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MITIGATING ERRORS AND
ESTABLISHING PRIORITIES
USING CASE MANAGEMENT
POLICIES IN A DUI LAB



Introduction

- Quality of Forensic Analysis can be impacted by workplace stress
- Causes of workplace stress¹⁻⁴
 - Workload
 - Tight deadlines)
 - Changing priorities
 - Unrealistic job) expectations)



1.) A.M. Jeanguenat, et al. (2017) JFS
2.) G.M. Peterson, et al. (1999) J. Clin Pharm
3. S. Sauter, et al. (1999) NIOSH/US Dept Health
4. Health Advocate, Inc (2009) internet resource



Introduction

- ⦿ Increased Requirements
 - ISO/IEC 17025)
 - SWGTOX Standards
- ⦿ Recommendations)
 - 2013 National Safety Council – Alcohol,) Drug, and Impairment Division⁵
 - Perform drug screen on all DUI cases

Recommendations



5. B.K. Logan, et al. (2013) JAT



Introduction

- Many DUI labs use a case management protocol limiting blood drug screens (BDS) performed based on ethanol concentration (BAC)
- By employing such a protocol the number of drugs involved in DUI cases is under reported⁵⁻⁹



5. B.K. Logan, et al. (2013) JAT
6. B.K. Logan, et al. (2006) AAFS
7. J.F. Limoges, et al. (2009) AAFS
8. R.B. Voas, et al. (2013) Drug Alcohol Dep
9. D. Giovanardi, et al. (2005) Drug Alcohol Dep



Introduction

- ◎ PBBSO Protocol
 - Every blood sample is tested for BAC / Volatiles
 - Case involves fatality
 - BDS is performed
 - Case does not) involve fatality)
 - BAC > 0.1 g/dL
 - BDS is not performed
 - BAC < 0.1 g/dL
 - BDS is performed



Introduction

- Is using a BDS case management protocol valid?
- Are meaningful drug results not being reported?
- Most studies were only qualitative⁵⁻⁹
- One quantitative study concluded that alcohol was the main factor in fatal accidents¹⁰



5. B.K. Logan, et al. (2013) JAT
6. B.K. Logan, et al. (2006) AAFS
7. J.F. Limoges, et al. (2009) AAFS
8. R.B. Voas, et al. (2013) Drug Alcohol Dep
9. D. Giovanardi, et al. (2005) Drug Alcohol Dep
10. A. Seymour, et al. (1999) For Sci Int



Cost

- Cost of performing BDS on every DUI blood case¹¹⁾
 - Would require materials budget and staffing to be at least doubled
 - BDS materials cost 30 times the cost of BAC
 - BDS analyst time 6 times the time to complete BAC



Analysis Materials
Cost



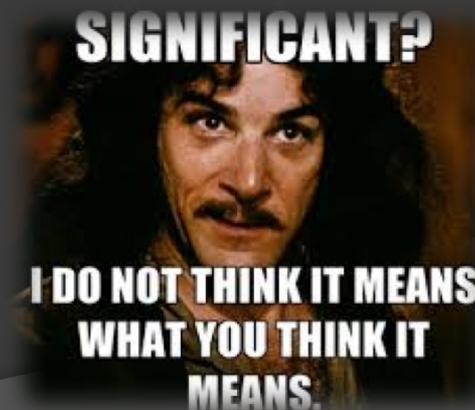
Analyst Time

11. N.B. Tiscione, et al. (2017) JAT



Benefit of Drug Screen

- Studies conducted to evaluate the benefit of performing a drug screen on every DUI case¹¹⁻¹²
- Drug results were determined to be meaningful if:)
 - The BAC was less than 0.15 g/dl
 - Ethanol impairment at this level is very significant
 - The drug results were at therapeutic levels or significant levels for illicit compounds



