The $500 Billion Dollar per-year molecule?

(estimate of medical, police, court, legal, insurance, disability, and lost productivity costs)
ETOH & Trauma

- Why talk about Alcohol and Trauma?
- Why learn about it?
- What do I need to know?
- Can I make a difference?
Why talk about Alcohol?

People with Alcohol-use disorders can be frustrating and frustrated.

- **They** reject help, deny problems and...
- **They** do stupid things when drunk (ie: create or receive Trauma) and...
- **They** test the limits of those who care for and about them
- **They** end up with labels which alienate and keep them at a distance such as “**They**”
- **They** can feel very alone, ashamed, and that it is “all their fault”
Why talk about Alcohol-use disorders?

Not surprisingly, blaming the Alcohol-use disorder entirely on the individual makes it more difficult for the patient to accept help. Remember, these are our neighbors, friends, and family. They could also be you and I.

But hey, we’re only human, and we get emotional every now and then, right?....
Why talk about Alcohol-use disorders?

What are some “bad” decisions somebody with an alcohol use disorder can make?

A) “I don’t need any help”
B) “I only have myself to blame”
C) “I can take care of it myself”
D) All of the above
Why talk about Alcohol-use disorders?

• “In general, the level of understanding regarding the nature of alcoholism is inadequate and dominated by myths”

• “Alcoholism is the most common chronic disease in trauma victims”

• “A leading cause of death for alcoholics is trauma”

Larry Gentilello, MD - A leading professor of trauma surgery
Why talk about Alcohol-use disorders?

some sobering numbers ahead....
Why learn about them?

- 200,000 deaths per year are ETOH related (1990) \(^1\)
- 258,000 people “officially” injured yearly in etoh-related MVA’s \(^2\)
- 15,000 new permanently disabled Americans per year due to drunk driving
- 70% chronic pancreatitis are etoh-related
- 75% cirrhosis patients are etoh-related

\(^1\) US Dept of Health and Human Services 7\(^{th}\) report to Congress
\(^2\) NHTSA 2002
Why learn about them?

- **17,419 Etoh-related fatalities in 2002 (41%)**:
  - Texas is #1 in USA for total fatal DWI’s
  - Utah lowest at 22%
  - Missouri had 43% rate and #10 in US for total deaths (525)
  - Most at risk: males 21-24 on a motorcycle on weekend night

NTSA 2002 report
Why learn about them?

- 65% homicides
- 75% stabbings
- 70% beatings
- 56% domestic violence
- >50% fire deaths
- Alcoholism in 25-50% of all trauma’s, next highest trauma comorbidity is 2-5%

Why learn about them?

Intoxication confounds assessment and increases diagnostic tests despite same illness severity:

- Intoxicated patients are more likely to get:
  - Intubated (tube in lungs)
  - Intracranial pressure monitor (tube into skull)
  - Diagnostic peritoneal lavage (tube into abdomen)

Jurkovich et al. (1993) JAMA 270:51-56
Why learn about them?

The disease that “keeps on giving”

- An alcohol-use disorder is associated with an increased risk of:
  - Complications during hospitalization (ie: pneumonia)
  - Longer lengths of stay

Jurkovich (2000) Trauma Quarterly 14: 385-402
Why learn about them?

One foolish night or Alcoholism?

- Of 2657 Pt’s in L1 Trauma center ²:
  - 75% of intoxicated patients had evidence of chronic alcoholism

- Of 1118 Pt’s in L1 Trauma center (Baltimore) ¹:
  - 54% had lifetime substance dependence diagnosis

1 - Soderstrom et al. (1997) JAMA 277:1769-1774
Why learn about them?

ETOH = MORE TRAUMA RECURRENCE

- Trauma plus BAL >100 leads to 2.5 fold ↑ risk for trauma readmission within 2 years  

- Detroit Level 1 Trauma Center – 5 yr f/u period with substance-abusing trauma patients: 
  - 44% trauma recurrence
  - 20% mortality

2 - Sims et al. (1989) J Trauma 29:940-946
Why learn about them?

Higher subsequent mortality rate from recurrent trauma

- 27,399 Pt’s at Level 1 Baltimore Trauma center 1983-1995
- 58% of the deaths due to recurrent trauma’s were alcohol or illicit drug positive

What do I need to know?

Alcoholism is a disease?

Yes?

or

No?
What do I need to know?

**The Disease:**

- Twins studies: (dz concordance raised apart)
  - 60% monozygotic
  - 39% dyzgotic
- Sons of alcoholics:
  - lower subjective response to etoh
  - 400% more likely to become alcoholics
- We can breed alcoholic rats
  - Decreased DA innervation densities in VTA neurons, nucleus accumbens, limbic cortex
What do I need to know?

**Genetically-based differences in alcoholics:**

- High novelty seeking: (50% variance explained genetically)
  - D2 receptor A2 Allele on 11q
  - D4 receptor exon III 7- repeat allele on chromosome 11
- Genes on chromosome 16 also linked with high risk for severe dependence, those on chr 4 are protective

R. Cloninger
What do I need to know?

More biologic and genetic markers:

- Decreased platelet MAO-B and AC
- Increased D2 receptor Taq A1 and B1 alleles
- Increased DA receptor transporter gene VNTR polymorphism in untranslated 3’ region
- Increased D4 gene polymorphism in 3rd cytoplasmic loop
- Increased high activity COMT
- Decreased cortisol and prolactin rises
- EEG: decreased stability of alpha, increased fast alpha, decreased P300 ERP
- D2 receptors 30% decreased in brains of A1 carriers:
What do I need to know?

Where does ETOH work?

- Ethanol seems to alter protein-protein interactions via conformational changes in protein structure:
  - $\text{GABA}_A$ receptor (agonist) – anxiolytic, sedative
  - NMDA receptor (antagonist) – anxiolytic, amnestic, sedative
  - Various multi-component systems such as receptor-coupled adenylyl cyclase
  - $5\text{HT}_{1B}$: mediate etoh preference
  - $5\text{HT}_{3A}$: antagonists (zofran) reduce consumption
- Interplay between NMDA, $5\text{HT}$, opioid, and DA systems regulate etoh’s relation to pleasure
Can I make a difference?

**Diagnose**

1) Have you ever felt you should cut down on your drinking?
2) Have people annoyed you by criticizing your drinking?
3) Have you ever felt bad or guilty about your drinking?
4) Have you ever taken a drink first thing in the morning (eye-opener) to steady your nerves or get rid of a hangover?

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<th>sensitivity</th>
<th>specificity</th>
<th>PPV (30% prev)</th>
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<td>85%</td>
<td>52-93%</td>
<td>45%</td>
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<tr>
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<td>75%</td>
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<td>4</td>
<td>25%</td>
<td>100%</td>
<td>&gt;99%</td>
</tr>
</tbody>
</table>
Can I make a difference?

Personal injury is the greatest motivator to reduce drinking
Can I make a difference?

**Brief Interventions (surprisingly effective)**

- Express **EMPATHY** for them
- Inform them of the **disease model**
- Provide **non-punitive FEEDBACK** on drinking behavior
- Reinforce their responsibility for choosing **to accept help**
- **Reduce** shame and humiliation
- Discuss **OPTIONS** for change / help
Can I make a difference?

HELP AND REHAB (and prevent trauma)

- **AA 647-3677**
- **NA 830-3232**
- **CA 768-2544**
- **DART 569-3105**
- **Harbor Light 652-3100**
- **BASIC 621-9009**
- **Archway 361-1630**