



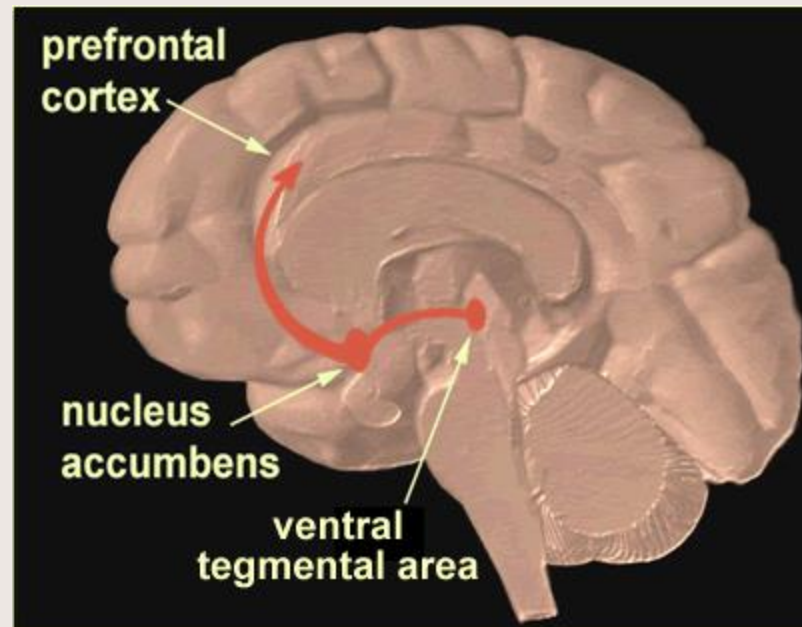
Integration of Substance Use and Primary Care

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MEDICAL COLLEGE

Substance Use Disorder

- The abuse of and dependence on a drug represents a **maladaptive pattern of drug use** characterized by **loss of control** and/or preoccupation with activities involved in obtaining the drug which significantly interferes with the normal daily functioning of the individual.

