Medicolegal Review: Toxicologic and Medication Misadventures

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UCSF Medical Center

Nothing to Disclose

AI prompt: “Animated cartoon of a doctor struggling with a conflict of interest”

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What Makes the ED High Risk?

- Rapid decision making
- Incomplete or imperfect information
- High acuity setting
- Interruptions and distractions
- Short-term relationships with patients

AI prompt: “Photo of an Emergency Physician overwhelmed with patients at work”

Table 2. Medical Liability Claim Frequency by Physician Specialty, 2016

Specialty	Percentage of Physicians			Number of Claims per 100 Physicians
	Ever Sued	Sued 2+ Times	Sued in Last 12 Months	
	(1)	(2)	(3)	(4)
Anesthesiology	36.3%	17.9%	1.3%	64
Emergency medicine	51.7%	25.7%	3.0%	108
Family practice	33.4%	13.8%	1.1%	55
General surgery	63.2%	50.1%	8.0%	205
Internal medicine	31.7%	14.8%	3.1%	57
Internal medicine sub-specialties	25.5%	11.0%	1.0%	44
Obstetrics/Gynecology	63.6%	44.1%	6.7%	162
Pediatrics	17.8%	6.0%	1.0%	28
Psychiatry	16.1%	5.9%	1.9%	25
Radiology	37.6%	21.4%	0.4%	82
Surgical sub-specialties	47.4%	25.0%	3.3%	110
Other specialties	19.5%	5.8%	2.5%	29
Observations	3211	3145	3147	3145

Source: Author's tabulation of data from the AMA's 2016 Benchmark Survey.

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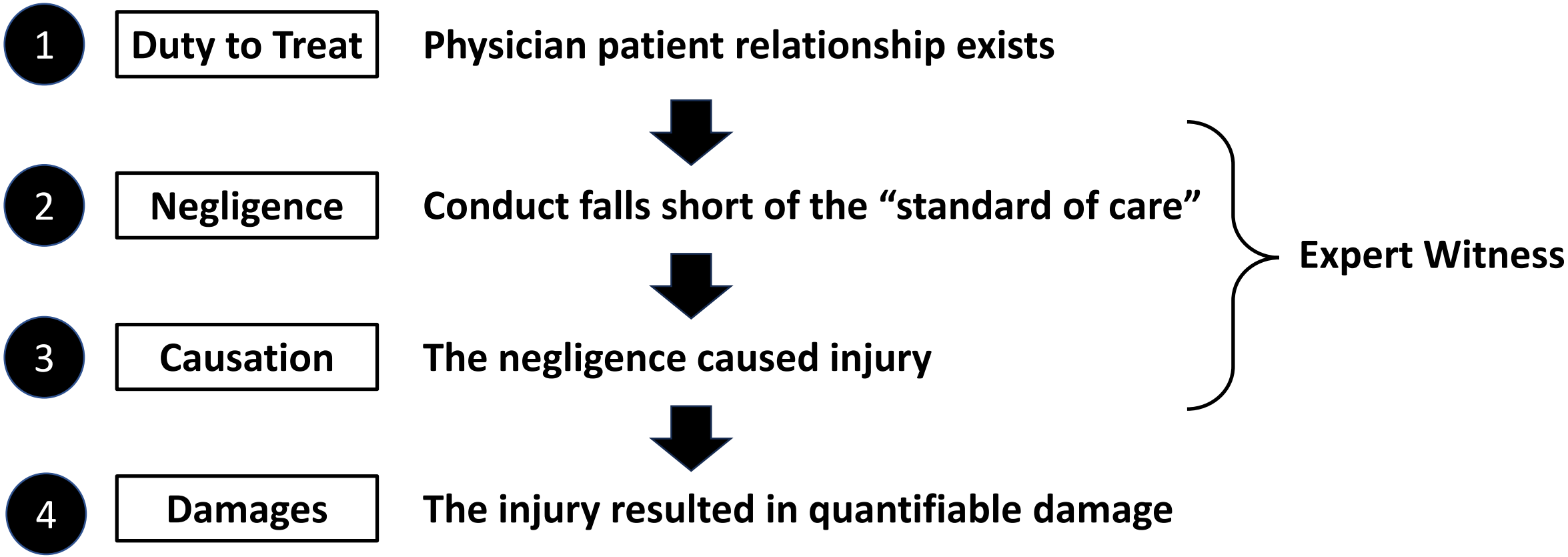
Why Are EM Physicians Sued?

Top Allegations	Cases Filed	Indemnity Incurred
Missed/Delayed Diagnosis	47%	62%
Management of Medical Treatment	28%	24%
Medication Related	7%	4%
Safety or Security	6%	2%
Surgical Treatment	3%	3%

American College of Emergency Physician, Summary of Malpractice Claim Data and Trends from Three Sources, Oct 2013

Anatomy of Medical Malpractice Case in the United States



Case 1 – Dental Pain

- A 43-year-old obese male with a history of obstructive sleep apnea presents with dental pain.
- He took Vicodin several hours prior to arrival without relief
- Physical exam:
  - HR 107, BP 157/118, RR 18, O2 Sat 94% RA
  - TTP over left side of face with tooth pain
- Assessment: Dental pain without evidence of tooth abscess.
- Plan: Hydromorphone 2 mg IM, Zofran 8 mg ODT.

