# CROSS EXAMINING THE BLOOD TEST ANALYST To establish your theory of defense

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# Gas Chromatagraphy

- Method by which volatile compounds (i.e. alcohol) are separated and quantified.
- A general understanding of gas chromatography is essential for raising a wide array of attacks on the validity of the blood test.
- Read Basic Gas Chromatography by Harold McNair and James Miller AND Browse YouTube
- Obtain chromatograms and study them.

# What's Your Theory

Test…is….WRONG!

I used a headspace gas chromatograph with a flame ionization detector…..no it's not.

# Ground Rules

- Anticipate the analyst will be bias and misleading.
  - Prosecutor: “Would you have noted if there appeared to have been some sort of contamination?”
  - Analyst: “Yes.”
  - Prosecutor: “But that was not the case here?”
  - Analyst: “No.”
  - Never mind the fact that the lab doesn’t test for contamination and visual inspection is ineffective.

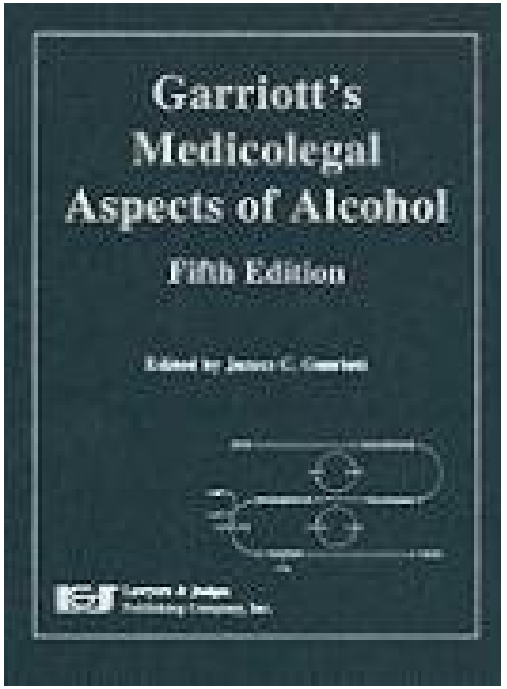
- But you can establish your defense through the analyst if it is sourced and/or scientifically sound.

- Be prepared to use very controlled cross—see *MacCarthy on Cross-Examination, Terence F. MacCarthy.*

- *Have sourced statements that further your theory of the case.*

# Arsenal

- Prior transcripts of analyst
- Impeach / 908.03(18)
  - With “analysts own textbook.”
    - Garriotts’ Medicolegal Aspects of Alcohol
      - Edited by James C. Garriott / Lawyers and Judges Publishing
  - Studies cited in the textbook.
  - Other studies by same authors.
  - Establish that Garriott’s is an authority early.



