
Converting Among Routes and Formulations of the Same Opioid

INTRODUCTION

In Chapter 1, we discussed the reasons why a patient may need to be switched from one opioid to another. Frequently, a patient's pain is controlled on his or her current opioid, but he or she requires, or would benefit from, a different dosage formulation or route of administration. For example, approximately 70% of patients with advanced illness will require a nonoral route of administration prior to death due to difficulty swallowing.¹ Conversely, patients who receive parenteral opioid therapy postprocedure or to control a pain crisis would likely prefer the convenience of oral opioid therapy as soon as possible. The purpose of this chapter is to learn how to switch a patient between routes of administration or dosage formulations using the same opioid.

OBJECTIVES

After reading this chapter and completing all practice problems, the participant will be able to:

1. List the advantages and disadvantages of potential routes of administration for opioid analgesics.
2. Define *bioavailability* and explain factors that influence medication bioavailability such as the first-pass effect, solubility, gastrointestinal (GI) influences, and drug formulation considerations.
3. Given an actual or simulated patient with a complaint of pain, convert between dosage formulations and routes of administration for the same opioid (e.g., morphine, hydromorphone, oxycodone, and oxymorphone).

ROUTES OF ADMINISTRATION

As you can see from Table 2-1, most opioids are commercially available in a variety of dosage formulations, giving us flexibility in opioid administration. Morphine, for example, can be given by the oral route (immediate-release tablets, capsules, and oral solution, and prolonged-release tablets and capsules), rectal route (rectal suppositories and rectal insertion of long-acting tablets [not an FDA-approved route of administration]), parenterally (intravenous [IV], subcutaneous [sub-Q], or intramuscular [IM]), or via the neuroaxis (epidural or intrathecal routes; to be discussed in Chapter 7). Many short- and long-acting opioid tablets and capsules are formulated as abuse-deterrent formulations. ***Let's consider route of administration and formulation-specific issues that guide dosing equivalency considerations.***

Oral

Oral dosage formulations are preferred when feasible and effective, particularly for the management of chronic pain. Oral medications are usually cost effective, convenient,

Table 2-1
Opioid Formulations

Opioid	IR Oral Tablet or Capsule	CR Tablet or Capsule	Abuse Deterrent IR or CR Tablet or Capsule	Oral Solution, Suspension, or Elixir	Sublingual Tablet or Solution	Rectal Suppository	Injectable	Transdermal	Transmucosal*	Other
Buprenorphine					X		X	X	X	X**
Codeine	X			X						
Codeine plus nonopioid	X			X						
Fentanyl					X		X	X	X	
Hydrocodone		X	X							
Hydrocodone plus nonopioid	X			X						
Hydromorphone	X		X	X		X	X			
Methadone	X			X			X			
Morphine	X	X	X	X		X	X			
Oxycodone	X		X	X			X***			
Oxycodone plus nonopioid	X			X						
Oxymorphone	X	X					X			
Tapentadol	X	X								
Tramadol	X	X		X			X***			

*Transmucosal includes buccal, sublingual, and intranasal administration.

**Probuphine subcutaneous implant.

***Not available in the U.S.

IR = immediate-release; CR = controlled-release.