

ECHO IDAHO

Cordant
Health Solutions™



ECHO Idaho: Opioid Addiction and Treatment

Interpreting Drug Test Results

10/11/18

Randy Saager, Director of Operations
Cordant Health Solutions, Tacoma, WA

Disclosures

- Presenter is a current employee of Cordant Health Solutions, a Toxicology Laboratory in Tacoma Washington

Learning Objectives

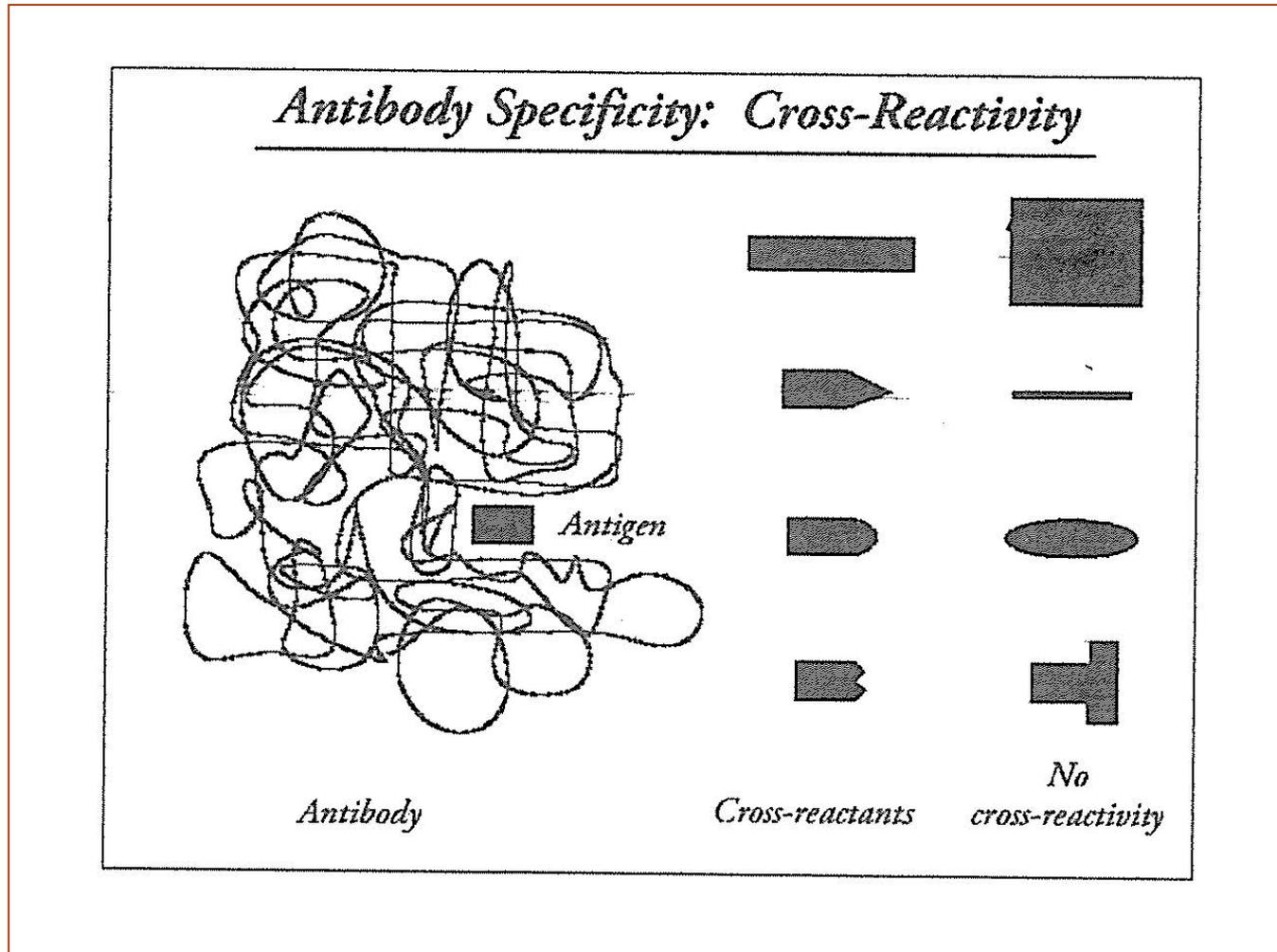
- Screening vs. Confirmation Methodologies
- Opiate Metabolism
- Windows of Detection