Case 1 – Dental Pain

- 40 minutes later - resting quietly, no signs of distress.
- Repeat VS – HR 100, BP 157/101, RR 16, O2 sat 93% RA.
- One hour after arrival O2 sat 94% on non-rebreather.
- 1.5 hours after arrival a new physician orders a second dose of hydromorphone 2 mg IM.
- 30 minutes later (2 hours after presentation) patient discharged.
- Last VS: HR 88, BP 150/96, O2 Sat 98% on non-rebreather.

Case 1 – Conclusion

- Patient brought home by roommate at 4:30 am and went to bed.
- Patient found unresponsive in bed at 7:30 am.
- Taken back to the hospital and pronounced dead.
- Medical examiner cause of death:
  - “Dilated cardiomyopathy with coronary artery heart disease”
  - “Opioids present in system” listed as significant contributor.

Is this medical malpractice?

Is this medical malpractice?

1. **Duty to Treat** — Physician patient relationship exists 
2. **Negligence** — Conduct falls short of the “standard of care” 
3. **Causation** — The negligence caused injury 
4. **Damages** — The injury resulted in quantifiable damage

Is this medical malpractice?

Negligence — **Conduct falls short of the "standard of care"**

- **Plaintiff:**
  - **The dose of medication was too high**
  - **The physician should have known that the patient was high risk**
  - **The patient showed signs of respiratory depression prior to discharge**
  - **The physician should have monitored the patient for a longer period**

Causation — **The negligence caused injury**

- **Medical examiner attribution of cause of death (dilated cardiomyopathy)**

DOSE

MONITORING

Case 1 – In Retrospect

- Obese male with obstructive sleep apnea
- Hydromorphone 4 mg over 2.5 hours by intramuscular route
- Placed on oxygen while in ED
- Last dose ~ 30 minutes prior to discharge
- Taking opioids as outpatient (Vicodin)
- Two emergency providers with change of shift during visit

Case 1 – In Retrospect

- **Obese male** with **obstructive sleep apnea**
- **Hydromorphone 4 mg** over **2.5 hours** by **intramuscular route**
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Open access Research

BMJ Open

Risk factors for opioid-induced respiratory depression in surgical patients: a systematic review and meta-analyses

Kapil Gupta,[1] Mahesh Nagappa,[2] Arun Prasad,[3] Lusine Abrahamyan,[4] Jean Wong,[3] Toby N Weingarten,[5] Frances Chung[3]

- **Systematic review of post surgical patient receiving opioid analgesia**
- **Outcome: Opioid-induced respiratory depression**
- **Incidence: 1/200 patients (0.5%)**

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Risk Factor	Odds Ratio [CI]
Opioid Dose	2.87 [2.03 - 3.71]
Cardiac Disease	1.79 [1.23 - 2.60]
Pulmonary Disease	2.27 [1.39 - 3.70]
Obstructive Sleep Apnea	1.49 [1.19 – 1.87]

Risk Factors for Opioid-Induced Respiratory Depression

- Age > 55 years
- Obesity (e.g., body mass index >30 kg/m^2)
- Obstructive sleep apnea
- Pre-existing pulmonary disease (e.g., COPD)
- Concomitant administration of sedating medications.
- Naloxone administration

From American Society for Pain Management Nursing Guidelines on Monitoring for Opioid- Induced Sedation and Respiratory Depression

The Dose Makes the Poison - Understanding Potency

Opioid Analgesic (route)	Onset of effect (min)	Duration of effect (hrs)	Potency
Morphine (IV)	5-10	3-6	1
Oxycodone (PO)	10-15	4-6	0.5
Hydrocodone (PO)	30-60	4-6	0.33
Hydromorphone (IV)	15	4-6	6.66
Methadone (PO)	30-60	6-12	1
Fentanyl (IV)	Immediate	0.5- 1	100
Buprenorphine (PO)	60	4-12	
Meperidine (IV)	1-5	2-4	0.1
Naloxone (IV)	1-2	1-2	

