BEATING THE DRUG TEST
A Closer Look
TOPICS OF DISCUSSION

- History of Drug Testing
- Adulteration
- Substitution
- Observed Collections
- New Validity Testing
- Flushing
- Internet Resources
- Forgery
HISTORY OF DRUG TESTING

And Subversion
EARLY YEARS

- US Military made the first big push
  - Troops in Vietnam in late 1960s and 1970s
    o Easy to obtain drugs like marijuana and heroin
  - Drug testing program was implemented
    o Immunoassay and TLC techniques
      - Susceptible to false positives

- Attitude during this time period was fairly liberal regarding drug use.
- In the late 1970s & 1980s attitudes began to change
1982 “WAR ON DRUGS”

- President Ronald Reagan
- 1986 Reagan signed Executive Order to establish Federal employee drug testing programs
- Initial work-place drug testing
  - Performed by clinical laboratories
  - Using immunoassay (susceptible to false-positives)
  - Confirmation testing by TLC and GC (relatively non-specific)
  - Chain of custody lacking
- 1988 “Mandatory Guidelines for Federal Workplace Drug-Testing” (DHHS)
  - Program was administered by NIDA
- 1992 Program responsibility transferred to SAMHSA
TLC – THIN LAYER CHROMATOGRAPHY

a – 6-AM
b – Codeine
c - Morphine
SUBVERSION

• First evaluation of sample adulteration was in 1985
  ▪ Cannabinoid excretion and substances that might affect detection
• Published article in 1988 looking at various products and effect on EIA testing
  o Vinegar, salt, bleach, lemon juice, cleaners, golden-seal tea, hand soap, Visine eye drops
• Dilution and substitution method also used
• Commercial products made available
  ▪ UrinAid (glutaraldehyde) – adulteration
  ▪ In vivo dilution products
  ▪ Products were initially marketed in magazines
  ▪ Then smoking shops, supplement retailers, natural food stores and now the internet.
VALIDITY TESTING

• 1988 guidelines did not have specific requirements for validity testing, it was up to the testing laboratory

• 1993 specific guidelines issued for reporting diluted specimens (creatinine and specific gravity)

• 2001 additional guidelines were issued for validity testing and criteria for determining a substituted or adulterated sample
HHS VALIDITY GUIDELINES
DON’T BREAK THE LAW

- State Laws Addressing Workplace Drug Test Subversion
- AK, FL, IL, KY, LA, MD, NC, NE, NJ, OK, PA, SC, TX, VA
- [2010 Arkansas Code](#)
ADULTERATION

- Nationwide product distribution
  - Internet
  - Smoke shops or “head shops”
  - Mail order / magazine advertisements

- Offer next-day delivery with money-back guarantees

- Disseminate misinformation to perpetuate myths about drug testing

- Make exaggerated and unsubstantiated claims as to the efficacy of their products
HOW IT WORKS

- Physical Tampering – Additives
- Destroy the drug
- Interfere with the test mechanism causing a negative result

Commercial Products
- Stealth: peroxidase and peroxide
- Klear: nitrite
- Clean ADDIT-ive: glutaraldehyde
- Urine Luck: pyridinium chlorochromate

Household Product
- Bleach, Draino, etc.
EFFECT OF ADULTERANTS ON IMMUNOASSAY RESULTS

### Table 3. Effects of Adulterants in Urine on Immunoassay Results

<table>
<thead>
<tr>
<th>Adulterant</th>
<th>Amp</th>
<th>Barb</th>
<th>Bzd</th>
<th>Coc</th>
<th>THC</th>
<th>Opi</th>
<th>PCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>NaCl</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Base Buffer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lime-A-Way or Liquid Plumber</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vinegar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bleach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drano</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detergent/soap</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visine (benzalkonium Cl)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Golden Seal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urinald (glutaraldehyde)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Klear (KNO₃)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DETOX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TEST CLEAN</td>
<td>EFR</td>
<td>EFR</td>
<td>EFR</td>
<td>EFR</td>
<td>EFR</td>
<td>EFR</td>
<td>EFR</td>
</tr>
</tbody>
</table>

E = EMIT; F = FPIA; C = CEDIA; R = RIA; K = KIMS.