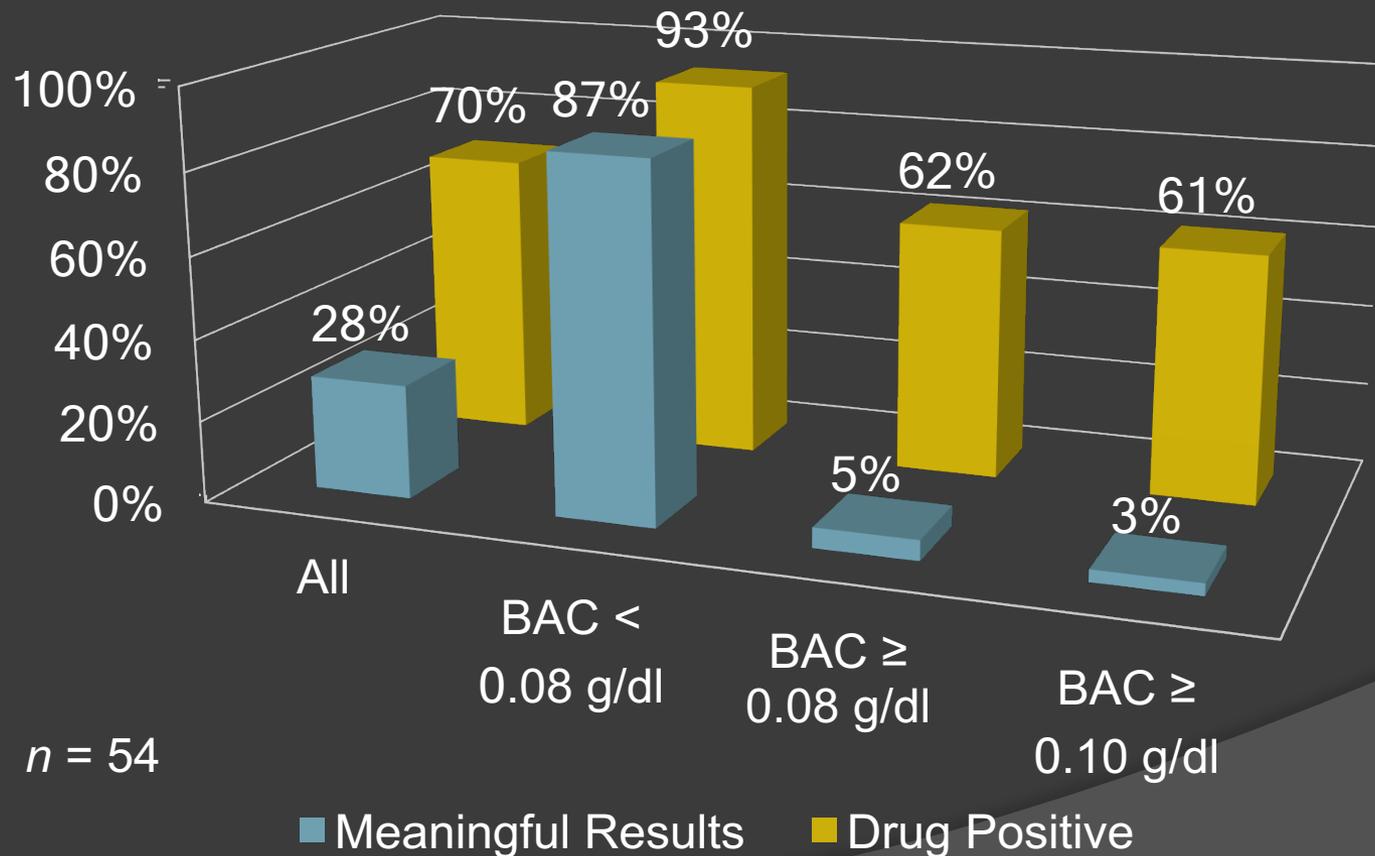
11. N.B. Tiscione, et al. (2017) JAT

12. N.B. Tiscione, et al. (2014) JAT



Benefit of Drug Screen

● Misdemeanor Cases¹¹⁻¹²



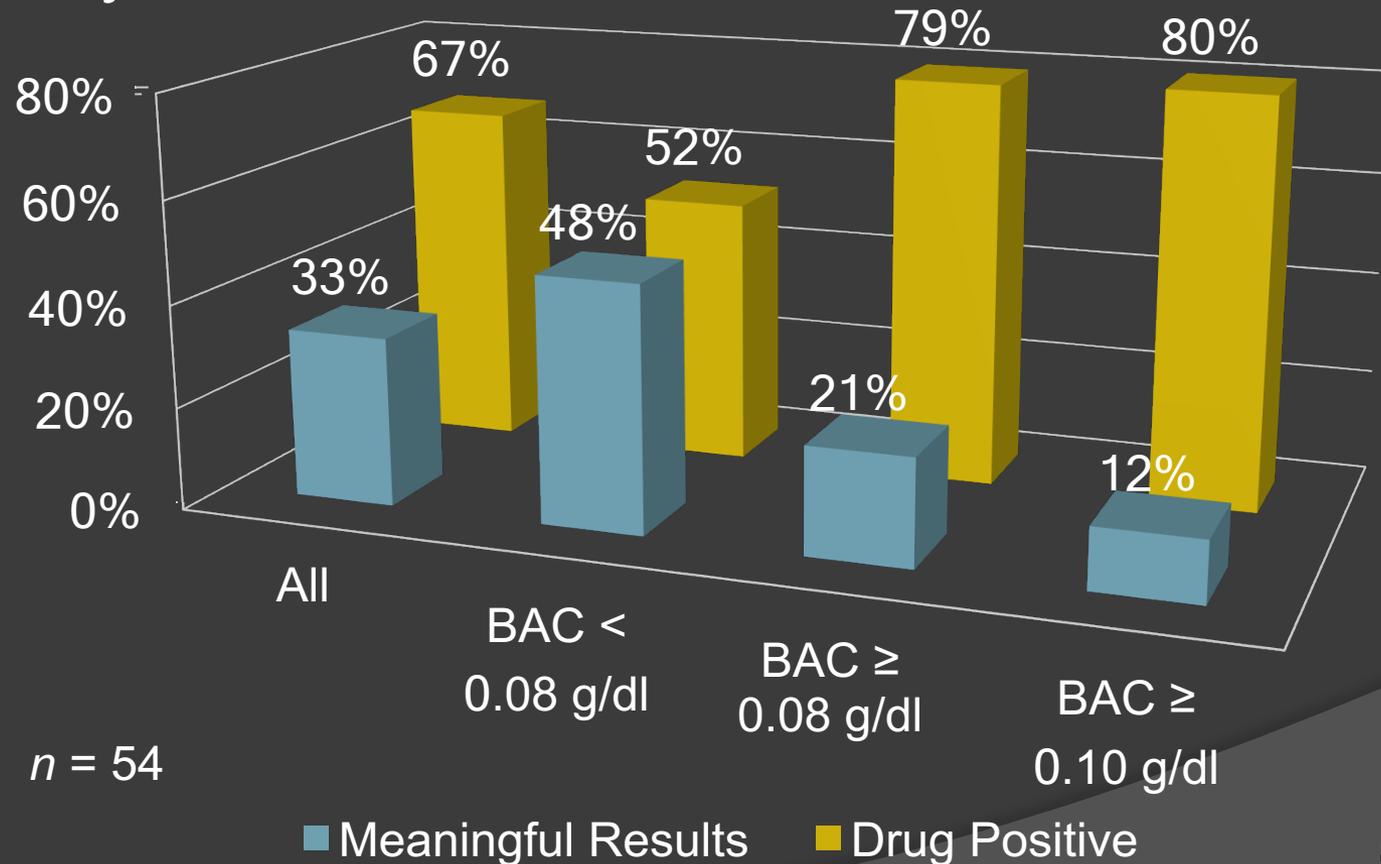
11. N.B. Tiscione, et al. (2017) JAT

12. N.B. Tiscione, et al. (2014) JAT



Benefit of Drug Screen

● Felony Cases¹¹



11. N.B. Tiscione, et al. (2017) JAT



Priorities

- ◎ Improving Quality)
 - Accreditation
 - Certification
 - SWG/OSAC) Standards)
- ◎ Expanding Scope)
 - Novel Psychoactive Substances (NPS)
 - Pharmaceuticals



Necessity of Expanding Scope

- ⦿ Cases submitted with the following history and no results after our testing that explained the behavior
 - History of 'Heroin'
 - Driver found unconscious and responded to naloxone)
 - Severe CNS Depression
- ⦿ Some cases sent to a private lab – carfentanil) detected)
- ⦿ Carfentanil is the most commonly observed fentanyl) analog that our Drug Chemistry Unit is encountering
 - Furanyl fentanyl is second
- ⦿ Developed and Validated Toxicology method



Necessity of Expanding Scope

● Blood DUI Casework: January 1 to June 6)

	2017		2016	
Total Cases	108)		101	
BAC > 0.02 g/dL	62	57%	74	73%
BAC > 0.08 g/dL	55	51%	67	66%
Total Drug Screen	69	64%	48	48%

● Drug Screen Results

Total Drug Screen	69		48	
Carfentanil	23	33%	?	
Alprazolam	22	32%	10	21%
Fentanyl	21	30%	11	23%
Morphine	20	29%	14	29%
Delta-9-THC	17	25%	17	35%



Blood DUI/DFSA Casework

Drugs Identified with Carfentanil since 8/2016)

Carfentanil	30	
Fentanyl	17	57%
Morphine	13	43%
