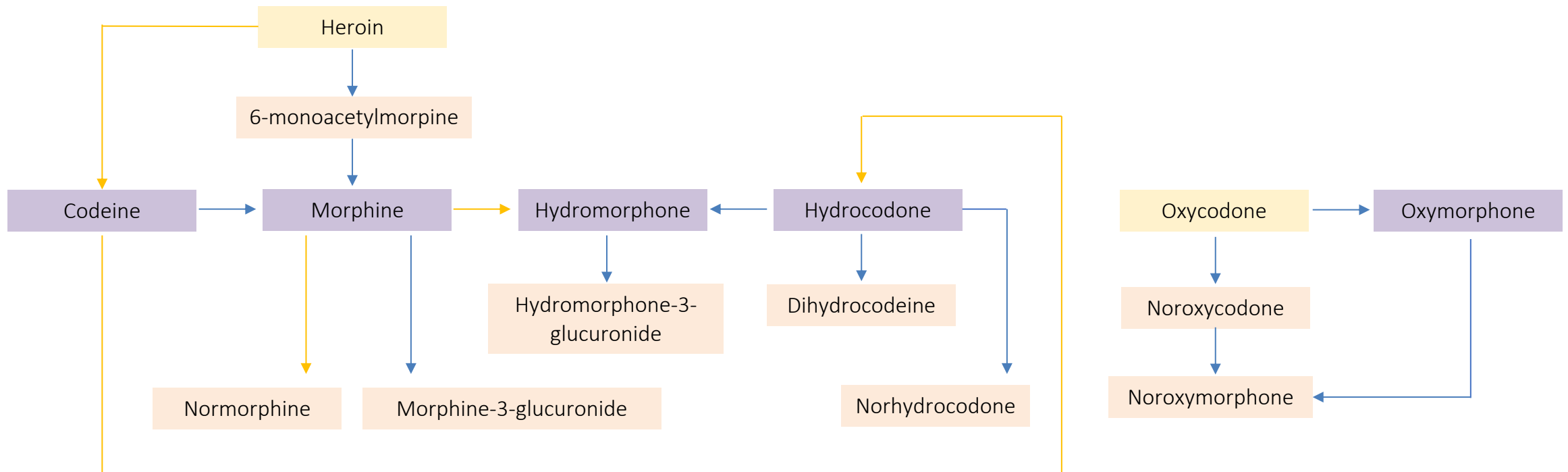


# Opioid metabolic pathways



# Parent drugs with associated potential analytes\*

<b>Heroin</b>
Codeine
Morphine (± glucuronide)
Hydromorphone (± glucuronide)
Hydrocodone
Norhydrocodone
Dihydrocodeine

<b>Codeine</b>
Morphine (± glucuronide)
Hydromorphone (± glucuronide)
Hydrocodone
Dihydrocodeine

<b>Morphine</b>
Morphine (± glucuronide)
Hydromorphone (± glucuronide)

<b>Hydrocodone</b>
Norhydrocodone
Dihydrocodeine
Hydromorphone (± glucuronide)

<b>Hydromorphone</b>
Hydromorphone (± glucuronide)

<b>Oxycodone</b>
Noroxycodone
Noroxymorphone
Oxymorphone

<b>Oxymorphone</b>
Noroxymorphone

<b>Fentanyl</b>
Norfentanyl

<b>Methadone</b>
EDDP

<b>Buprenorphine</b>
Norbuprenorphine

<b>Suboxone (buprenorphine + naloxone)</b>
Buprenorphine
Norbuprenorphine
Naloxone
Noroxymorphone (nornaloxone)

# Pharmaceutical manufacturing impurities

If an unexpected opioid or opioid metabolite is present in patient urine, it is possible that it is impurity produced from the manufacturing process

Drug	Impurity	Allowable Limit (%)
Hydrocodone	Codeine	0.15
Hydromorphone	Morphine	0.15
	Hydrocodone	0.10
Morphine	Codeine	0.50
Oxycodone	Hydrocodone	1.00
Oxymorphone	Hydrocodone	0.15
	Oxycodone	0.50