# THE TEST IS ~~WRONG~~ MEANINGLESS

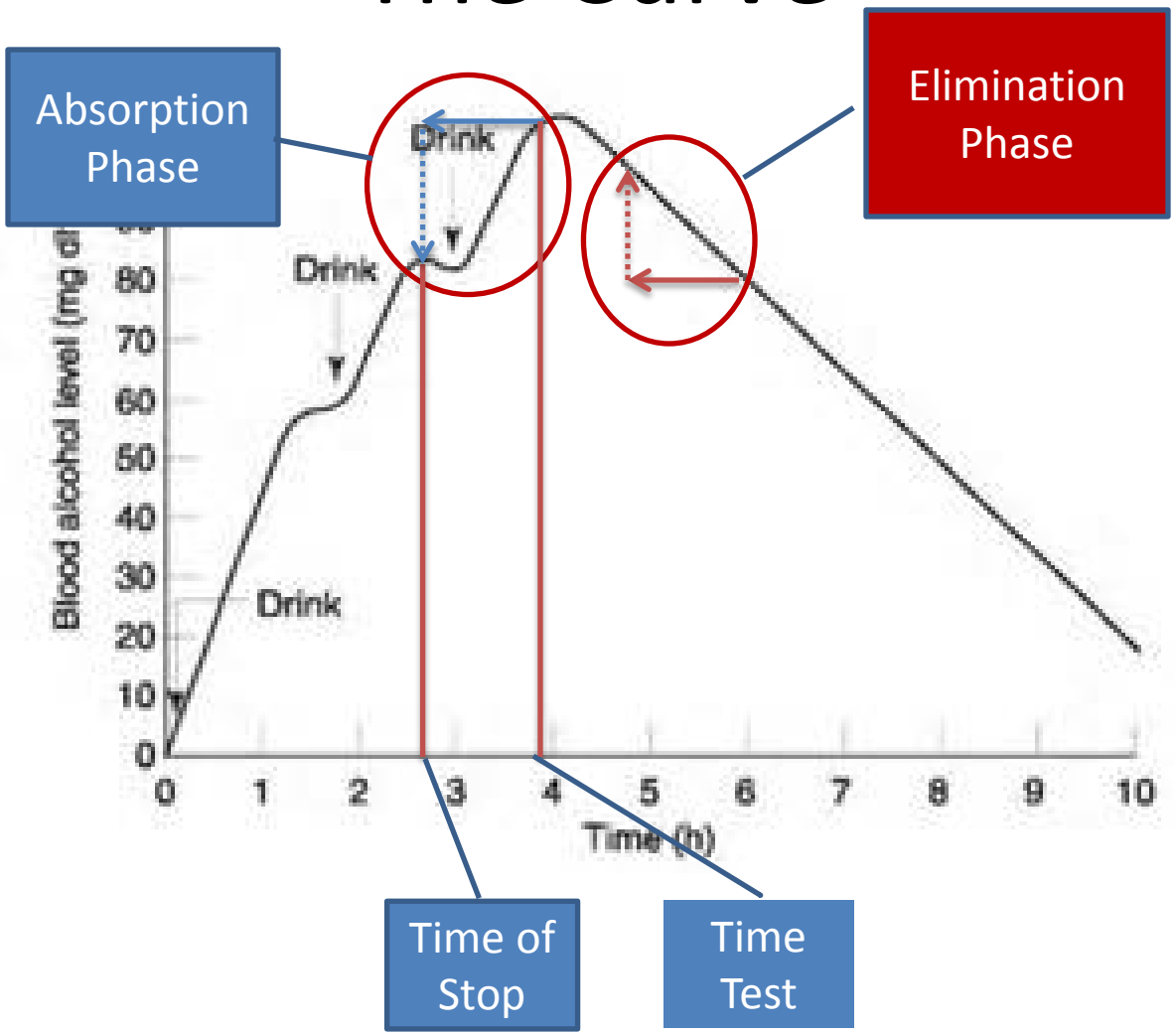
It's a snapshot taken too late.

- "The Curve"
  - Widmark Equasion
  - State v. Hinz, 121 Wis.2d 282

The Sample is invalid

- Fermentation

# The Curve


Absorption Phase
Elimination Phase
Drink
Drink
Drink
Blood alcohol level (mg
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
8
9
10
Time (h)
Time of Stop
Time Test

# The Curve-as theory of innocence

Give hypo & assumptions—Use Hinz Chart

- i.e. 160 lb Male with a .015 elimination rate/hour
  - 4 drinks in 1.5 hours (5:00 – 6:30pm)
  - Double shot for the road at 6:30 (hope voir dire went well)
  - Stopped at 6:45.
  - Blood test at 8:00 = .096 (6 drinks in 5 hours: peak of .141 – approx .045) If Double shot not absorbed when stopped = .064 (4 drinks in 1.8 hours .094 – approx .03)
- Lots of problems.

# The “Curve” —Reasonable Doubt Approach

- **BAC at the time of the test without more says very little about BAC at the time of driving.**

- **Absorption Rate Varies Greatly**
  - **Most reach peak BAC 60-120 minutes after consumption. Garriott’s (p. 103).**

- **Elimination varies greatly**
  - **“[Elimination rate] can vary by about four-fold among different individuals.” Garriott’s (p. 88) (.008-.035 g/100ml/h)**

- **Factors influencing the curve—most unknowns**

# Crossing on Curve

- Analyst will give you the curve generally.
- Tell jury what we'd need to know to reconstruct the curve.
- All the things analyst doesn't know.
- Conclusion—Don't have enough info.
  - Could be higher
  - Could be lower

- Need to have through understanding of pharmacokinetics of alcohol or Hinz Chart.
  - To analyse viability of curve defense
  - To analyse client's statements / proposed testimony
  - If helpful, use the analyst.