Alprazolam	9	30%
Cocaine	5	17%
Codeine	5	17%
	4	13%

- Diazepam (4), Oxycodone (4), 6-MAM (3), Amphetamine (3), Ethanol (3), Mitragynine (3), Diphenhydramine (2), Hydromorphone (2), Acetyl fentanyl (1), Buprenorphine (1), Lorazepam (1), Methadone (1), Methamphetamine (1), N-ethylpentylone (1), Tramadol (1), U-47700 (1)



Conclusions

- Protocol for limiting drug testing in toxicology
 - Efficient method to manage caseload and limit errors
 - Supported by:
 -) Known impairment of ethanol at higher concentrations
 -) Difficulty assigning a level of contributing impairment from drugs in the presence of high ethanol levels
 -) Likelihood that drug results may be suppressed at trial
 - Does lead to under reporting of drugs in DUI cases.)
- In majority of cases studied, drug results were not significant in light of the ethanol levels and do not warrant the substantial increase in analysis.



Conclusions

- Use of case management policies should be based on appropriate, sound research
- Priorities should be determined to minimize workplace stress factors
 - Performing drug screens simply to gather statistics is not worth the cost
 - Resources are better spent improving quality and expanding services
 - Scope of testing in toxicology



Conclusions

- By setting appropriate priorities
 - Errors in cases can be mitigated
 - Service can be improved to the criminal justice system
 - Higher quality analysis
 - Expanded scope of testing
 - Reduced turnaround times



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