

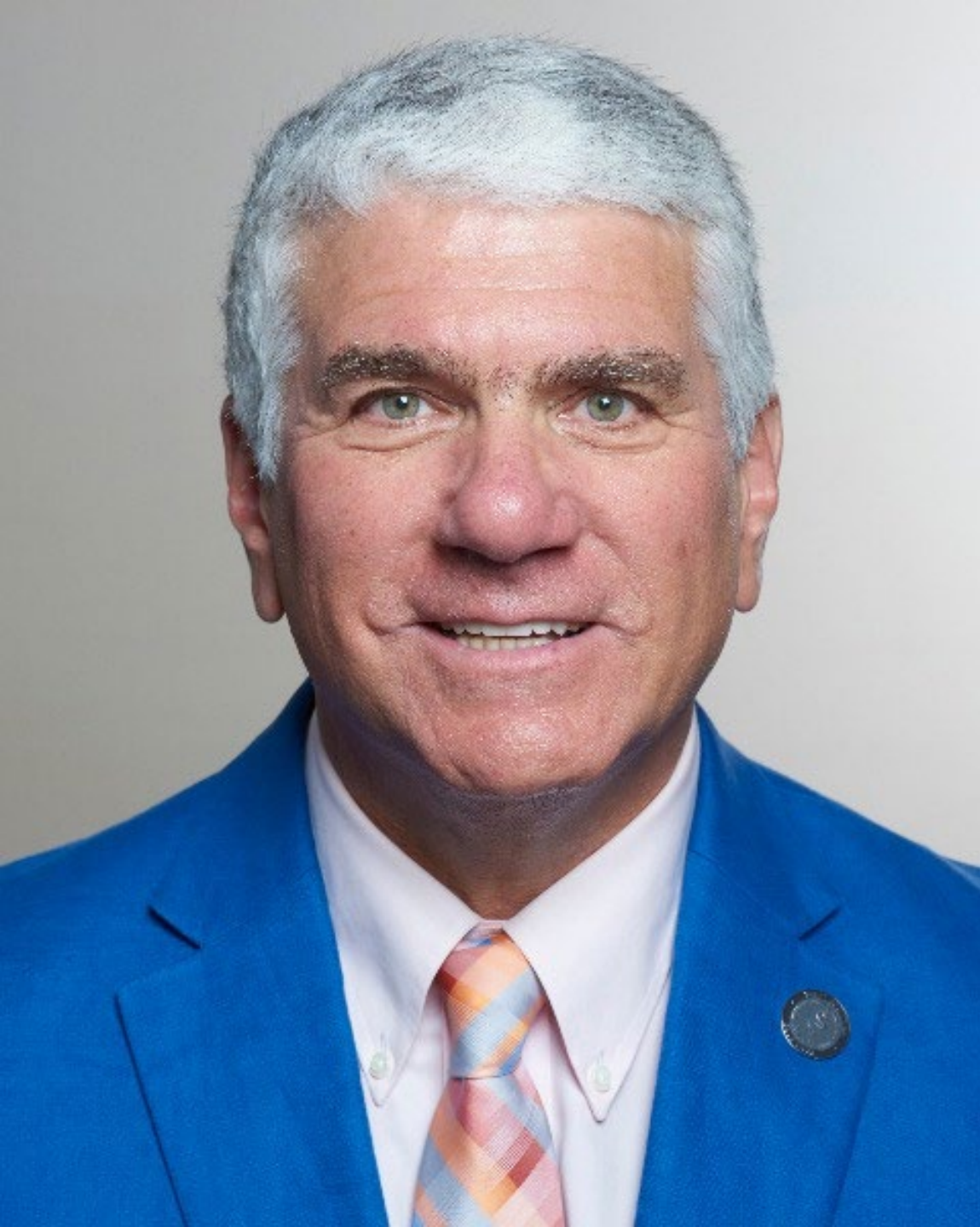


ASAM REVIEW COURSE 2023

Interesting Cases: Applying Concepts to Unexpected Real-Life Scenarios

Edwin A. Salsitz, MD, DFASAM
Associate Clinical Professor
Mount Sinai Beth Israel
New York, NY





Financial Disclosure

Edwin A. Salsitz, MD, DFASAM

- No relevant disclosures

Name the Event



Patient 1: 64-year-old Female

- Admitted to rehab for treatment of AUD following a “detox” protocol. MMTP 60mg for many years- OUD in Remission
- Married: Spouse no SUD
- F: +EtOH M: No EtOH 4S: No EtOH 2Children: No EtOH
- HS Graduate: Employed in Sales
- Social, Occasional EtOH until age 56
- ? Event → ↑↑ EtOH one year after event → AUD
- PE: unremarkable
- Labs: Normal CMP, CBC, Lipids
- UDT: + Methadone

What was the event?



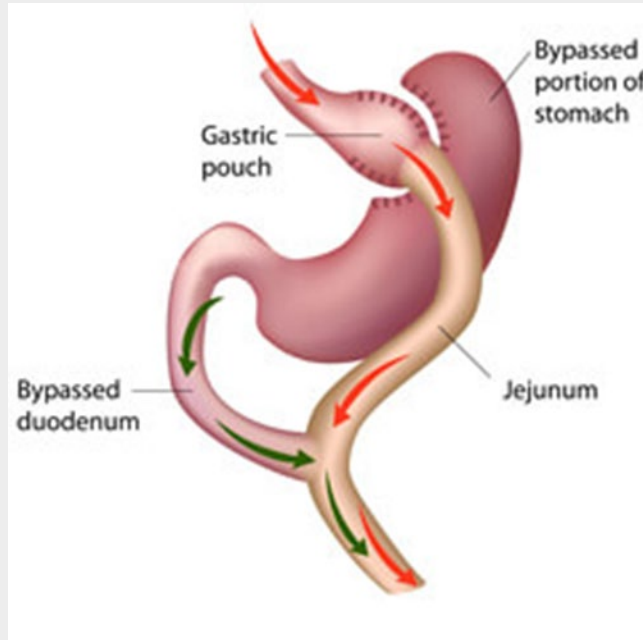
Bariatric Surgery

64-year-old Female with AUD

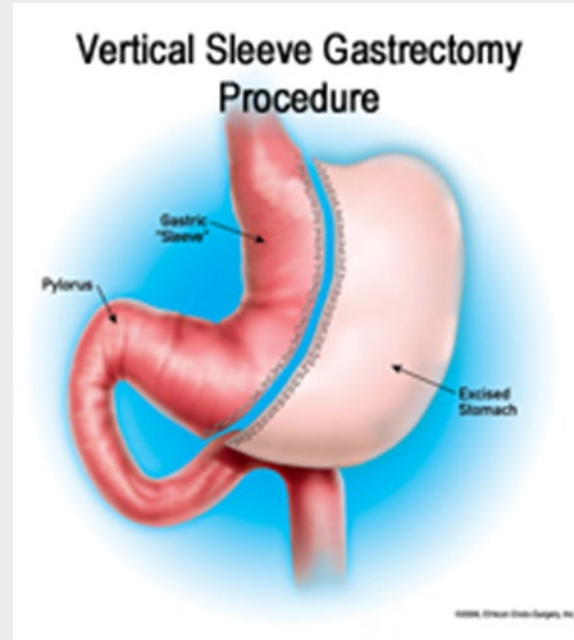
- Age 56: Bariatric Surgery: 5' 4" 240lbs. BMI= 41
- ? Type of Bariatric Surgery?
- ? RYBS, SG, LAGB
- SG
- Current BMI: 24
- 2 liters Vodka day