Interpretation of drug test results

Screening Test

- **First line of testing**
 - EIA (Enzyme Immunoassay)
- **Sensitive but not specific**
 - Drugs (methadone)
 - Drug metabolites (THC-COOH, Benzoyllecgonine)
 - Drug family (opiates, benzodiazepines)
- **Identify negative specimens**
- **False positive results do occur**
 - Important to confirm presumptive positive results

Immunoassay Cross-reactivity



Point of care vs. in-lab screening

- Similar mechanism of action
- Benefits of Point of Care
 - Immediate results
 - Inexpensive preliminary testing method
- Cons of point of Care
 - Inconsistent cutoffs
 - Presumptive results
 - Limited testing offering

Interpretation of drug test results

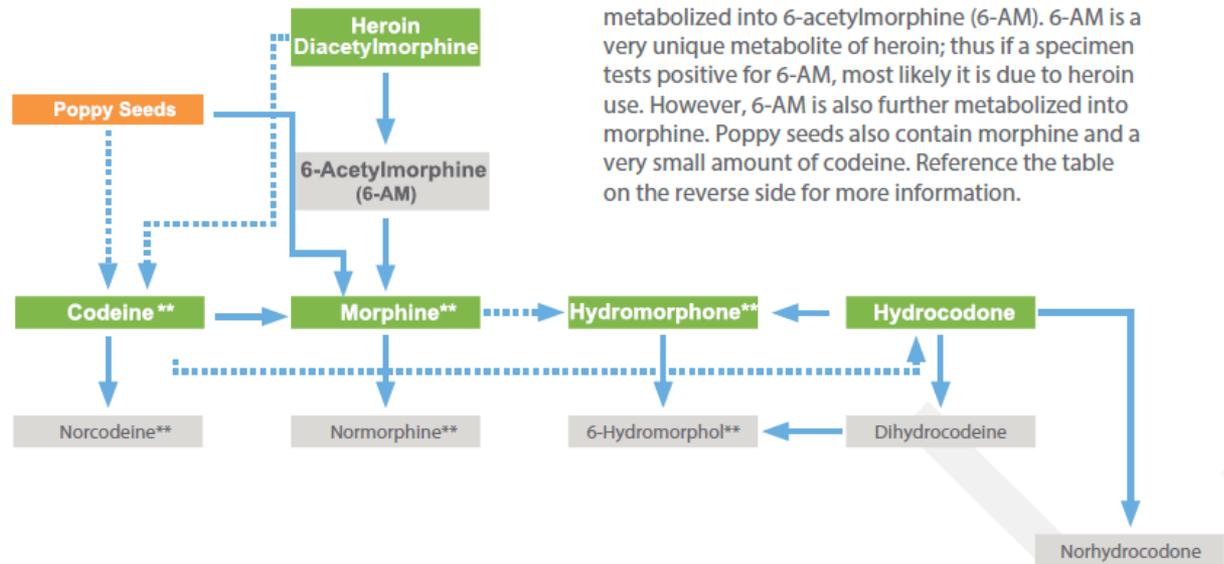
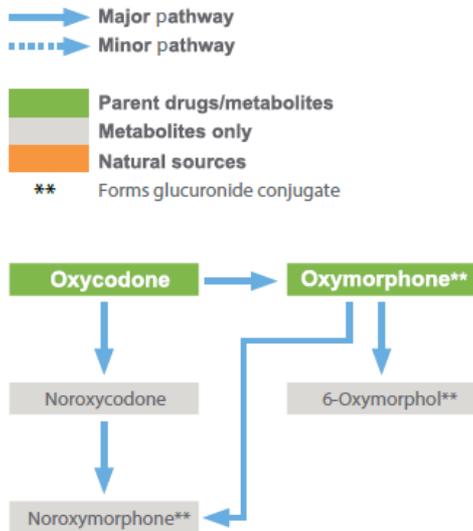
Confirmation Testing

- Different physical-chemical testing method
- Gas chromatography/mass spectrometry (GC/MS)
- Liquid Chromatography/tandem mass spectrometry(LC-MS/MS)
 - Sensitive and specific
 - False Positives are extremely rare
 - Legally defensible

OPIOID METABOLISM

This reference chart details the metabolism of several key opioids to aid in the interpretation of toxicology testing results. An arrow pointing towards a specific drug/metabolite indicates a potential source, while an arrow pointing away from a specific drug/metabolite indicates a metabolic product.