Case 1 – In Retrospect…

- **Obese male** with **obstructive sleep apnea**
- **Hydromorphone 4 mg** over **2.5 hours** by **intramuscular route**
- Placed on **oxygen** while in ED
- Ventilation monitored using **pulse oximetry**
- Last dose ~ **30 minutes prior to discharge**
- **Taking opioids** as outpatient (Vicodin)
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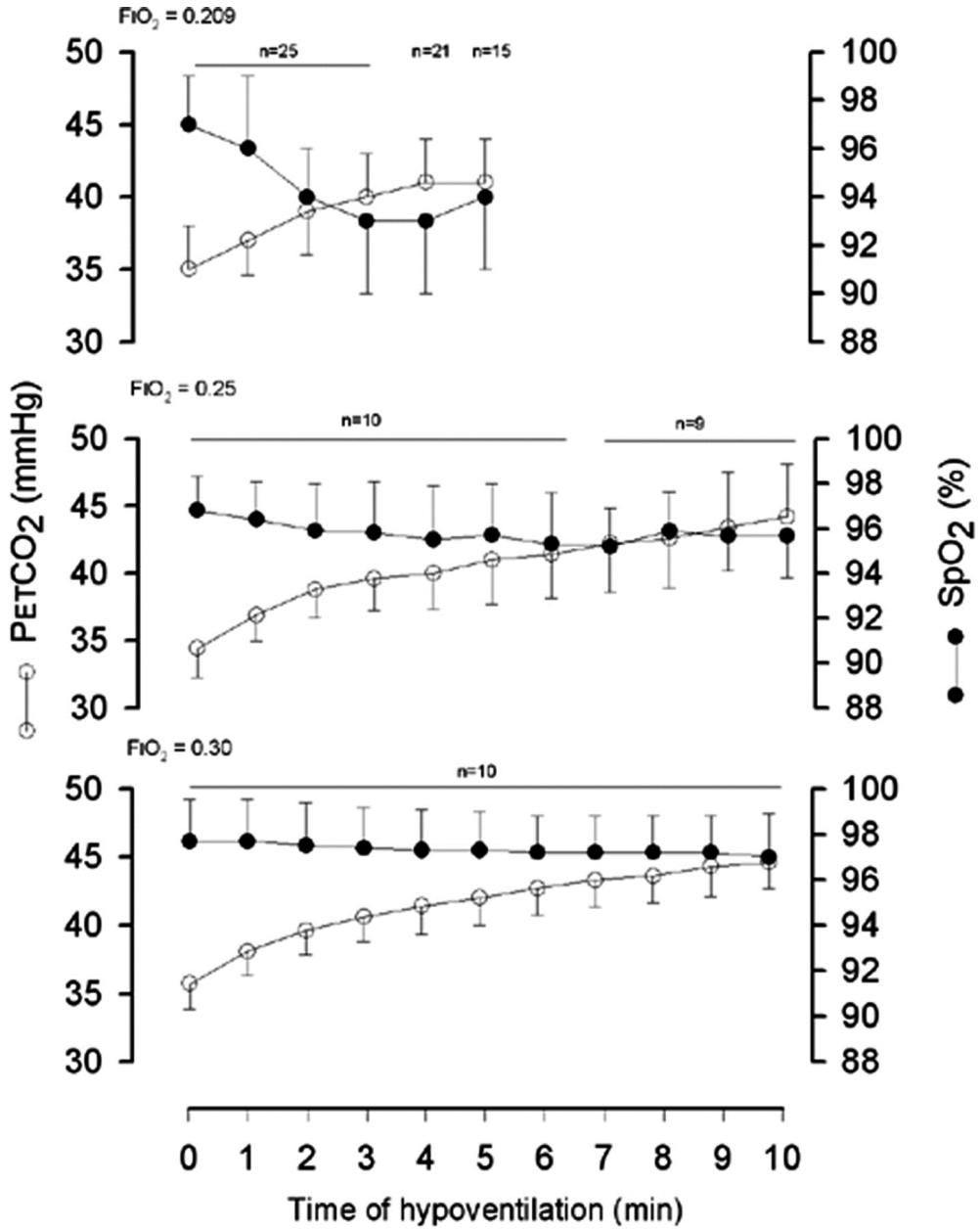
Hypoventilation Experiment

FiO2 = 21%
(room air)

FiO2 = 25%
(suppl O2)

FiO2 = 30%
(Suppl O2)



Chest. 2004;126(5):1552-1558

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FDA News Release

FDA requires strong warnings for opioid analgesics, prescription opioid cough products, and benzodiazepine labeling related to serious risks and death from combined use

Action to better inform prescribers and protect patients as part of Agency's Opioids Action Plan

For Immediate Release August 31, 2016

Inquiries

Media

Sarah Peddicord
301-796-2805

Consumers

888-INFO-FDA

Related Information

- New Safety Measures

Case 1 - Pearls

- Use caution when giving opioids to patients with comorbid conditions (Especially OSA)
- Carefully consider dose and route of administration
- A normal oxygen saturation does not exclude opioid induced hypoventilation.
- End tidal CO2 monitoring is a better monitoring tool.
- Beware when combining multiple sedative hypnotics.

Case 2 – The intoxicated patient

- A 32-year-old male was brought in for acute alcohol intoxication.
- PMH: Prior visit to the ED with suicidal ideation during which he had been placed on ”one to one” observation. (Not reviewed by MD)
- Physical exam: Red eyes, slurred speech, strong smell of alcohol.
- Labs: Ethanol level 369 mg/dL

Case 2 – The intoxicated patient

- Four hours later – He removed his IV and told the nurse that he planned to go home in a taxi.
- Nurse urged him to call a friend, and he agreed.
- Nurse went to tell the attending, but when they returned the patient had eloped.
- Nurse asked attending if they should call the police and the attending said no, but did contact hospital security.
- The patient left the hospital unescorted.
- Two hours later he was struck by a car sustaining serious traumatic injuries.