RYGB

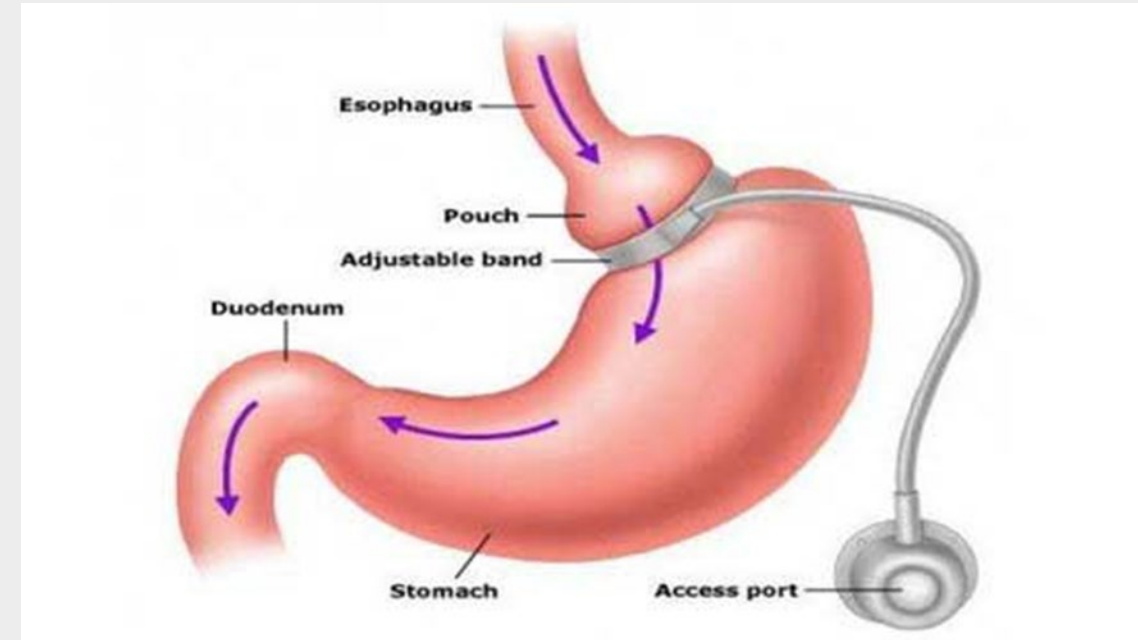
Roux-en-Y



SG



LAGB



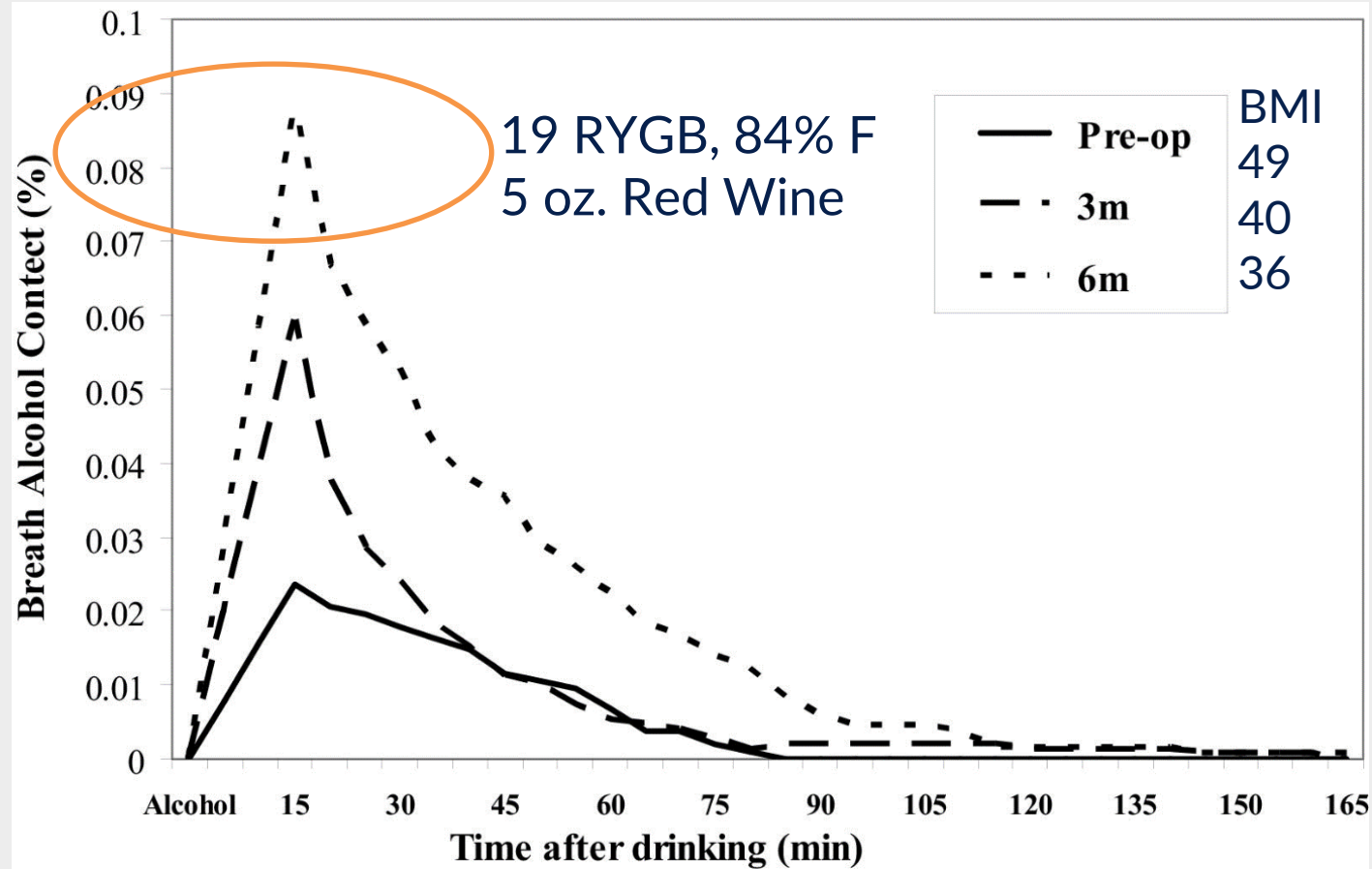
Roux-en-Y, is an end-to-side surgical anastomosis of bowel used to reconstruct the gastrointestinal tract. The name is derived from the surgeon who first described it César Roux and the stick-figure representation.

Impaired Alcohol Metabolism after Gastric Bypass Surgery: A Case-Crossover Trial

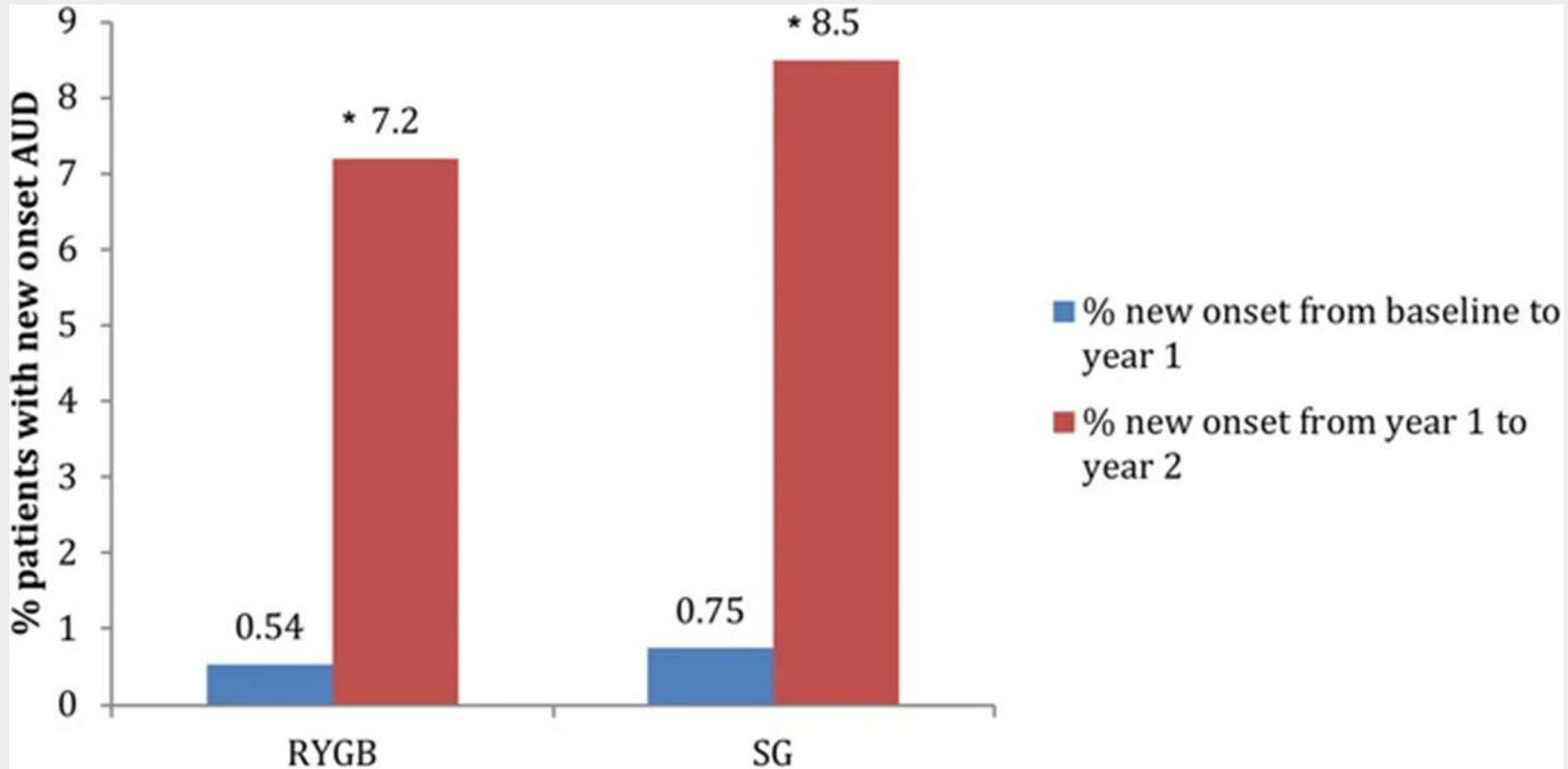
Gavitt A Woodard, BS, John Downey, MD, Tina Hernandez-Boussard, PhD, MPH,
John M Morton, MD, MPH, FACS