# 3-Hour Presumption

How to Use the Test Result Evidence

The law states that the alcohol concentration in a defendant's (breath) (blood) (urine) sample taken within three hours of (driving) (operating) a motor vehicle is evidence of the defendant's alcohol concentration at the time of the (driving) (operating).[8]

WHERE TEST RESULTS SHOWING 0.08 GRAMS OR MORE HAVE BEEN ADMITTED[9] **AND THERE IS NO ISSUE RELATING TO THE DEFENDANT'S POSITION ON THE "BLOOD-ALCOHOL CURVE,"**[10] THE JURY SHOULD BE INSTRUCTED AS FOLLOWS:

If you are satisfied beyond a reasonable doubt that there was .08 grams or more of alcohol in 100 milliliters of the defendant's blood at the time the test was taken, you may find from that fact alone that the defendant had a prohibited alcohol concentration at the time of the alleged (driving)

# Blood-Alcohol Curve JI-Crim 234

234 Blood-Alcohol Curve

Evidence has been received that, within three hours after the defendant's alleged driving…, a sample of the defendant's blood was taken. An analysis of the sample has also been received. This is **relevant** evidence… **Evidence has also been received as to how the body absorbs and eliminates alcohol.** You may consider the evidence regarding the analysis of the blood sample and the evidence of how the body absorbs and eliminates alcohol along with all the other evidence the case, giving it the weight you believe it is entitled to receive.

# Can always raise issue for JI 234

- We've talked about how the body absorbs and eliminates alcohol.
- You've testified that we would need certain information to reconstruct the curve.
- Information you don't have.
- Thus you cannot reconstruct the curve.
- Don't know client's position on unknown curve.
- **It's at issue in this case**

# Pros and Cons of Reasonable-Doubt Curve Defense

- Why it works
  - It is honest…we are not pretending to know things that we don't.
    - We admit it could be higher or lower (Crim JI 140)
    - They are pretending to know the answer
- Problems
  - Can fail to inspire sympathy from Jury (Voir dire).
  - Client "only had 2 beers"
  - BAC too high / Video bad.

# Retrograde Extrapolation

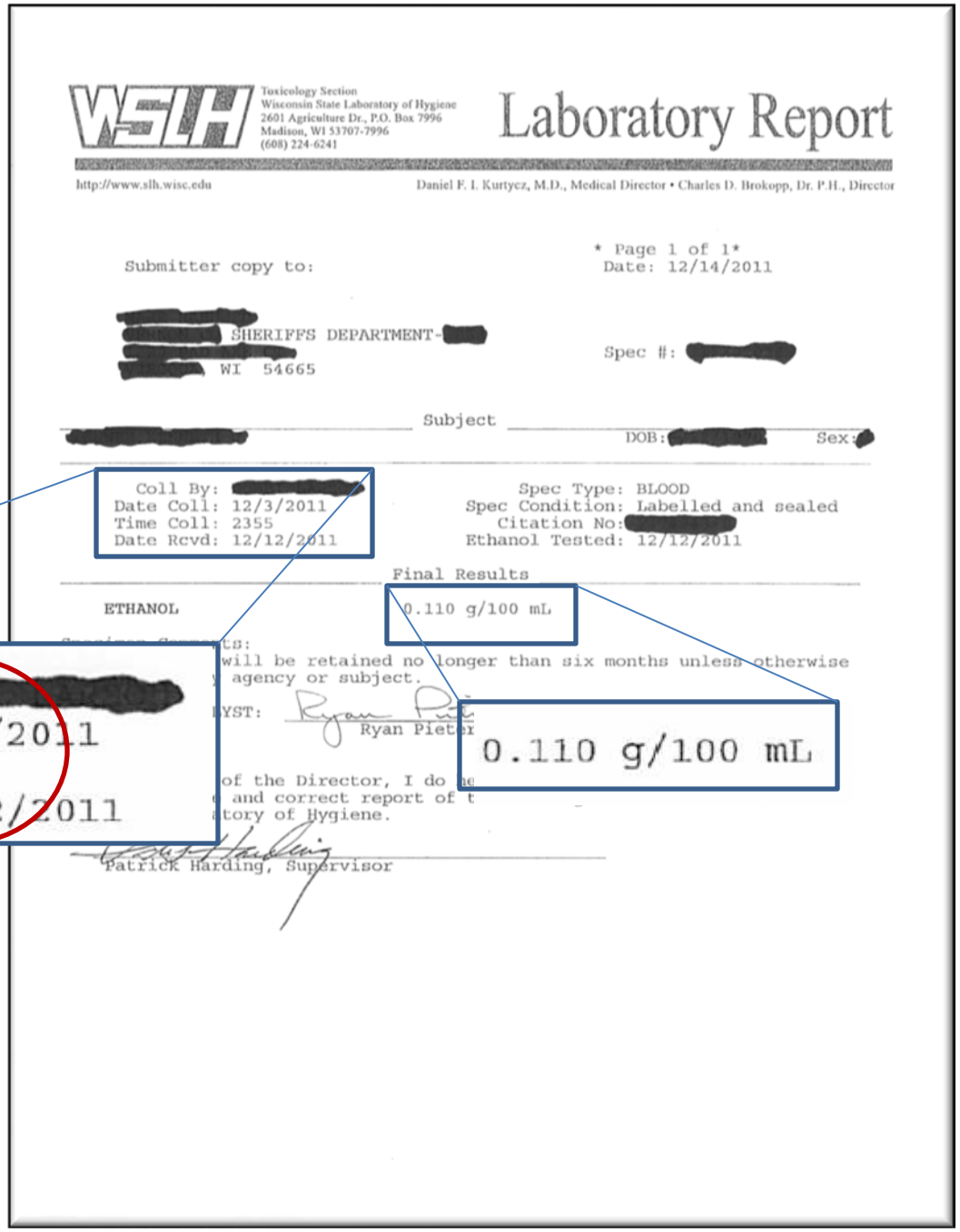
- First Object! – Daubert (907.02, Stats.)
  - See Garriott's pg. 103
    - Cross analyst on all the unknown factors affecting the absorption and elimination rate?
      - Exactly what was consumed and when
      - What was eaten and when
      - Height, weight, body-fat composition
      - Physiological factors such as age, weight, sleep, stress.
    - Validity requires pretending to know subject was post absorption when driving.

