

# OPIOIDS WITH ABUSE DETERRENT PROPERTIES (Part 1 of 2)

Generic	Brand	Form	Abuse Deterrent Mechanism	Special Considerations
buprenorphine HCl + naloxone	<b>Suboxone</b>	sublingual film	Naloxone, a potent opioid antagonist is the deterrent component of Suboxone that is not sublingually absorbed and has minimal oral absorption. If injected parenterally, opioid-tolerant patients will experience withdrawal signs and symptoms thus deterring abuse.	<p><b>Special risk groups:</b> Opioid naive. Elderly. Debilitated. Hepatic impairment. &lt;16yrs: not established. Neonatal withdrawal. Pregnancy (Cat.C). Nursing mothers: not recommended.</p> <p><b>Warnings/Precautions:</b> Abuse potential. Increased risk of respiratory depression. COPD or cor pulmonale. Increased intracranial pressure. Head injury. Orthostatic hypotension. Biliary tract dysfunction. Acute abdominal conditions. Caution in hypothyroidism, adrenal insufficiency (eg, Addison's disease), CNS depression coma, toxic psychosis, prostatic hypertrophy or urethral stricture, delirium tremens, kyphoscoliosis. Acute alcoholism. Hepatitis. Jaundice. Withdrawal symptoms.</p>
hydromorphone HCl	<b>Exalgo</b>	ext-rel tab	It is crush and extraction resistant. Utilizes the tamper-resistant technology, OROS Push-Pull osmotic delivery system which releases hydromorphone at a controlled rate over an extended period of time.	<p><b>Special risk groups:</b> Elderly. Cachectic. Debilitated. Severe renal or hepatic impairment. ≤17yrs: not established. Neonatal withdrawal syndrome. Pregnancy (Cat.C). Labor and delivery, nursing mothers: not recommended.</p> <p><b>Contraindications:</b> Opioid non-tolerant. Significant respiratory depression. Acute or severe asthma. Sulfite allergy. Known or suspected paralytic ileus. GI or GU obstruction or stricture.</p> <p><b>Warnings/Precautions:</b> Abuse potential. Increased risk of fatal respiratory depression. Significant COPD or cor pulmonale. Orthostatic hypotension. Increased intracranial pressure. Head injury. Avoid if impaired consciousness or coma. Biliary tract disease. Acute pancreatitis. Convulsive disorders. Avoid abrupt cessation.</p>
oxycodone HCl	<b>Oxecta</b>	immediate-release tab	Utilizes AVERSION technology, a combination of active and inactive ingredients that provide abuse deterrent features. If dissolved for IV inj, a viscous gelatinous mixture will form trapping oxycodone inside, thus making it not suitable for injection. If crushed and snorted, inactive ingredients will cause nasal discomfort.	<p><b>Special risk groups:</b> Elderly. Debilitated. Severe renal or hepatic impairment. &lt;18yrs: not established. Neonates may experience withdrawal or respiratory depression. Pregnancy (Cat.B). Labor &amp; delivery, nursing mothers: not recommended.</p> <p><b>Contraindications:</b> Respiratory depression in an unmonitored setting or in the absence of resuscitative equipment. Paralytic ileus. Acute or severe bronchial asthma or hypercarbia.</p> <p><b>Warnings/Precautions:</b> Abuse potential. Risk of respiratory depression. COPD or cor pulmonale. Patients with decreased respiratory reserve (eg, severe kyphoscoliosis). Head injury. Increased intracranial pressure. CNS depression. Orthostatic hypotension. Circulatory shock. Toxic psychosis. Acute alcoholism. Delirium tremens. Acute abdominal conditions. Biliary tract disease. Acute pancreatitis. GI or GU obstruction. Addison's disease. Hypothyroidism. Prostatic hypertrophy. Urethral stricture. Convulsive disorder. Avoid abrupt cessation.</p>