J Am Coll Surg 2011;212:209-

214



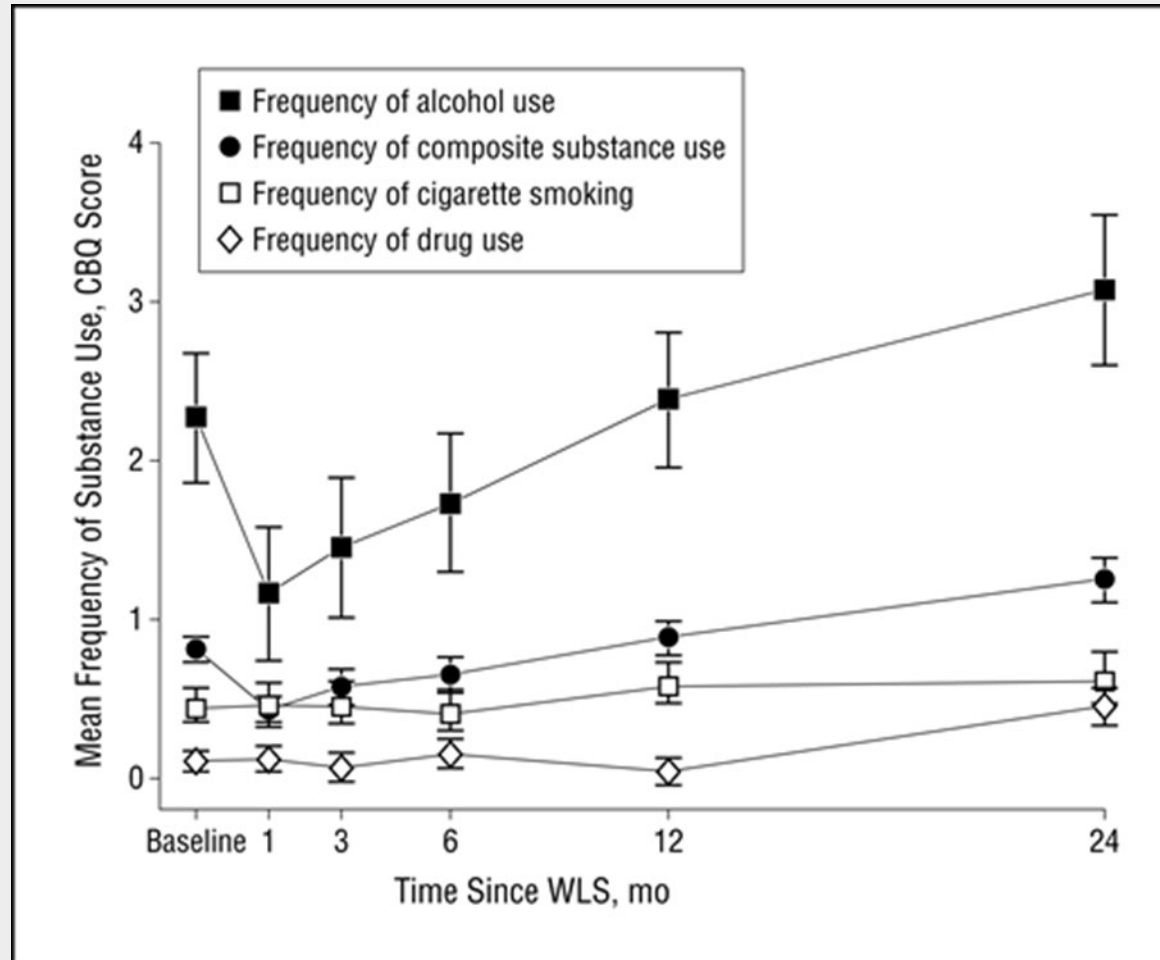
Comparison of patients screening positive for AUD between baseline and year 1 and year 1 to year 2 following surgery



Ibrahim, N., Alameddine, M., Brennan, J. et al. New onset alcohol use disorder following bariatric surgery. *Surg Endosc* 33, 2521-2530 (2019)

Substance Use Following Bariatric Weight Loss Surgery

Alexis Conason, PsyD; Julio Teixeira, MD; Chia-Hao Hsu, PhD; Lauren Puma, MS; Danielle Knafo, PhD; Allan Geliebter, PhD



Addiction Transfer/Substitution

- Why the ~ 2-year delay?
- Why procedure-dependent?
- Occurs In Patients with Gastrectomy for peptic ulcer and CA with nl BMI
- Rodent Model: ↑EtOH after RYGB

Pharmacokinetics/Pharmacodynamics

- Explains Difference RYGB, SG, LAGB
- ↓ Gastric ADH (Cimetidine H2 Blocker)
- ↓ Weight → ↑ Socialization
- ↑ Absorption, ↑ Cmax, earlier Tmax
- Feeling More Intoxicated
- AUD >> Other SUDs
- Cocaine Analogy: I.N. → Smoked (Crack Cocaine)

Predictors of AUD Post WLS

- Type of Weight Loss Surgery
- Male: Women More WLS
- Younger Age, FH
- EtOH use Pre-Op
- Tobacco, Illicit Drug Use
- ADHD
- Lower Sense of Belonging, Depression
- More Weight Loss → ↑ Socialization → ↑ EtOH

Key Takeaways

- New Onset EtOH related problems occur in ~ 10% of WLS Pts.
- More likely with RYGB & SG than with LAGB.
- Some WLS patients ↓ EtOH intake.
- EtOH problems increase over time. Usually begins ~2 years after WLS.
- Inform and Monitor all WLS patients about the risk of AUD/SUD over time.
- Special Thanks to Allan Geliebter PhD, for alerting me to the relationship between Bariatric Surgery and Alcohol

Next Case



“Rapid Sudden Death” After IV Drug Use

Sudden Death IVDU

- 26 yo male
- 8 year hx of OUD
- Prescription Opioids → IN Heroin → IV Heroin last 12 months
- 3 non-fatal ODs last 8 months
- Non compliant with Bupe Rx and Psychosocial Tx
- Argued with his Mother: Went up to his Room: Mother heard a loud thud, found him on floor, unresponsive, with syringe and needle in his arm 5 minutes later.
- Naloxone Nasal Spray 4mg administered X2—No Response
- Patient could not be resuscitated by EMS

What Happened?