# Post-draw Fermentation

- Due to microbial contamination of the vial, the alcohol concentration increased after blood is drawn.
- Scientific foundation for fermentation defense is in Garriott's (P. 277 (10.3))  And
- Chang, J. and Kollman, S.E. The effect of temperature on the formation of ethanol by Candida albicans in blood. *J. Forensic. Sci.* 34:105-109, 1989.

# Chang and Kollman Study

- Established
  - 10-mL “Grey top Tubes”
  - Containing
    - 100 mg sodium fluoride (preservative)
    - 20 mg of potassium oxalate (anticoagulant)
    - Blood *(cadaver blood)
    - *Candida albicans*
  - 5 days no refrigeration: .071, .059, 065, .013.
  - 10 days no refrigeration: .07, .069, .037, .024.



WSLH

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# Laboratory Report

http://www.slh.wisc.edu

Daniel F. I. Kurtycz, M.D., Medical Director • Charles D. Brokopp, Dr. P.H., Director

* Page 1 of 1*
Date: 12/14/2011

Submitter copy to:

[redacted] SHERIFFS DEPARTMENT-[redacted]
[redacted] WI 54665

Spec #: [redacted]

Subject

[redacted]

DOB: [redacted] Sex: [redacted]

Coll By: [redacted]
Date Coll: 12/3/2011
Time Coll: 2355
Date Rcvd: 12/12/2011

Spec Type: BLOOD
Spec Condition: Labelled and sealed
Citation No: [redacted]
Ethanol Tested: 12/12/2011

Final Results

| | |
|---|---|
| ETHANOL | 0.110 g/100 mL |

ts:
will be retained no longer than six months unless otherwise
agency or subject.

YST: Ryan Pieter

of the Director, I do he
and correct report of t
tory of Hygiene.

Patrick Harding, Supervisor

Coll By: [redacted]
Date Coll: 12/3/2011
Time Coll: 2355
Date Rcvd: 12/12/2011

0.110 g/100 mL

9 Days!

# Prepare Closing Exhibits during Cross

- Chang Kollman Study
  - 10 mL Tube
    - 100 mg sodium flouride
    - 20 mg potassium oxalate
    - Blood
    - *Candida albicans*
  - *5 days no refrigeration*
  - *Growth of .071, .059, .063, .013 after 5 days.*

- Client's Sample
  - 10 mL Tube
    - 100 mg sodium flouride
    - 20 mg potassium oxalate
    - Blood
    - **(Candida albicans?)**
  - 9 days (no refrigeration?)
  - Growth?