Underlined abbreviations indicate a false-positive result.

Abbreviations without underlines indicate a false-negative result.

Some of data are from a 1998 personal communication from Sal Salamone, OraSure Technologies, Inc., Bethlehem, PA, and Yale Caplan, Baltimore, MD.
# THE ADULTERANT INDUSTRY

<table>
<thead>
<tr>
<th>Physical Adulterants</th>
<th>Ingested Compounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acids</td>
<td>Vinegar</td>
</tr>
<tr>
<td>Surfactants (Soaps)</td>
<td>Pickle Juice</td>
</tr>
<tr>
<td>Fixatives (Glues)</td>
<td>Bleach</td>
</tr>
<tr>
<td>Oxidants</td>
<td>Drano</td>
</tr>
<tr>
<td></td>
<td>Water Pills</td>
</tr>
<tr>
<td></td>
<td>Detox Drinks</td>
</tr>
<tr>
<td></td>
<td>Herbal Teas &amp; Supplements</td>
</tr>
</tbody>
</table>
SPECIMEN SUBSTITUTION

- Dehydrated urine
- Non-urine liquids
- Also used in devices
DEVICES

- Concealed beneath clothing
- Utilizes drug-free urine
- Maintains proper urine temperature with heating pads or digital heating packs
- Typically sold to males; may include prosthetic penis
- Typically very expensive / single use only
CONFISCATED DEVICES

The Whizzinator
CONFISCATED DEVICES

DIY Devices
CONFISCATED DEVICES

Female Devices
OBSERVED COLLECTIONS
URINE COLLECTION

- Client’s photo ID verified and signs log book. CCF is initiated.
- ID verified by CST at restroom
- Restroom for visual observation
- CST verifies CCF with client after sample collected
- Security seal applied in client’s presence
- Client signs security seal on container & CCF
- Sample placed in secure storage
VISUALLY MONITORED COLLECTION

- One way mirror to view collection
- Bluing agent in toilets
- No hot water
- No chemicals in area
- Remove excessive clothing
- No items allowed in restroom
VISUALLY MONITORED COLLECTION
COLLECTION INSTRUCTIONS

Male

1. Stand in front of the urinal, angled, so the monitor has a full frontal view.
2. Pants and underwear must be lowered to your mid-thigh. The monitor must have a full frontal view.
3. Your shirt has to be pulled up to your belly button.
4. Monitor needs to have a clear view at all times.
5. Monitor must see the urine stream or your sample will not be accepted.
6. You have to fill the bottle at least halfway full.
7. You will be provided 3 minutes to produce your sample, if you are not able to produce your sample you must wait a minimum of 30 minutes to retry.
8. Do not bring the bottle to the sink or rinse off bottle in the sink. Samples are to be handed immediately to the monitor (and chain of custody signed) prior to washing your hands.
9. Your sample will not be accepted if you have a bowel movement.
10. The monitor will not accept your sample if you are not following the testing procedures.
COLLECTION INSTRUCTIONS

Female

1. Pants and underwear must be lowered to your ankles and you must sit back on the toilet with your knees apart for a full view.
2. Please urinate into the cup and pour it from the cup into the bottle.
3. Fill your bottle if possible, must be at least half full to be accepted.
4. Hold the cup from the bottom; your fingers can not touch the top of the cup or go inside of the cup at any time.
5. Monitor must see your cup and bottle at all times.
6. Monitor must see your urine stream or your sample will not be accepted.