Sudden Death IVDU

- ? Typical Opioid Induced Respiratory Depression Fatal Overdose
 - Time Frame: ≥ 1 hour: Naloxone Reversal Effectiveness Evidence
- Post Mortem Toxicology: +Fentanyl, -Norfentanyl, +Heroin, -6-MAM, +Morphine
- Fentanyl Induced Chest Wall Rigidity (“Wooden Chest”)
 - Fentanyl Induced Respiratory Muscle Rigidity & Laryngospasm

Fentanyl Chest Wall Rigidity

- First Reported in 1953 in anesthesia literature
- Skeletal Muscle Rigidity: Chest Wall Most Common
- Most common with fentanyl and its congeners (lipid solubility)
- Most common with rapid IV administration
- ? Activation of the **coeruleospinal noradrenergic pathway**, following mu receptor activation in LC
- ? dose related
- +/- Reversal with naloxone (IV route in literature): succinylcholine in OR
- Ventilatory Support
- Low or Absent Nor-fentanyl (appears in 2 minutes: CYP3A4)

100 Accidental OD deaths
2017:

99% + FENTANYL
Only 3 cases + HEROIN

64% + Nor-fentanyl 2 min: 3A4



RESEARCH UPDATE ON FENTANYL OUTBREAKS IN THE DAYTON, OH AREA:

Acryl Fentanyl and Furanyl Fentanyl Commonly Found in Overdose Death Cases

UPDATE 04/28/2017

DAYTON, OHIO. The Dayton area (Montgomery County, Ohio) has recently experienced dramatic increases in heroin and other opioid-related problems. Unintentional drug overdose deaths increased significantly from 127 in 2010 to 264 in 2014. In 2016, there were 349 overdose deaths in Montgomery County, and 251 of them screened positive for fentanyl. Preliminary data from 2017 indicate continuing increases in overdose deaths.

Synthetic opioids/fentanyl analogues/metabolites	A. All cases (N=100)	B. Acryl Fentanyl Positives (N=56)	C. Furanyl Fentanyl Positives (N=39)
Fentanyl	99 (99%)	56 (100%)	39 (100%)
Norfentanyl	64 (64%)	39 (70%)	26 (67%)
Acryl fentanyl	56 (56%)		25 (64%)
Despropionylfentanyl	46 (46%)	26 (46%)	32 (82%)
Furanyl Fentanyl	39 (39%)	25 (45%)	
Carfentanil	3 (3%)	2 (4%)	1 (2.6%)
Acetyl Fentanyl	2 (2%)	1 (2%)	1 (2.6%)
Butyryl/isobutyrylfentanyl	1 (1%)	0 (0%)	0 (0%)
Furanyl Norfentanyl	1 (1%)	1 (2%)	1 (2.6%)
U47700	1 (1%)	1 (2%)	1 (2.6%)

Fentanyl-Induced Chest Wall Rigidity

Başak Çoruh, MD; Mark R. Tonelli, MD; and David R. Park, MD

Fentanyl and other opiates used in procedural sedation and analgesia are associated with several well-known complications. We report the case of a man who developed the uncommon complication of chest wall rigidity and ineffective spontaneous ventilation following the administration of fentanyl during an elective bronchoscopy. His ventilation was assisted and the condition was reversed with naloxone. Although this complication is better described in pediatric patients and with anesthetic doses, chest wall rigidity can occur with analgesic doses of fentanyl and related compounds. Management includes ventilatory support and reversal with either naloxone or a short-acting neuromuscular blocking agent. This reaction does not appear to be a contraindication to future use of fentanyl or related compounds. Chest wall rigidity causing respiratory compromise should be readily recognized and treated by bronchoscopists.

CHEST 2013; 143(4):1145–1146

CLINICAL TOXICOLOGY, 2016
VOL. 54, NO. 5, 420–423
<http://dx.doi.org/10.3109/15563650.2016.1157722>



CLINICAL RESEARCH

Could chest wall rigidity be a factor in rapid death from illicit fentanyl abuse?

Glenn Burns^a, Rebecca T. DeRienz^b, Daniel D. Baker^b, Marcel Casavant^c and Henry A. Spiller^c

^aCentral Ohio Poison Center, Ohio State University Medical Toxicology, Columbus, OH, USA; ^bOffice of the Franklin County Coroner, Division of Forensic Toxicology, Columbus, OH, USA; ^cDepartment of Pediatrics, Central Ohio Poison Center, College of Medicine, Ohio State University, Columbus, OH, USA

ABSTRACT

Background: There has been a significant spike in fentanyl-related deaths from illicit fentanyl supplied via the heroin trade. Past fentanyl access was primarily oral or dermal via prescription fentanyl patch diversion. One factor potentially driving this increase in fatalities is the change in route of administra-

High levels of fentanyl but not norfentanyl = rapid death onset, and is associated with acute chest rigidity
42% No Nor-Fentanyl 20/48 cases

tanyl in half of our cases suggests a very rapid death, consistent with acute chest rigidity. An alternate explanation could be a dose-related rapid onset of respiratory arrest. Deaths occurred with low levels of fentanyl in the therapeutic range (1–2 ng/ml) in apparent non-naïve opiate abusers. Acute chest wall rigidity is a well-recognized complication in the medical community but unknown within the drug abuse community. The average abuser of illicit opioids may be unaware of the increasing fentanyl content of their illicit opioid purchase. **Conclusion:** In summary we believe sudden onset chest wall rigidity may be a significant and previously unreported factor leading to an increased mortality, from illicit N fentanyl use. Fentanyl and norfentanyl ratios and concentrations suggest a more rapid onset of death given the finding of fentanyl without norfentanyl in many of the fatalities. Chest wall rigidity may help explain the cause of death in these instances, in contrast to the typical opioid-related overdose deaths. Intravenous heroin users should be educated regarding this potentially fatal complication given the increasingly common substitution and combination with heroin of fentanyl.