# CANDIDA ALBICANS?

~~Ms. Analyst, isn't it possible that there were candida albicans in my client's vial? (Please)~~

~~– It's extremely unlikely~~.

--~~Ahhhh. But possible~~?

~~– Not really. Not when you consider blah blah blah.~~

~~– Are you sure~~?

--~~Positive.~~



Ms. Analyst, I'd like to talk to you about ~~if~~ **WHEN** contamination may occur.

**"Contamination may take place <u>BEFORE</u>, <u>DURING</u>, or <u>AFTER</u> Collection" (P. 277)**

# No involvement Before Collection

- **Not present when tube manufactured**
- **Anticoagulant/preservative added?**
- **When kit components shipped to lab**
- **When kit put together at lab**
  - **Q: "You don't know who packaged the kit that was used in this case?"**
  - **Drewieck: "It was very likely our specimen receiving, our mail room technician. He does most of the kit preparation, although some of the clerical staff help every once in a while."**
- **When Kit transferred to hospital…storage.**
- **No idea who had access to it, who handled it, etc.**

# During Collection

- Not present when kit taken out of storage
- Not present when kit disassembled.
- When components opened up
- When arm supposedly cleaned, disinfected.
  - Did not see whether effective technique used.
- During injection.

# Or <u>After</u> Collection

Not present during the handling of the Tube

--Inverted slowly / 6-10 times?

Sealing of the tube.

Not present **for the ____ days** it took the tube to find its way to Madison.

-- “Monitoring and documenting the temperature of sample storage areas is vial.” (pg. 270)

How many people handled it.

# How Contamination Can Occur

- Experts I have consulted have indicated the following. SOME of the Hygiene Lab Analysts have agreed.
  - Candida in Blood Supply (more likely in accident case)
  - Candida on or under skin.
  - Candida in air entering tube from leaky seal on vacutainer (some analysts affirm/ some say practically impossible)
  - Candida on grey top tube when needle puncture

# Concluding Chapter

- Not involved in the stages that contamination may occur.
- Didn’t observe whether contamination occurred.
- Not scientific to guess. (this is established early)
- Didn’t test for whether contamination occurred.
- If Contamination DID occur, your machine wouldn’t alert you to that.

**Can you raise issues with both the curve and post-draw fermentation?**

# What if the test is too high

- Disconnect (Garriott's p28)
- All those assumptions—
  - Gray top tube / Vacutainer manufactured adequately
  - Correct type and amount preservative used
  - Correct type and amount of anticoagulant used
  - Clumping did not occur
  - Vacutainer seal did not leak
  - Non-alcohol swab provided **and used**
  - Injection site properly sterilized
    - Non-alcohol swab used
    - Outward circular motion
    - Proper duration
  - Tube inverted 6-10 times
    - Insure proper mixing of preservative/anticuagulant
    - Prevent clotting maximize effectiveness of preservative.
  - Chain of custody
  - Proper temperature and handling during ___ days prior to the lab.
  - Contamination didn't occur "before, during or after" collection.
  - Alcohol concentration at test = Alcohol concentration at draw
  - Alcohol concentration at draw = alcohol concentration at time of operation.
  - The right sample was tested.

# Resources

- MacCarthy on Cross Examination, Terence F. MacCarthy (ABA)
- Garriott's Medicolegal Aspects of Acohol, (Lawyers and Judges)
- Chang, J. and Kollman, S.E. *The effect of temperature on the formation of ethanol by Candida albicans in blood*. *J. Forensic. Sci. 34: 105-109, 1989.*
- Basic Gas Chromatography, Harold McNair & James Miller.
- Drunk Driving Defense, Taylor and Oberman (Aspen)
- WI OWI Defense: The Law & Practice, Andrew Mishlove and James Nesci. (Lawyers and Judges)
- Attend Barry Cohen's Annual Drunk Driving Defense Seminar (annually)
- Join National College for DUI Defense. NCDD.com