Is this medical malpractice?

Anatomy of Medical Malpractice Case in the United States

1	**Duty to Treat**	**Physician patient relationship exists**	
2	**Negligence**	**Conduct falls short of the “standard of care”**	
3	**Causation**	**The negligence caused injury**	
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Anatomy of Medical Malpractice Case in the United States

Negligence — **Conduct falls short of the "standard of care"**

- **Plaintiff –**
  - **Physician and hospital should have prevented the patient from leaving the emergency department.**
  - **The patient was over the "legal limit" at the time of discharge.**
  - **ED physician should have reviewed previous records indicating that the patient was a suicide risk.**
- **Defense –**
  - **The patient did not exhibit any suicidal or homicidal ideation, presented on his own volition and, though intoxicated, could still make decisions for himself.**

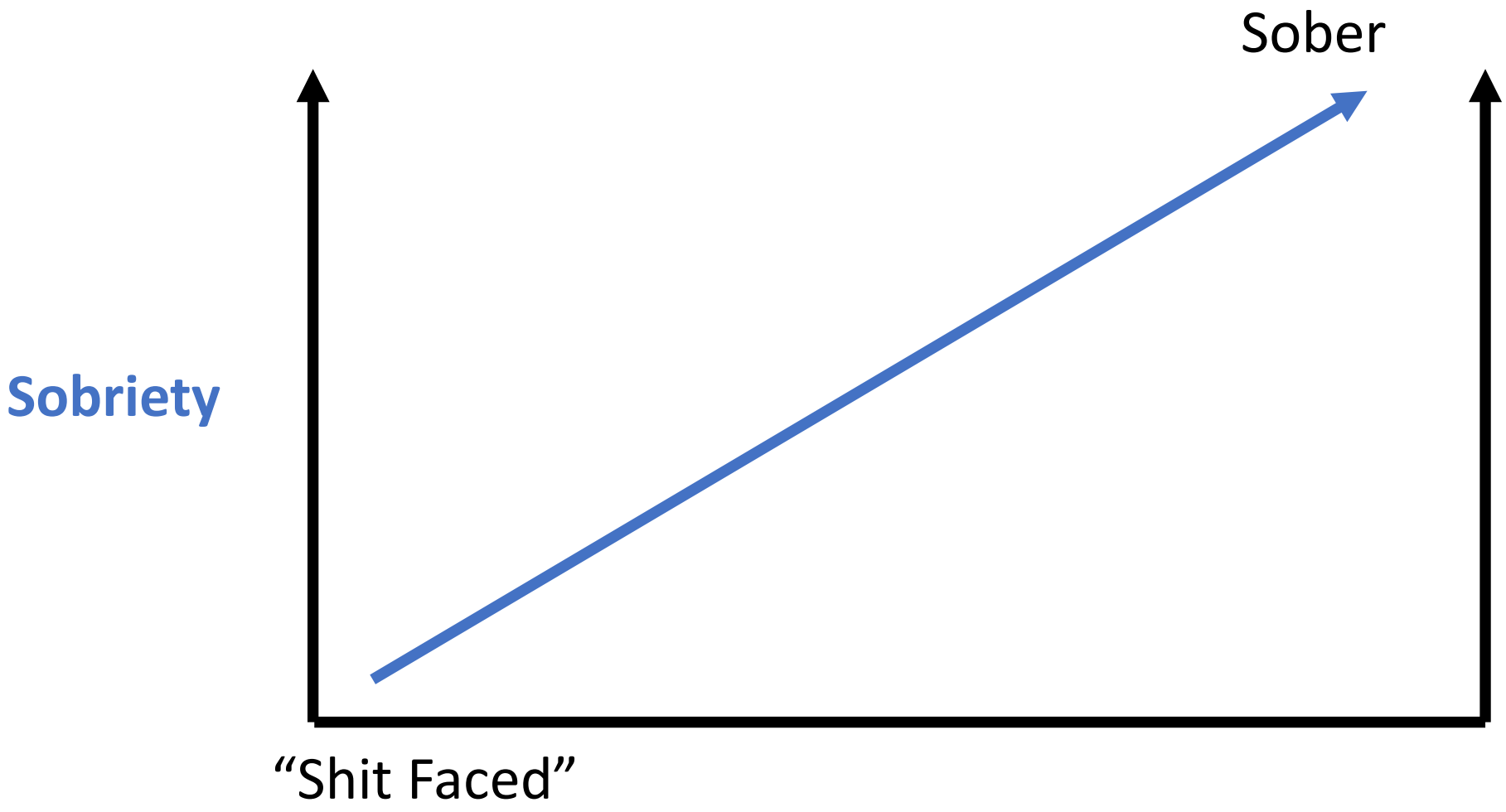
Considerations When Discharging Intoxicated Patients

- Exclusion of dangerous medical, psychiatric and social conditions.
- Determination of mental status and safety as it relates to the discharge environment.
- Emergency physicians are responsible for protecting impaired patients under their care.