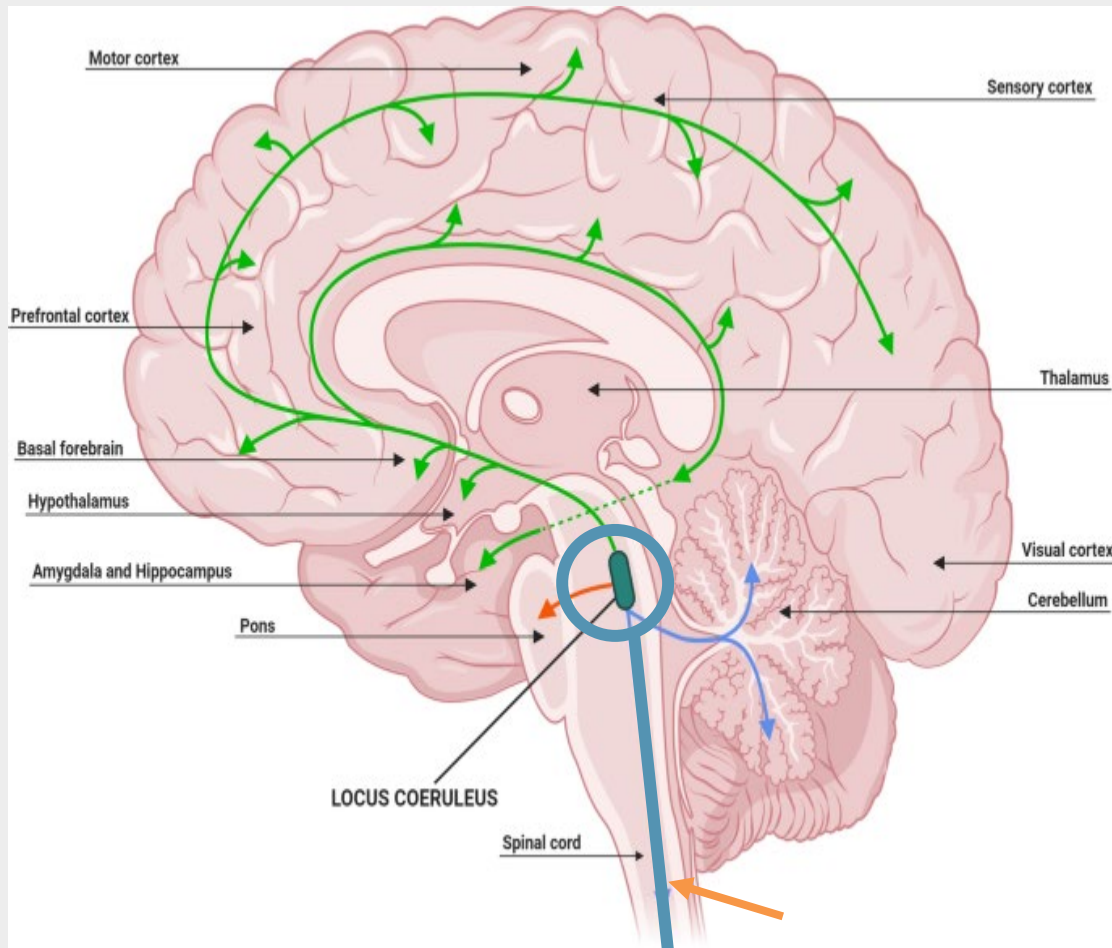
ARTICLE HISTORY

Received 2 December 2015
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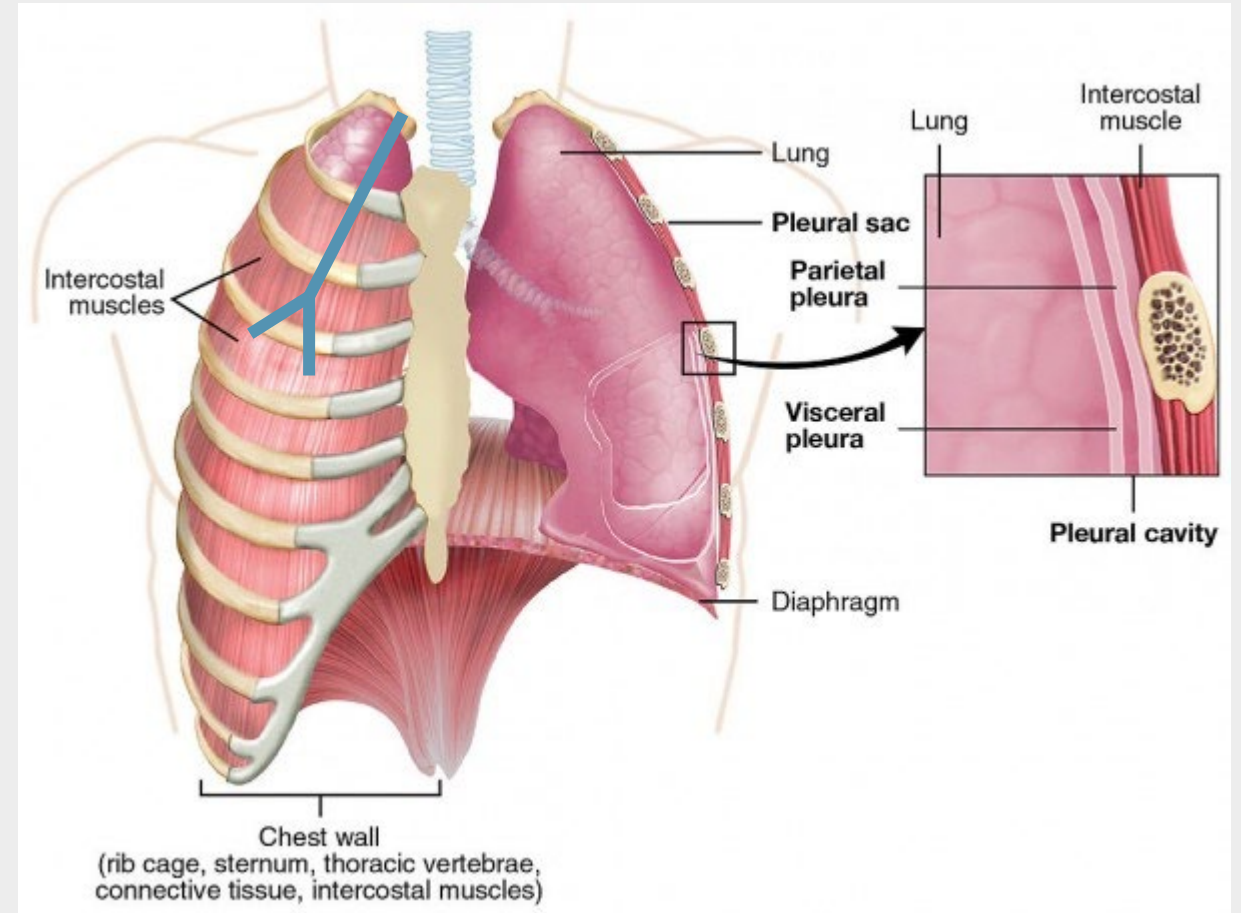
KEYWORDS

