenous to oral morphine conversion" and "opioid analgesia," "dose equivalence," and "pain management" [2,6]. The researchers included clinical trials and observational studies, and evidence-based guidelines that targeted adult patients as their qualifying publications. The researchers excluded studies that used non-morphine opioids or animal models or pediatric populations according to standard procedures for opioid research [9,10]. The relevant articles underwent screening to evaluate their clinical applicability, together with their consistency in reporting conversion ratios.

### **Key Findings from Reviewed Literature**

The literature studies show that intravenous to oral morphine conversion results in a standard ratio of 1:3, which corresponds to 30% to 40% of oral medication bioavailability [4,9,10]. Standard practice involves calculating the total 24-hour IV morphine dose, multiplying it by three to estimate the oral equivalent, and dividing the total into scheduled doses that occur every 4 to 6 hours [2,11]. Healthcare providers use short-acting oral morphine for breakthrough pain management, which requires 10 to 15 percent of a patient's total daily dose [12,13].

Elderly patients and people who experience renal or hepatic problems and those who have developed opioid dependence should receive dose modifications according to their specific needs [5,7,14]. The studies that researchers examined showed that accurate conversion procedures brought stable pain relief to patients, which enhanced their ability to move and reduced their hospital stay length while only causing mostly minor and easy-to-handle physical symptoms [8,15].

### **Results**

#### **Standard IV-to-oral conversion: 1:3 ratio**

Patients will receive oral medication through their next dosing window, which occurs every four to six hours and includes additional short-acting doses for emergencies.

The clinical advantages provide patients with uninterrupted pain relief, which enables them to move more freely while their hospital time decreases.

The safety profile shows that patients experience only minor side effects, which include nausea and constipation, while they face extremely low risks of encountering serious side effects.

The treatment plan requires changes for patients with kidney or liver dysfunction, for elderly individuals, or for patients who have developed tolerance to opioids.

**Table 1. Intravenous to Oral Morphine Conversion Guide**

IV Morphine Dose (mg/24h)	Oral Morphine Equivalent (mg/24h)	Dosing Schedule	Breakthrough Dose (10–15% total daily dose)	Clinical Notes
5	15	5 mg PO q4h	1.5–2 mg PO q2h PRN	Standard adult patient
10	30	10 mg PO q4h	3–4 mg PO q2h PRN	Monitor renal function
15	45	15 mg PO q4h	4.5–6 mg PO q2h PRN	Adjust for the elderly
20	60	20 mg PO q4h	6–9 mg PO q2h PRN	Opioid-tolerant patient
30	90	30 mg PO q4h	9–13 mg PO q2h PRN	Monitor for sedation/respiratory depression

**Notes:**

- Conversion ratio: IV: oral = 1:3
- Adjust dose for organ impairment, age, and tolerance
- Short-acting morphine is recommended for breakthrough pain

**Figure 1. Conceptual Flow of IV-to-Oral Morphine Conversion**



**Conceptual Flow of IV-to-Oral Morphine Conversion (Sources: 1–6).**

**Discussion**

The process of converting intravenous morphine to oral morphine creates better treatment results because it allows medical staff to monitor patients more effectively during their transition to home-based pain relief treatments. The combination of standard conversion procedures with personalized patient evaluation methods decreases the possibility of insufficient medication

delivery and dangerous opioid effects. The elderly population and patients who suffer from kidney problems need healthcare providers to observe their drug dosage increase needs while observing their medical condition.

The implementation of electronic prescribing systems together with digital monitoring platforms has resulted in improved medication dosing accuracy and enhanced protection of patient safety. Future research should focus on pharmacogenomic approaches and predictive modeling to refine individualized opioid dosing strategies.

### Conclusion

The safe and effective execution of the intravenous-to-oral morphine conversion operation requires evidence-based protocols and individual patient assessment. The standardized conversion ratios combined with personalized clinical evaluation provide a method that achieves better pain relief results and decreases side effects while supporting effective ongoing pain treatment.

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### Author Contributions

All authors contributed substantially to the conception, literature review, analysis, drafting, and critical revision of the manuscript. All authors have read and approved the final version.

### Conflict of Interest

The authors declare no conflict of interest.

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