Dangerous Co-occurring Conditions In Intoxicated Patients

- Metabolic Derangements
  - Hypoglycemia, Hyponatremia, Hypokalemia, Hypomagnesemia
- Alcoholic Ketoacidosis
- Thiamine Deficiency
  - Wernicke's encephalopathy
- Underlying Infection
- Occult Trauma
  - Intracranial hemorrhage etc.

Mental Status as it Relates to Discharge Environment



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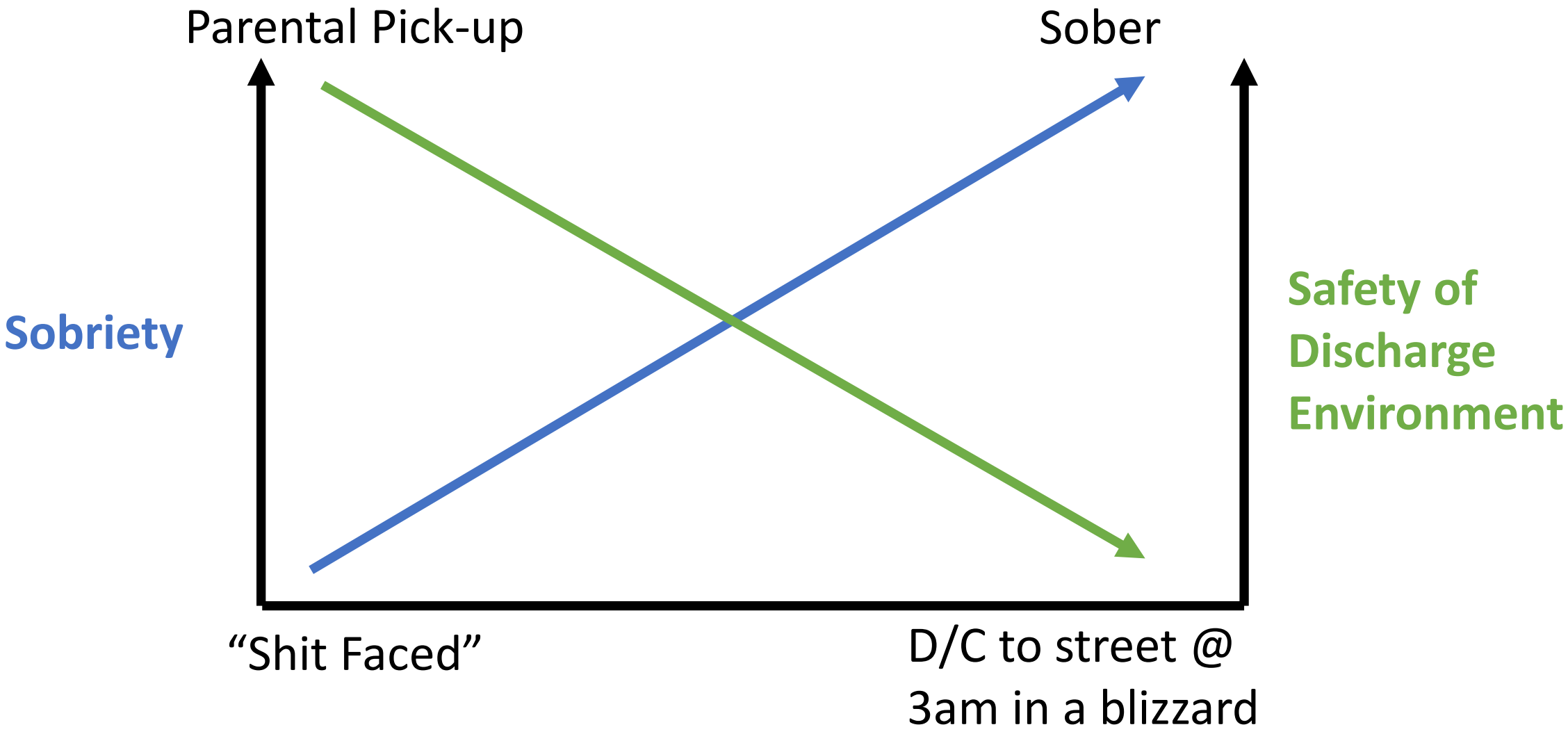