Chest wall rigidity; fentanyl; heroin; norfentanyl; opioids; overdose

Cerulospinal Pathway

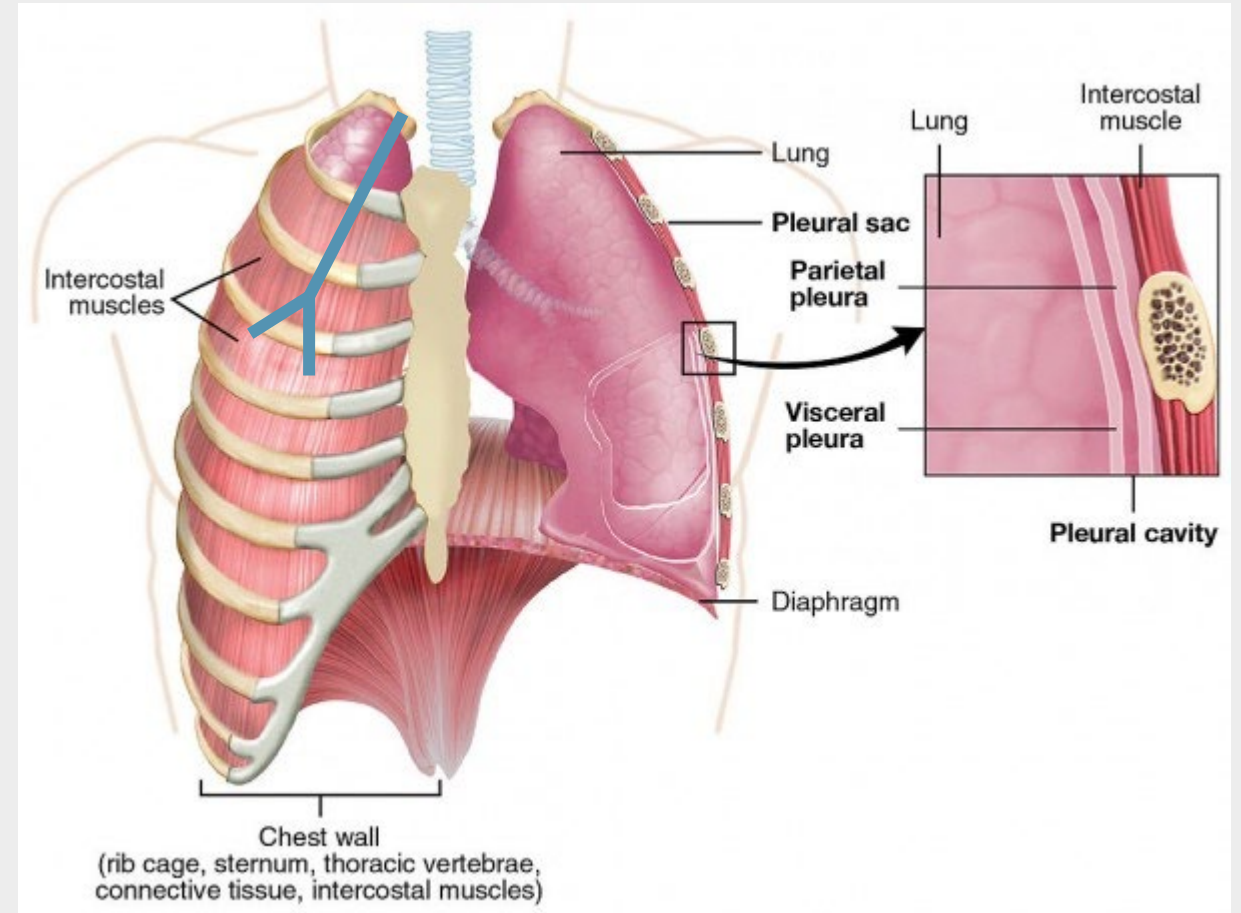
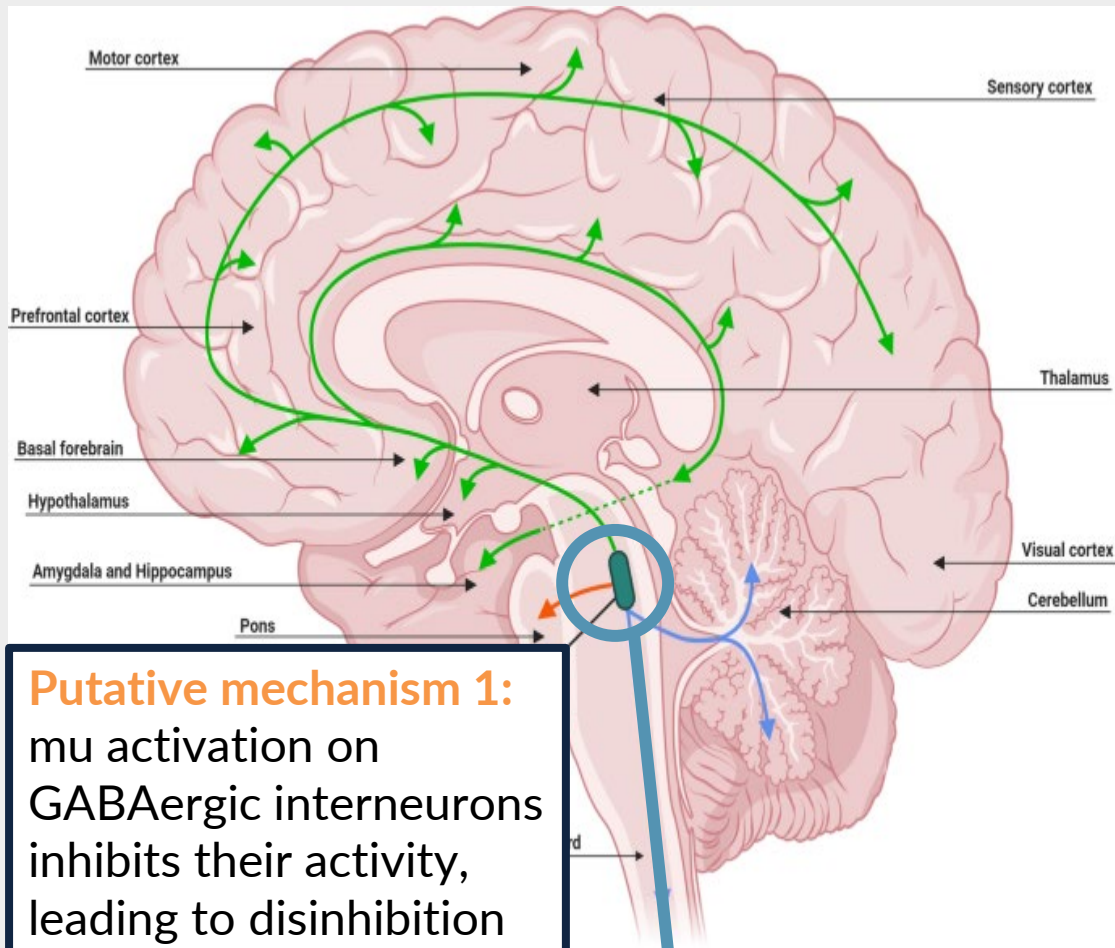