Remaining rules are same as male.
Tampons must be removed prior to collection or sample will not be accepted.
NEW VALIDITY TESTING

Future Options?
IDENTIFYING SYNTHETIC URINE

• Research published in March 2017 (J. of Analytical Toxicology)
• Substances found in synthetic urine
  ▪ Benzisothiazolinone (BIT)
  ▪ Ethylene glycols
• Additional compounds identified in urine metabolome
  ▪ 3-methylhistidine
  ▪ Normetanephrine
  ▪ Urobilin
  ▪ Uric acid
• Compounds identified by LC-MS-MS
• Perhaps future screening tests will be developed
UR CODE MARKER

• Product developed by Marker Test Diagnostics
• Combination of polyethylene glycols in a soft gel capsule
  ▪ Client consumes the capsule
  ▪ Quickly cleared through the kidney
  ▪ 30 minutes after consuming a urine sample can be collected without supervision
• Testing laboratory identifies unique combination using LC-MS-MS
• Issues
  ▪ Client weary of taking capsule
  ▪ Laboratory must be equipped to test for marker
  ▪ Increase cost of drug testing
DILUTED

In vivo dilution is the most common method employed to circumvent a drug test.

Principle:

The ingestion of copious amounts of fluids prior to providing a urine sample in order to induce polyuria and ultimately lower the concentration of drugs in the bladder below the detectable limit.
EFFECTS OF WATER LOADING

Urine Production Rate After Water Loading

Urine Production (mL/min)

Time (min)

1 Liter
2 Liters

Beating the Drug Test

2017

33
DIURETICS

- Natural diuretics are natural foods and herbs that induce the removal of excess fluids in the body by increasing urination.

- Caffeine, fruits and vegetables, fruit juices, some herbs like green tea.

- Diuretic drugs treat edema caused by disorders of the heart, kidneys, liver or lungs. They are used commonly in treatment of hypertension.
INGREDIENTS IN DETOX DRINK

- Herbal Clean QCarbo32 Ingredients
  - Herbs
  - Extracts
  - Vitamins
A CLOSER LOOK

- Detox Drink
INTERNET RESOURCES
CONFLICTING INFORMATION

• Baking Soda...Does it Really Work?

• What do the "experts" say?
15 BEST METHODS TO PASS A URINE DRUG TEST

• I'm gonna pass!!!
PUTTING THE MYTH TO THE TEST

• CERTO/Sure Jell/Fruit Pectin

• **Certo Drug Test Instructions:**
  ▪ Stop Using all toxins immediately
  ▪ Drink at least a gallon of water a day to stay hydrated
  ▪ Mix 1 Packet of Certo with a Gallon of water and drink night before urinalysis
  ▪ Drink plenty of water day of test
  ▪ 1-2hr before Mix one packet of Certo with 32oz lemon Gatorade
  ▪ You should be free of toxins for up-to 4 hours

• [Myth Buster](#)
FORGERY
### Screening Tests

<table>
<thead>
<tr>
<th>TEST NAME</th>
<th>TEST RESULT</th>
<th>CUT-OFF LEVEL</th>
<th>METHODOLOGY</th>
<th>MEDIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMPHETAMINE</td>
<td>Negative</td>
<td>1000 NG/ML</td>
<td>EIA</td>
<td>URINE</td>
</tr>
<tr>
<td>BARIATRATES</td>
<td>Negative</td>
<td>200 NG/ML</td>
<td>EIA</td>
<td>URINE</td>
</tr>
<tr>
<td>BENZODIAZEPINES</td>
<td>Negative</td>
<td>200 NG/ML</td>
<td>EIA</td>
<td>URINE</td>
</tr>
<tr>
<td>COCAINE</td>
<td>Negative</td>
<td>300 NG/ML</td>
<td>EIA</td>
<td>URINE</td>
</tr>
<tr>
<td>ETHYL GLUCURONIDE</td>
<td>Negative</td>
<td>500 NG/ML</td>
<td>EIA</td>
<td>URINE</td>
</tr>
<tr>
<td>OPIATES</td>
<td>Negative</td>
<td>2000 NG/ML</td>
<td>EIA</td>
<td>URINE</td>
</tr>
<tr>
<td>PHENCYCLIDINE</td>
<td>Negative</td>
<td>25 NG/ML</td>
<td>EIA</td>
<td>URINE</td>
</tr>
<tr>
<td>PROPOXYPHENE</td>
<td>Negative</td>
<td>300 NG/ML</td>
<td>EIA</td>
<td>URINE</td>
</tr>
<tr>
<td>THC</td>
<td>Negative</td>
<td>50 NG/ML</td>
<td>EIA</td>
<td>URINE</td>
</tr>
</tbody>
</table>