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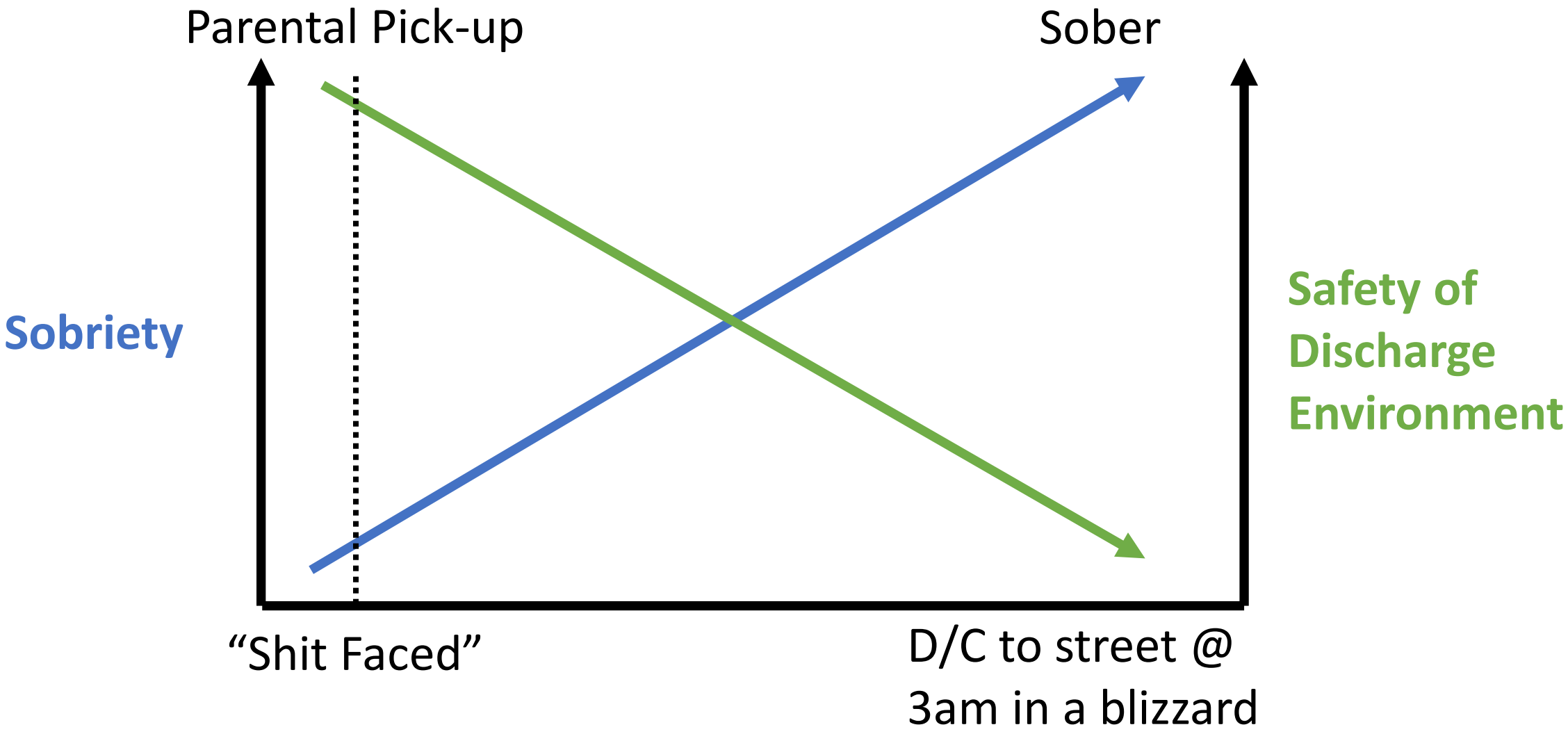