For example, pharmaceutical morphine, codeine, heroin and poppy seeds are all possible sources of a morphine positive test result. Approximately 15-20% of codeine is metabolized into morphine. Heroin itself has an extremely short half life; it is metabolized into 6-acetylmorphine (6-AM). 6-AM is a very unique metabolite of heroin; thus if a specimen tests positive for 6-AM, most likely it is due to heroin use. However, 6-AM is also further metabolized into morphine. Poppy seeds also contain morphine and a very small amount of codeine. Reference the table on the reverse side for more information.



Windows of detection

DRUG CLASS & DRUG	COMMON PRESCRIPTION BRAND AND NAME	DRUG METABOLITE	DETECTION TIMES	
-------------------	------------------------------------	-----------------	-----------------	--

Amphetamines/ Stimulants			Urine (Days)	Oral Fluid (Hours)
Amphetamine	Adderall [®] , Benzedrine [®] , Dexedrine [®]	Amphetamine	3-5	Up to 36
Methamphetamine	Desoxyn [®] , Vick's [®] Inhaler, Metabolite of Didrex [®]	Methamphetamine, Amphetamine (metabolite)	3-5	Up to 36
Methylphenidate	Ritalin [®] , Concerta [®] , Metadate, Methylin [®] , Focalin	Ritalinic Acid (metabolite)	Up to 2	Up to 36

Anticonvulsants			Urine (Days)	Oral Fluid (Hours)
Gabapentin	Gabaron [®] , Neurontin [®]	Gabapentin	1-2	Up to 36
Pregabalin	Lyrica [®]	Pregabalin	1-3	Up to 36

Barbiturates			Urine (Days)	Oral Fluid (Hours)
Amobarbital	Amytal, Tuinal	Amobarbital	4-6	Up to 36
Butalbital	Fiorinal [®] , Fioricet [®]	Butalbital	4-6	Up to 36
Pentobarbital	Nembutal [®]	Pentobarbital	4-6	Up to 36
Phenobarbital	Belladonna [®] , Luminal [®]	Phenobarbital	Up to 16	Up to 36
Secobarbital	Seconal [®]	Secobarbital	4-6	Up to 36

Windows of detection

DRUG CLASS & DRUG	COMMON PRESCRIPTION BRAND AND NAME	DRUG METABOLITE	DETECTION TIMES	
Benzodiazepines			Urine (Days)	Oral Fluid (Hours)
Alprazolam	Xanax [®] , Niravam, Xanor [®] , Tafil [®] , Alprolox [®]	Alpha-hydroxyalprazolam	2-4	Up to 36
Chlordiazepoxide	Librium [®] , Tropium [®] , Risolid [®] , Clipoxide [®]	Nordiazepam, Oxazepam, Demoxepam	2-4	Up to 36
Clonazepam	Klonopin [®] , Rivotril [®]	7-aminoclonazepam	2-4	Up to 36
Diazepam	Valium [®] , Apzepam [®] , Vival [®] , Apozeepam [®]	Oxazepam, Nordiazepam, Temazepam	2-4	Up to 36
Flunitrazepam	Rohypnol [®] , Fluscand [®]	7-aminoflunitrazepam	2-4	Up to 36
Flurazepam	Dalmadorm [®] , Dalmane [®]	Desalkylflurazepam, Hydroxyethylflurazepam	2-4	Up to 36
Lorazepam	Ativan [®] , Temesta [®] , Lorabenz [®]	Lorazepam	5-7	Up to 36
Medazepam	Nobrium [®]	Oxazepam	2-4	Up to 36
Midazolam	Versed [®] , Dormicum [®] , Hypnovel [®] , Flormidal [®] , Dormonid [®]	1-hydroxymidazolam	2-4	Up to 36
Oxazepam	Serax [®] , Seresta [®] , Serepax [®] , Sobril [®] , Vapen [®] , Opamox [®] , Oxascand [®] , Vaben [®]	Oxazepam	2-4 *	Up to 36
Temazepam	Restoril [®] , Normison [®] , Euhypnos [®]	Temazepam, Oxazepam	1-4 *	Up to 36
Triazolam	Halcion [®] , Novodorm [®] , Songar [®]	Alpha-hydroxytriazolam	2-4	Up to 36