Spinal Motor Neuron



Activation of NE via GABA inhibition increases muscle tone

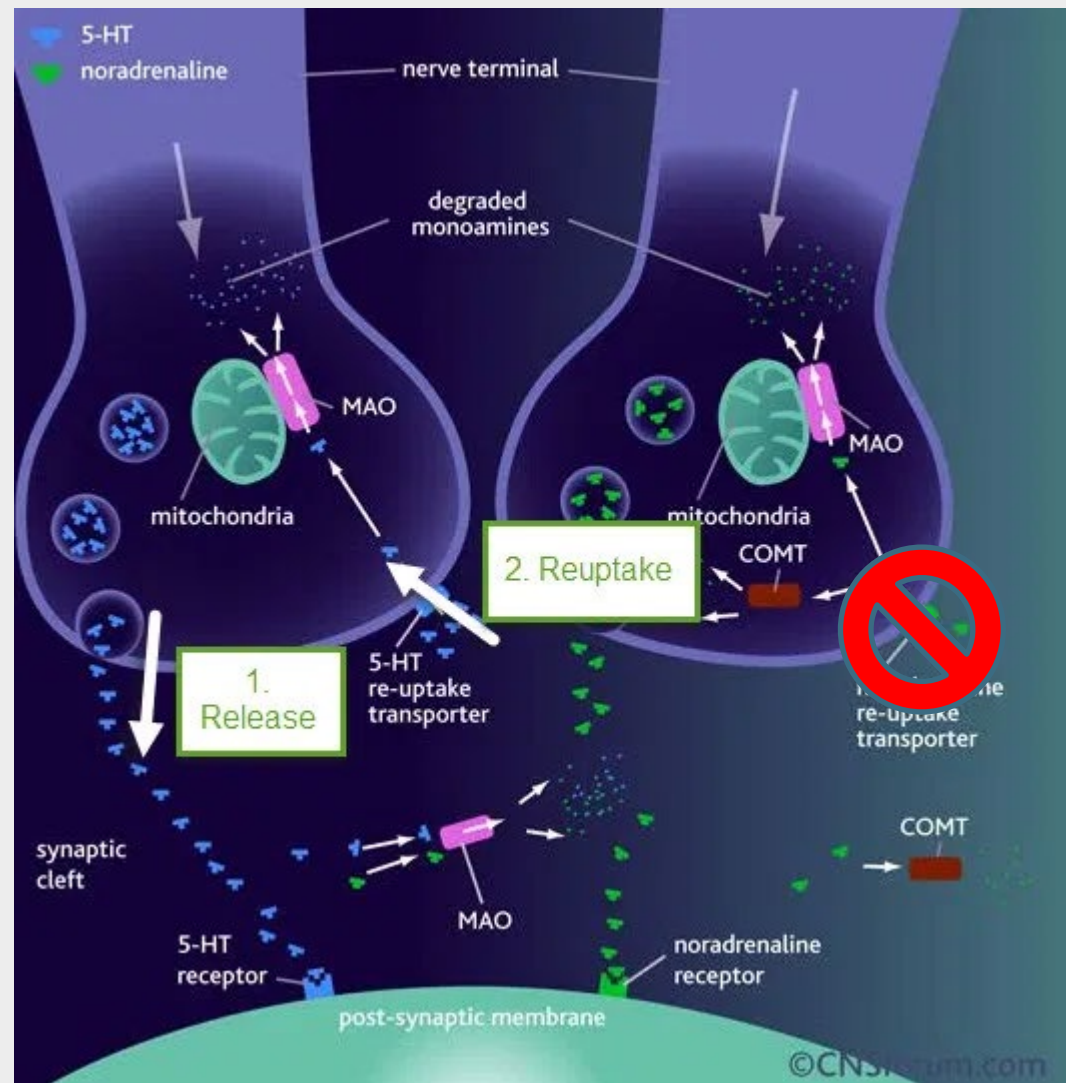
Courtesy Dr. Ferland



Continuous activation of LC leads hyper contraction of the cell wall

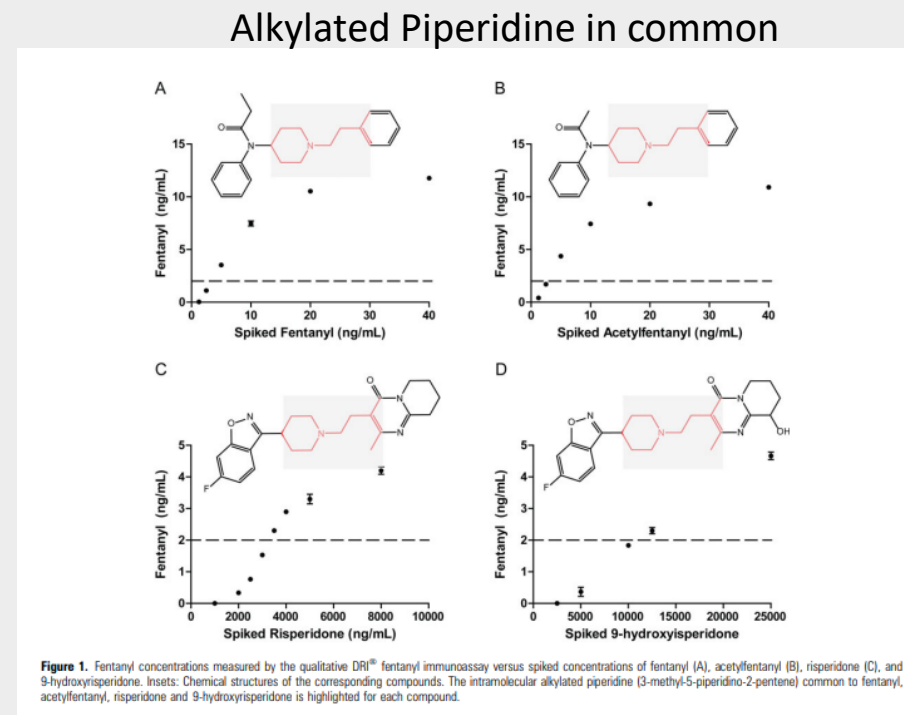
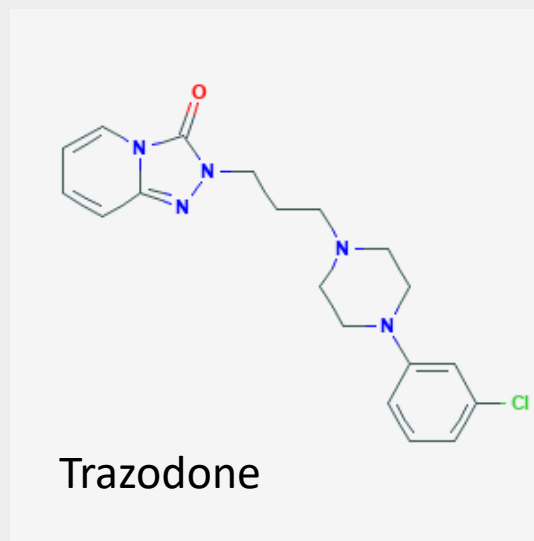
Putative mechanism 2:
fentanyl has been shown
to block reuptake of NE

Importantly, naloxone
does not affect this
mechanism



False Positive Fentanyl Immunoassay

- Trazodone
- Risperidone, Paliperidone, Iloperidone
- Some of the Fentanyl Analogues
- Not Norfentanyl
- Diphenhydramine, Sertraline,
- Labetalol, Fluoxetine, MDMA,
- Methamphetamine, Amitriptyline



Lockwood et al. *Harm Reduct J* (2021) 18:30

J Addict Med 2021;15: 150–154

Journal of Analytical Toxicology 2014;38:672 –675

Next Case



38 yo Female with AUD

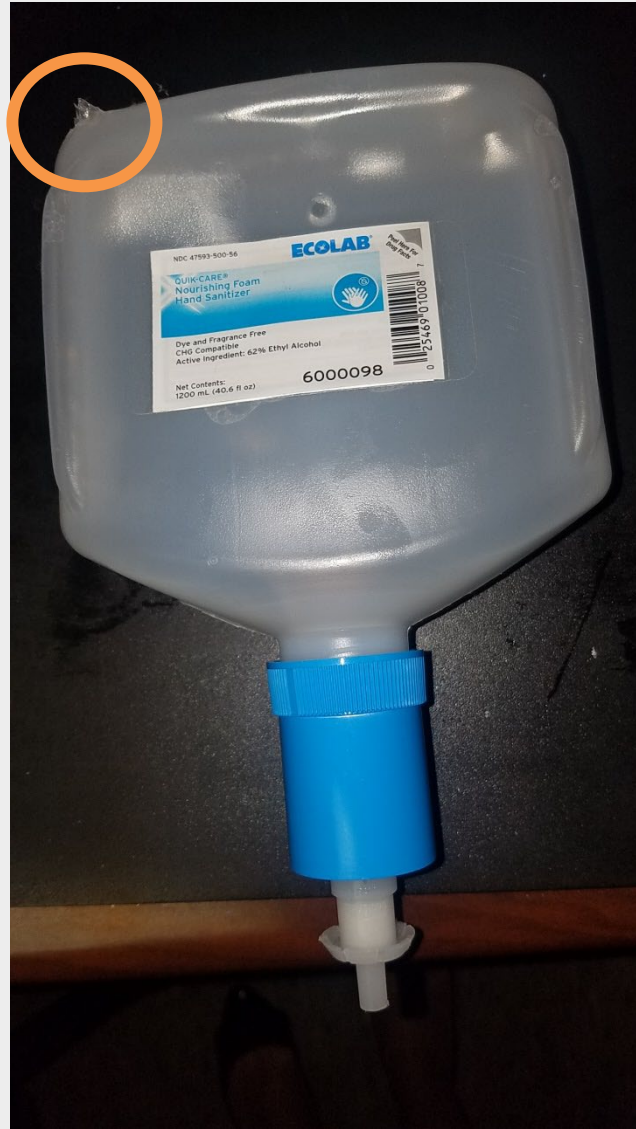
- Admitted to inpatient rehab following alcohol “detox” with chlordiazepoxide Sept 2016
- Never felt happy—anxious, low self esteem
- Father physically abused patient: mother ignored
- Raped on street by stranger while intoxicated with EtOH: age 20
- EtOH, THC in H.S.: IN cocaine D/C'd 10 yrs ago: heroin IN X4 did not like: never IV. EtOH preferred: Benzos last few years

38 yo Female with AUD

- Rehab is a locked unit, with visitors 1xweek--Sunday. Pt. had visitor on 3rd day of rehab
- Started on Gabapentin 300mg tid on admission for MAT for AUD
- On 4th day of rehab, 9AM, patient had altered mental status, and rapid response called. Patient was somnolent: O2 Sat=91%, Glu=64, BP=125/70, P=60, Pupils=nl. After DW50 and IV hydration MS improves. Remains on Rehab unit.
- UDT: Negative –opiate, cocaine, THC, benzo, PCP, MTD, Bupe
- Blood Alcohol Level: 312mg/dl
- **What Happened??**
- **Where did the Alcohol come from?**

Hand Sanitizer Ingestion





Home > Ecolab Quik-Care Aerosol Foam Hand Sanitizer, 500 ml bottle, 12/case

Ecolab 6032105 Ecolab Quik-Care Aerosol Foam Hand Sanitizer, 500 ml bottle, 12/case



Our price: **\$199.00**

Sold By: 12 per case

Item Number: 6032105

Manufacturer: Ecolab

Quantity:

ADD TO SHOPPING CART

OR
>> email a friend

PRODUCT DETAILS

Ecolab Brand Skin Care Supplies, Reorder Code 6032105

Ecolab Quik-Care Aerosol Foam Hand Sanitizer, 500 ml bottle, 12/case

Quik-Care Foam Hand Sanitizer is a waterless, foaming antimicrobial hand sanitizer formulated with **62.5% ethyl alcohol** and emollients to help moisturize and improve skin health with continued use. Quik-Care Aerosol Foam Hand Sanitizer is ideal for situations when there is simply no time or place to wash with soap and water by providing fast, proven antimicrobial efficacy against a wide range of microorganisms.