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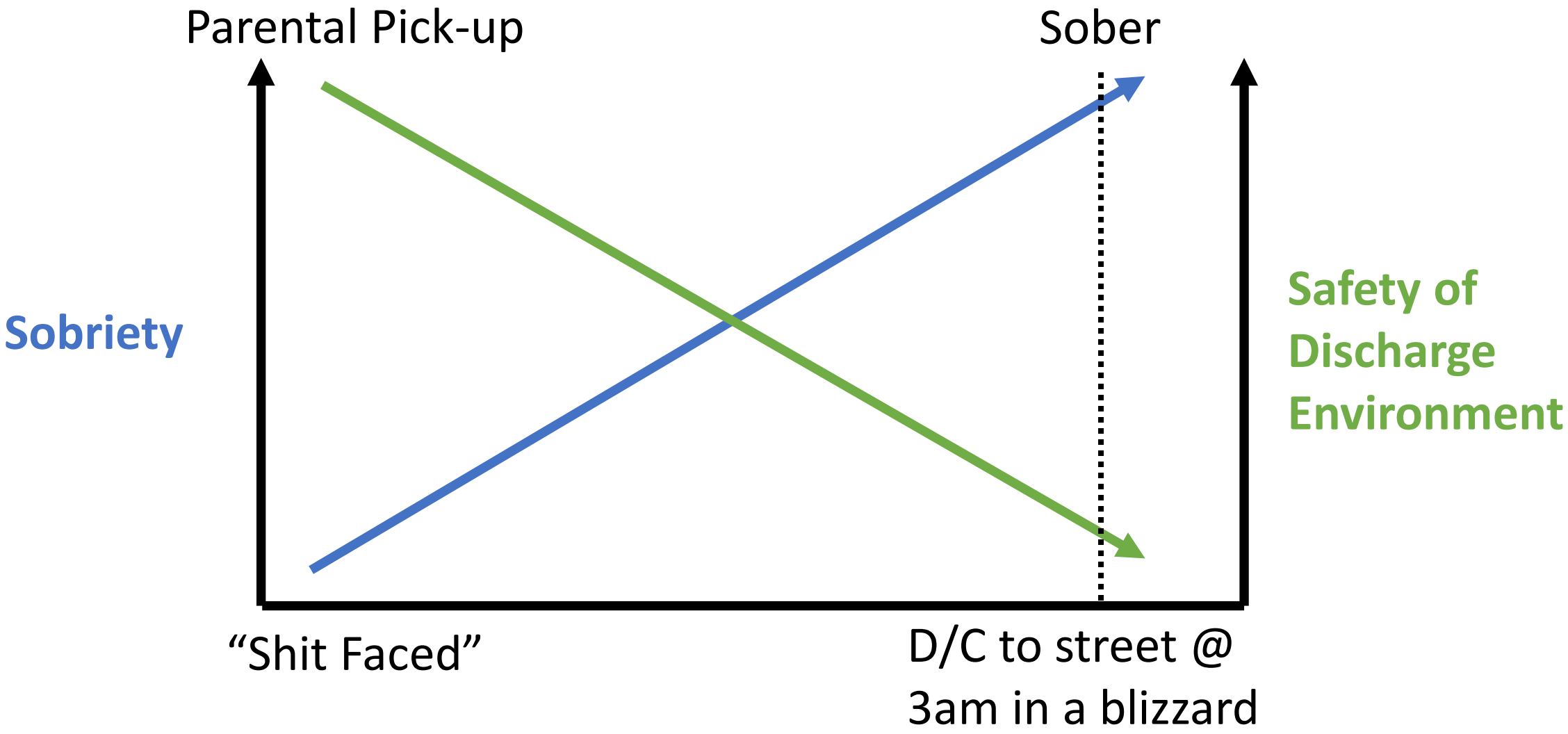