*Longer as a metabolite of Diazepam or Chlordiazepoxide

Windows of detection

DRUG CLASS & DRUG	COMMON PRESCRIPTION BRAND AND NAME	DRUG METABOLITE	DETECTION TIMES	
Drugs of Abuse			Urine (Days)	Oral Fluid (Hours)
Bath Salts	N/A	Various		Up to 36
Cocaine	N/A	Benzoyllecgonine (metabolite)	1-2	Up to 36
Heroin	N/A	6-monoacetylmorphine (metabolite), Morphine (metabolite)	1-3	Up to 36
Marijuana	Marinol®	Tetrahydrocannabinol (THC)	1-30	Up to 36
MDMA (Ecstasy)	N/A	MDMA, MOA (metabolite)	3-5	Up to 36
Nicotine	N/A	Cotinine		Up to 36
Phencyclidine (PCP)	N/A	Phencyclidine (PCP)	3-7	Up to 36
Spice	N/A	Various		Up to 36

Windows of detection

DRUG CLASS & DRUG		COMMON PRESCRIPTION BRAND AND NAME	DRUG METABOLITE	DETECTION TIMES	
				Urine (Days)	Oral Fluid (Hours)
Opioids					
Buprenorphine	Buprenex [®] , Suboxone [®] , Subutex [®]	Buprenorphine, Norbuprenorphine (metabolite)	2-4	Up to 36	
Codeine	Tylenol [®] 3, Tylenol [®] 4, Tylenol [®] 5	Codeine, morphine (metabolite)	2-3	Up to 36	
Fentanyl	Actiq [®] , Fentora [™] , Duragesic [®]	FentinyI, Norfentanyl (metabolite)	1-2	Up to 36	
Hydrocodone	Vicodin [®] , Lorcet [®] , Lortab [®] , Hycodan [®] , Norco [®] , Vicoprofen [®] , Anexsia [®] , Bekaid [®] , Hycodan [®] , Xodol [®] , Dicodid [®]	Hydrocodone, Hydromorphone (metabolite)	2-3	Up to 36	
Hydromorphone	Dilaudid [®] , Exalgo [®] , Hymorphan [®] , Laudicon [®] , Novolaudin [®] , Palladone [®]	Hydromorphone	2-3	Up to 36	
Meperidine	Demerol [®] , Algil [®] , Alodan [®] , Centrolgin [®] , Dispadol [®] , Dolantin [®]	Meperidine, Normeperidine (metabolite)	1-2	Up to 36	
Methadone	Dolophine [®] , Methadose [®]	Methadone, EDOP (metabolite)	2-4	Up to 36	
Naloxone	Narcan, Suboxone (combo)	Naloxone	2-4	Up to 36	
Oxycodone	Tylox [®] , Percocet [®] , Percodan [®] , OxyContin [®] , OxyIR [®] , Roxicodone [®]	Oxycodone, oxymorphone	2-3	Up to 36	
Oxymorphone	Opana [®] , Opana ER [®] , Numorphan [®]	Oxymorphone	2-3	Up to 36	
Propoxyphene	Darvocet [®] , Darvon [®]	Propoxyphene, Norpropoxyphene (metabolite)	Up to 7	Up to 36	
Tapentadol	Nucynta	Tapentadol		Up to 36	
Tramadol	Ultram [®] , Ultracet [®]	Tramadol, O-desmethyltramadol (metabolite)		Up to 36	

Key Points

- Immunoassay screening should be used as a preliminary presumptive test
- Detection of metabolites is crucial in monitoring compliance

References

- Disposition of Toxic Drugs and Chemicals in Man. Baselt.
- Pain Management Testing Reference. White