*(continued)*

## OPIOIDS WITH ABUSE DETERRENT PROPERTIES (Part 2 of 2)

Generic	Brand	Form	Abuse Deterrent Mechanism	Special Considerations
oxycodone HCl (continued)	<b>Oxycontin</b>	controlled-release tab	Utilizes INTAC technology consisting of a specific manufacturing process and excipients to resist crushing, forms a gel that cannot be easily injected or snorted if dissolved in solutions, and to resist extraction of active drug via solvents.	<b>Special risk groups:</b> Elderly. Cachectic. Debilitated. Renal or hepatic impairment. <18yrs: not established. Neonatal withdrawal syndrome. Pregnancy (Cat.B). Labor & delivery, nursing mothers: not recommended. <b>Contraindications:</b> Significant respiratory depression. Acute or severe bronchial asthma in an unmonitored setting or in the absence of resuscitative equipment. Paralytic ileus or GI obstruction. <b>Warnings/Precautions:</b> Abuse potential. Life-threatening respiratory depression; monitor during initiation and titration. COPD or cor pulmonale. Orthostatic hypotension. Circulatory shock. Head injury. Increased intracranial pressure. Avoid in impaired consciousness, coma. Difficulty swallowing. Underlying GI disorders (eg, esophageal or colon cancer with a small GI lumen). Biliary tract disease. Acute pancreatitis. Convulsive disorders. Avoid abrupt cessation.
oxymorphone HCl	<b>Opana ER</b>	ext-rel tab	Utilizes INTAC technology consisting of a specific manufacturing process and excipients to resist crushing, form into a gel that cannot be easily injected or snorted if dissolved in solutions, and to resist extraction of active drug via solvents.	<b>Special risk groups:</b> Elderly. Cachectic. Debilitated. Renal or hepatic impairment. <18yrs: not established. Neonatal withdrawal syndrome. Pregnancy (Cat.C), labor & delivery, nursing mothers: not recommended. <b>Contraindications:</b> Significant respiratory depression. Acute or severe bronchial asthma or hypercarbia. Paralytic ileus. Moderate or severe hepatic impairment. <b>Warnings/Precautions:</b> Abuse potential. Life-threatening respiratory depression; monitor during initiation and titration. COPD or cor pulmonale. Severe hypotension. Circulatory shock. Head injury. Increased intracranial pressure. Avoid in impaired consciousness, coma, GI obstruction. Biliary tract disease. Acute pancreatitis. Convulsive disorders. Avoid abrupt cessation.

### NOTES

**Abuse-deterrent formulations can be categorized as follow:**

**Agonist/Antagonist combinations** – An opioid antagonist can be added to interfere with, reduce, or defeat the euphoria associated with abuse. The antagonist can be sequestered and released only upon manipulation of the product. For example, a drug product may be formulated such that the substance that acts as an antagonist is not clinically active when the product is swallowed but becomes active if the product is crushed and injected or snorted.

**Aversion** – Substances can be combined to produce an unpleasant effect if the dosage form is manipulated prior to ingestion or a higher dosage than directed is used.

**Delivery System (including depot inj forms and implants)** – Certain drug release designs or the method of drug delivery can offer resistance to abuse.

**Physical/Chemical barriers** – Physical barriers can prevent chewing, crushing, cutting, grating, or grinding. Chemical barriers can resist extraction of the opioid using common solvents like water, alcohol, or other organic solvents. Physical and chemical barriers can change the physical form of an oral drug rendering it less amenable to abuse.

**Prodrug** – A prodrug that lacks opioid activity until transformed in the GI tract can be unattractive for IV inj or intranasal routes of abuse.

**Combination** – Two or more of the above methods can be combined to deter abuse.

### REFERENCES

Exalgo. Zalicus website. Accessed January 2014. <http://www.zalicus.com/product-pipeline/exalgo.asp>  
 AVERSION Technology. Acura Pharmaceuticals website. Accessed January 2014. <http://acurapharm.com/platforms/aversion-technology/>  
 Welcome to INTAC. Grunenthal Group website. Accessed January 2014. <http://www.intac.grunenthal.com/>  
 Guidance for Industry Abuse-Deterrent Opioids-Evaluation and Labeling. FDA. January 2013. Accessed December 2013. <http://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/UCM334743.pdf>  
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