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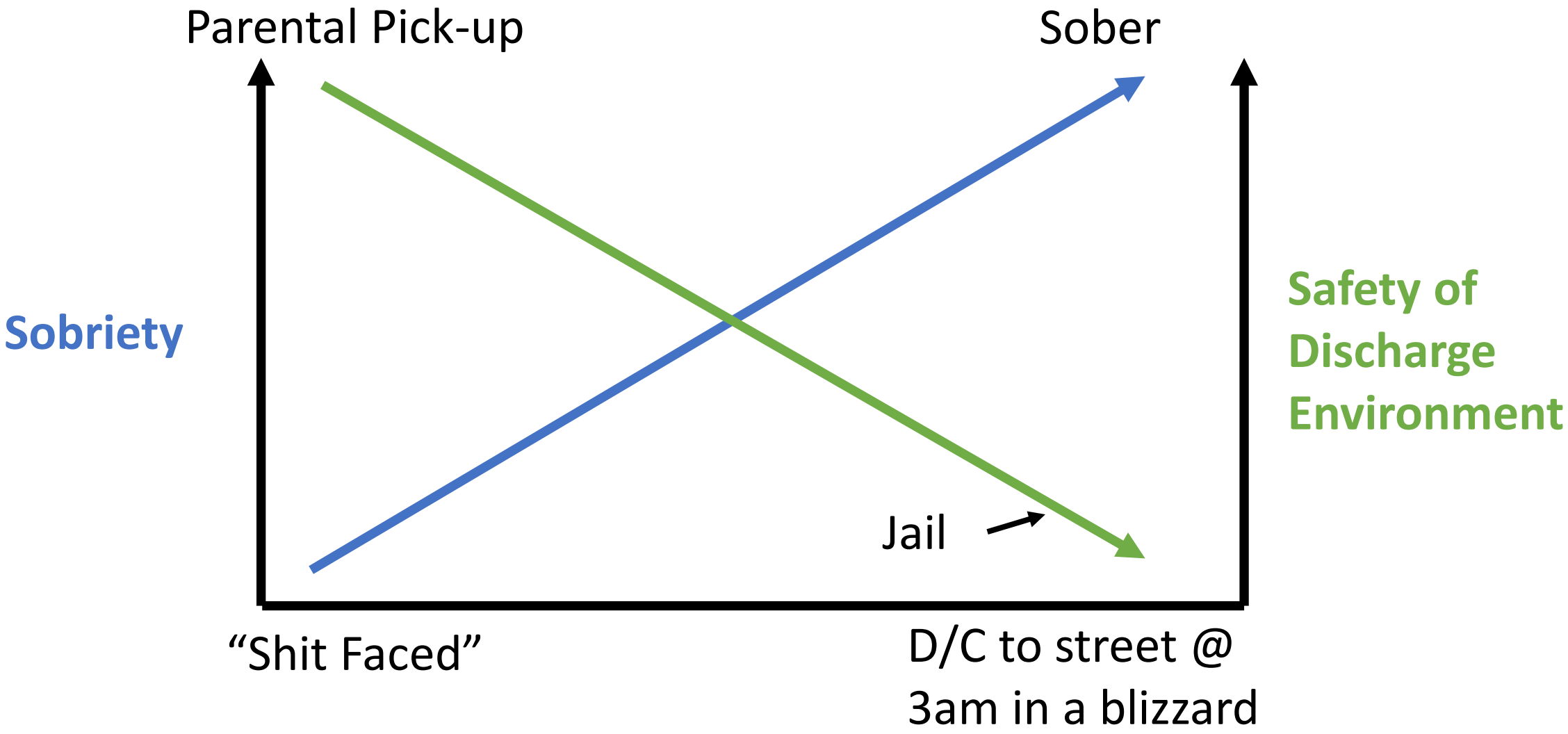
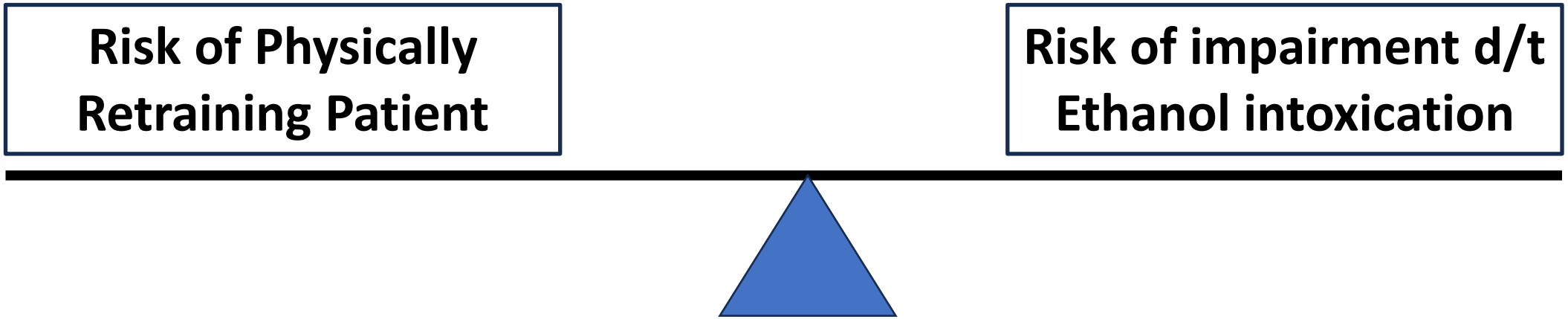


A Difficult Balancing Act



Pearl - You are less likely to run into trouble when erroring on the side of holding a patient against their will than prematurely discharging a patient with acute intoxication.

Ethanol Levels in the Emergency Department

- Ethanol concentrations have no impact on ED length of stay.
- Physical signs of intoxication do not correlate well with BAC.
- Consider ethanol levels on a case-by-case basis.

- **Pitfall:** Reflex ethanol levels in certain situations (e.g., trauma)
- **Pitfall:** The existence of defined legal limits for DUI introduces risk for the Emergency Physician when levels are obtained.

Case 2 – In Retrospect

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Case 2 - Pearls

- **Be careful when discharging intoxicated patients.**
- **Rule out potentially life-threatening concurrent illness.**
- **Consider level of impairment with respect to the discharge plan when patients are leaving against medical advice.**
- **Consider the value of obtaining blood alcohol concentration.**
- **Clear documentation is critically important.**

Summary

- The ED is a high-risk environment
- Most Emergency Physicians will be sued
- Negligence is determined by the “standard of care”
- Experts will disagree on the “standard of care”
- Opioids – Most litigation centers around the dose and patient monitoring.
- Ethanol – Always consider concurrent dangerous medical dx.
- Ethanol – Avoid sending reflex blood alcohol levels.

Questions?


MASTERS OF POISON...
CALIFORNIA'S POISON HOTLINE, RUN BY UCSF, HELPS 700 PEOPLE A DAY ANSWER ONE URGENT QUESTION: IS IT HARMFUL?
ILLUSTRATIONS BY CAT SIMS
WINDOW GLEAM
SILICA GEL
DO NOT EAT THROW AWAY
INCOMING-------
714-555-8950
530-555-6542
510-555-7489
POISON ALERT
HMM... I MUST ADMIT THIS IS VERY UNUSUAL...
IN CALL
MA'AM, DO YOU KNOW HOW MANY PILLS? WHEN DID SHE EAT THEM?
I THINK SHE NEEDS TO GET HER DAUGHTER TO THE EMERGENCY ROOM...
I CAN ASSURE YOU, SIR... SILICA GEL IS NOT TOXIC...
Candy or Medicine?