- 500 ml
- 12 per case

62.5% Ethanol
125 Proof

CUSTOMER REVIEWS

[Be the first to review this product](#)

SIMILAR PRODUCTS



Ecolab Iodine Antimicrobial Surgical Scrub, 800 ml bottle, 12/case
Item # 6084332



EpiSoft Mild Pink Lotion Skin Cleanser, 1000 ml bottle, 12/case
Item # 61067202



Ecolab Asepticare TB+II Quat Ammonium/Alcohol Germicidal Solution, 32oz, Each
Item # 61121521



Endure Clear and Soft Hand Soap, 540 ml bottle, 12/case
Item # 6000031

5%
10 Proof



13%
25 Proof



40%
80 Proof



50%
100 Proof





~ 25% Alcohol
50Proof



35% Alcohol
70Proof



10% Alcohol
20Proof

38 yo female with AUD

- 5 year hx of drinking hand sanitizer in health care facilities; like Vodka—but stronger
- Would drink Sanitizer to alleviate withdrawal
- No hangovers
- Also drank Listerine
- Required ICU and intubation in the past

Table 1. Case reports of intentional alcohol-based hand sanitizer ingestions

Case No.	Reference	Age Yrs Sex	Psychiatric Illness	Hospital Admission Diagnosis	Stated Ingestion Intent	Location of Ingestion (Number of Acute Attempts)	Hand Sanitizer Alcohol Concentration	Blood Concentration of Alcohols, mg/dL	Therapeutic Interventions	Outcome
1	(3)	49, M	Alcoholism	Alcohol intoxication	NS	Hospital	85% ethanol	Ethanol 335	Gastric lavage, intubation	Recovery
2	(4)	38, M	Alcoholism	Suspected intoxication	NS	Hospital	Not specified	Ethanol >500	Intubation	Recovery
3	(5)	38, M	Chronic psychosis	Pancreatic duct stone	Suicide attempt	Hospital	51% isopropanol, 34% propanol-1	isopropanol 37, acetone 227, propanol-1 <10	Fomepizole	Recovery
4	(6)	27, M	Polysubstance abuse, depression	Pancreatitis	Suicide attempt	Emergency department (2 episodes within 2 months)	63% isopropanol	Elevated isopropanol levels	Intubation	Recovery
5	(7)	NS, M	Alcoholism	Alcohol withdrawal	Intoxication	Hospital	65% to 75% ethanol	Ethanol 700	Intubation	Recovery
6	(8)	81, M	NS	Cardiac rehabilitation	Suicide attempt	Cardiac rehabilitation	85% ethanol	Ethanol 228	Supportive care	Recovery
7	(9)	43, M	Alcoholism	Chest pain	Intoxication	Hospital	63% isopropanol	Isopropanol 13.6, acetone 269	Supportive care	Recovery
8	(10)	49, M	NS	Acute intoxication	NS	Correctional facility	62% ethanol	Ethanol 335	Fluid repletion	Recovery
9	(11)	37, M	NS	Hospital visitor	NS	Hospital	27.6% 1-propanol, 36.1% 2-propanol	NS	Gastric lavage, activated charcoal, intubation	Recovery
10	(12)	53, M	Alcoholism	Acute intoxication	Intoxication	Outpatient and hospital	Isopropanol with first ingestion episode and second episode 61% ethanol	Isopropanol 100, acetone 207 both from first episode, ethanol 376, second episode	Intensive care admission	Recovery
11	(13)	46, M	Bipolar disorder alcoholism	Acute intoxication	Intoxication	Outpatient and in hospital	62% ethanol	NS	Observation	Recovery
12	(14)	NS, M	Borderline personality syndrome	NS	NS	Correctional facility	Isopropanol,	Isopropanol 195, acetone 128	Intubation hemodialysis	Recovery
13	(15)	71, M	Alcoholism	Hyponatremia	NS	Hospital, 2 episodes	70% alcohol first episode 48% 2-propanol and 32% 1-propanol, second episode	1st episode ethanol 180 2nd episode 1-propanol 850, 2-propanol 1600, acetone 55	Intensive care	Death
14	(16)	33, M	Depression alcoholism	Depression	Suicide attempt	Psychiatric ward	43% ethanol	Ethanol 414	Intubation	Recovery

Subway Riders Scrub Anti-Semitic Graffiti, as 'Decent Human Beings'

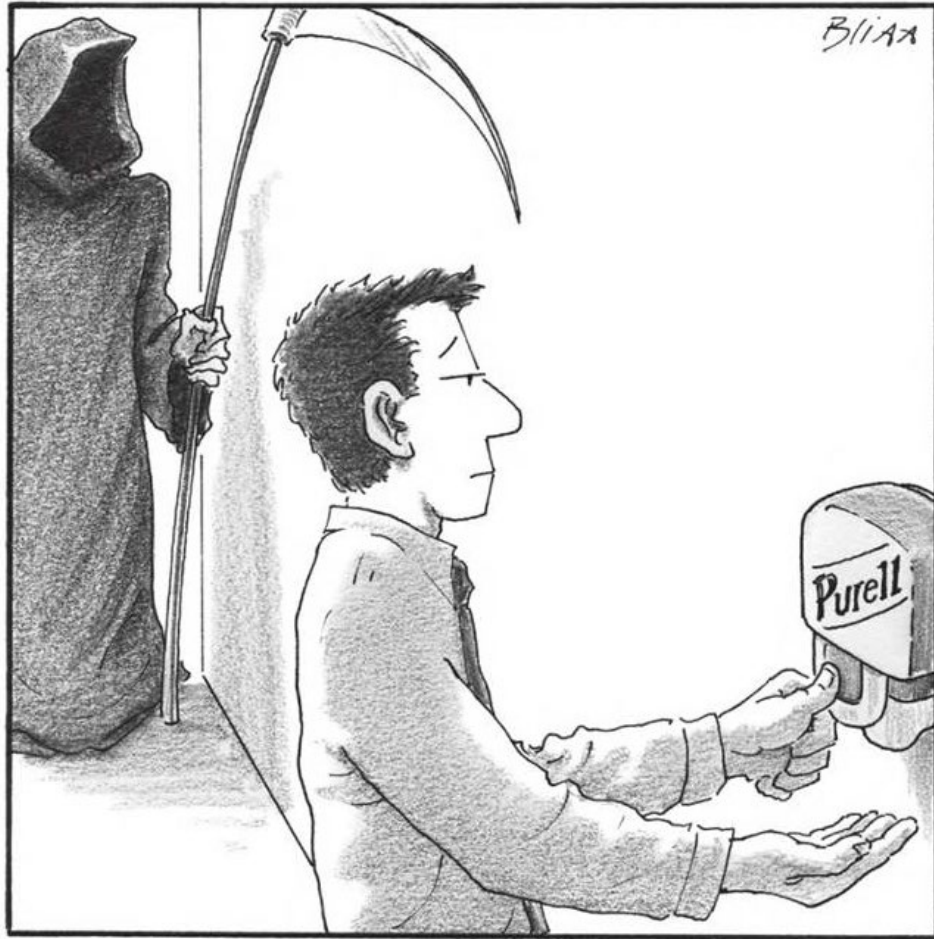
By JONAH ENGEL BROMWICH FEB. 5, 2017



With Ample Purell, Riders Scrub Graffiti

than 354,000 times. "I've never seen so many people simultaneously reach into their bags and pockets looking for tissues and **Purell**," Mr. Locke wrote. "Within about two minutes, all the Nazi symbolism was gone." Mr. Nied

February 05, 2017 - By JONAH ENGEL BROMWICH - N.Y. / Region - Print Headline: "With Ample Purell, Riders Scrub Graffiti"




"Don't bother."





Get in Touch

 301.656.3920

 education@asam.org

 www.asam.org