### Urine Validity Tests

<table>
<thead>
<tr>
<th>TEST NAME</th>
<th>TEST RESULT</th>
<th>ACCEPTABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECIFIC GRAVITY</td>
<td>1.022</td>
<td>Normal</td>
</tr>
<tr>
<td>CREATINININE</td>
<td>90</td>
<td>Normal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.0030 or greater</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10.0 mg/dl, or greater</td>
</tr>
<tr>
<td>Test Name</td>
<td>Test Result</td>
<td>Cut-off Level</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>---------------</td>
</tr>
<tr>
<td>AMPHETAMINE</td>
<td>Negative</td>
<td>1000 NG/ML</td>
</tr>
<tr>
<td>BARBITURATES</td>
<td>Negative</td>
<td>200 NG/ML</td>
</tr>
<tr>
<td>BENZODIAZEPINES</td>
<td>Negative</td>
<td>200 NG/ML</td>
</tr>
<tr>
<td>COCAINE</td>
<td>Negative</td>
<td>300 NG/ML</td>
</tr>
<tr>
<td>ETHYL GLUCURONIDE</td>
<td>Negative</td>
<td>500 NG/ML</td>
</tr>
<tr>
<td>OPIATES</td>
<td>Negative</td>
<td>2000 NG/ML</td>
</tr>
<tr>
<td>PHENCYCLIDINE</td>
<td>Negative</td>
<td>25 NG/ML</td>
</tr>
<tr>
<td>PROPOXYPHENE</td>
<td>Negative</td>
<td>300 NG/ML</td>
</tr>
<tr>
<td>THC</td>
<td>Negative</td>
<td>50 NG/ML</td>
</tr>
<tr>
<td>SPECIFIC GRAVITY</td>
<td>1.0113</td>
<td>Normal</td>
</tr>
<tr>
<td>CREATININE</td>
<td>73.3</td>
<td>Normal</td>
</tr>
</tbody>
</table>
Feb 19, 2017

Medical Center of Dallas
4172 Mckinney Ave Ste 200
Dallas, TX 75204

LaQuencilla Green
9101 Blackstone Dr

Donor Name and Address

To Whom It May Concern:
The above-named patient is being treated for Ovarian Cancer (non-malignant).

This patient has been under my care since April of 2016.

The following is a list of her prescriptions:
Naproxen 1000mg once daily
Ketoprofen 500 mg once daily
Doxorubicin hydrochloride 50mg injections 2 times monthly
(Please note these taken together can often cause false positives in testing for drugs because of the high dosage taken)
Cisplatin 50 mg daily (Started Feb 2017)

I have spoken with Ms. Green regarding the prescriptions she is taking and the effects they can have. While none of them contains THC, her taking them together can often cause a false positive in an urinalysis because of the high dosage she is taking. Taking high dosage of Naproxen daily can often cause a false positive as well. We have taken several blood test here because of her diagnoses and none of them has come back positive for any drugs. Please feel free to contact me with any questions.

Dr. Seriby

Medical City Healthcare
SUMMARY

• Most effective method to beat a drug test is substitution with a synthetic urine.
• Dilution is most effective when observed collections are mandatory.
• Don’t believe everything you read on the internet.
• There is no scientific data supporting the effectiveness of detox drinks.