DOPAMINE AND REWARD



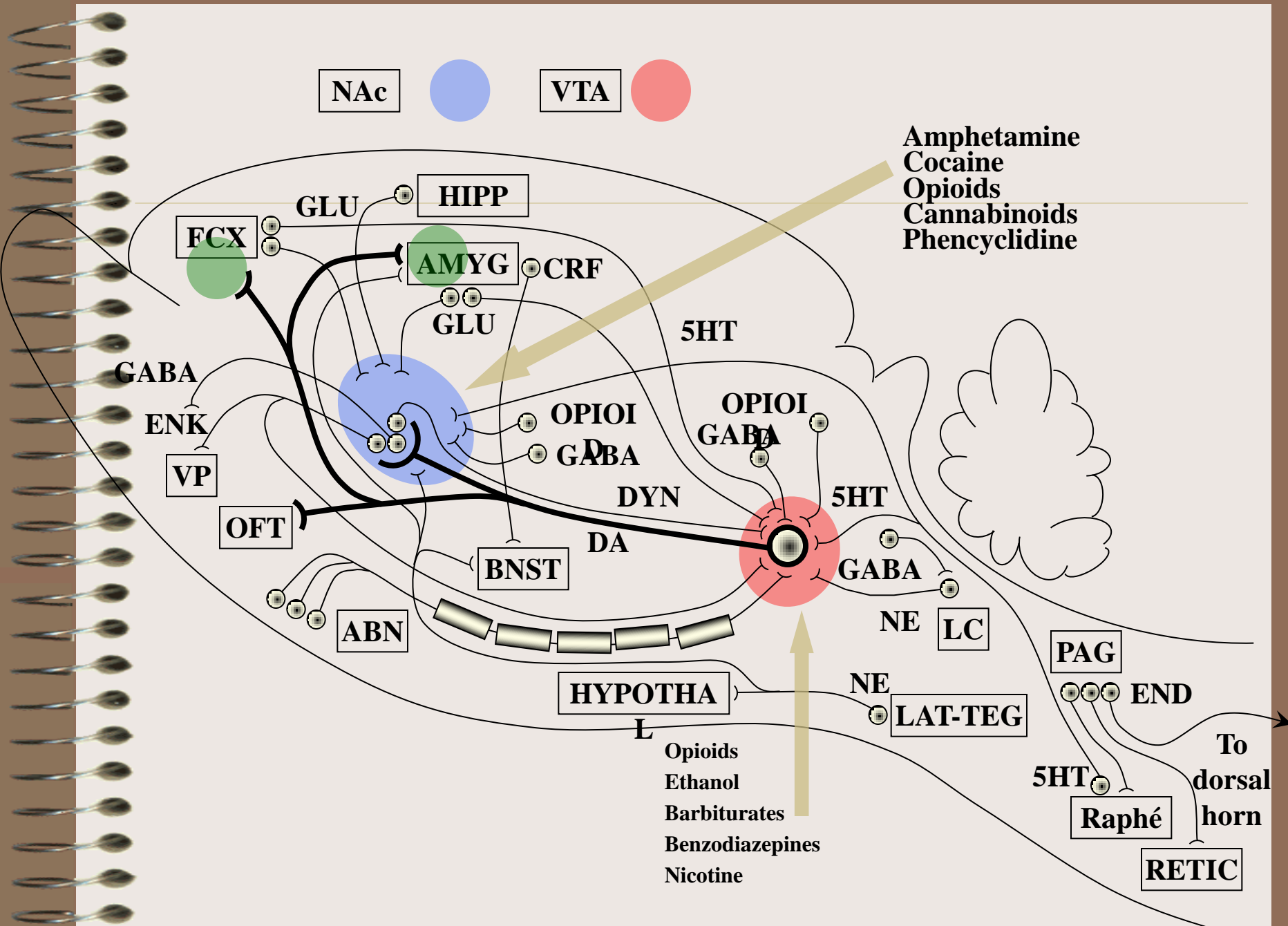
NAc



VTA



Amphetamine
Cocaine
Opioids
Cannabinoids
Phencyclidine



Substance Use Disorder

In the elderly, it is important to note that biopsychosocial **consequences of drug dependence can be confused with frequent problems associated with aging**, such as falls or impaired cognitive function.

Substance Misuse And Older Adults: Issues And Concerns

- Many physiological changes occur as people age, which influence:
 - absorption
 - metabolizing,
 - Retention
 - elimination of alcohol and other drugs.

Substance Use And Older Adults: Issues And Concerns

- These changes increase the likelihood of older adults having **adverse reactions to alcohol and other drugs when combined**, or of having adverse drug reactions even when they are prescribed at recommended doses.

Substance Use And Older Adults: Issues And Concerns

- Tolerance for alcohol and other medications decreases with age.



Substance Use And Older Adults: Issues And Concerns

- The majority of people over the age of 60 who have been hospitalized, were admitted due to alcohol related illnesses and trauma.



Most Commonly Prescribed Inappropriate Medications

- “Inappropriate Prescribing for Elderly Americans in a Large Outpatient Population” Curtis et al, *Arch Intern Med* Vol 164, August 2004
 - 162370 subjects
 - 21% filled a prescription for 1 or more medications of concern as defined by the Beers revised list of drugs to be avoided
 - 15% filled prescriptions for 2 drugs of concern
 - 4% filled prescriptions for 3 or more drugs of concern
 - Amitriptyline and doxepin accounted for 23% of all claims of concern
 - 51% of claim concerns had the potential for severe adverse effects

Recognizing and Treating SUD

- A bleak picture
 - Lack of addiction knowledge
 - Lack of resource knowledge or availability for treatment
 - Lack of time
 - Numerous screens a primary care physician is suggested to carry out
 - Stigma
 - Insurance barriers

- Alcohol and other drug using patients often present with other medical problems.
- These medical conditions are consequences
 - Of both their current and their past **high risk behaviors**
 - **Injection or route of drug use**
 - **Direct toxic effects** of illicit drugs or caustic agents

Drugs have global adverse health effects and body changes:

- Dramatic changes in appetite
- Increased body temperature
- Mood swings
- Fatigue
- Insomnia
- Withdrawal aches and pains

ALCOHOL

3 Types of Senior Alcohol Users

- “Survivors” or early onset drinkers.
 - These individuals are defined as having had long-term problems with alcohol misuse and abuse, and thus often experience significant health problems and are estimated to have a lifespan abbreviated by between 5 and 15 years due to the negative impact and damaging health effects of chronic alcohol overconsumption.

3 Types of Senior Alcohol Users

- “Reactors” or late-onset drinkers.
 - These individuals are thought to **begin problematic drinking later in life, in response to specific traumatic events** such as a death of a loved one, illness, or loneliness—sometimes secondary to retirement. **The loss of professional identity as one moves into one’s retirement years may very well be an emotional trauma** that, once again, makes a person who took pride in their emotional identity—and who mourns its loss—take refuge in alcohol.

3 Types of Senior Alcohol Users

- “Binge Drinkers” or intermittent users.
 - These individuals may use alcohol only occasionally but to excess, which can cause health problems including falls, gastrointestinal problems, and negative interactions with prescribed medications. For these individuals who over-drink infrequently, the increased impact of alcohol as the body ages may come as an unwelcome and unexpected surprise

ALCOHOL METABOLISM

1 BEER = BAC OF .015

3 BEERS = BAC OF .05

21ST BIRTHDAY – 21 SHOTS = ~0.350

*ZERO ORDER METABOLISM

** URINE IS 1.3 X'S CONCENTRATION OF THE BLOOD
ALCOHOL CONCENTRATION

DOSING AND OVERDOSING

BLOOD ALCOHOL CONCENTRATION (BAC)

20 - 99 mg%: LOSS OF MUSCULAR
COORDINATION

100 - 199 mg%: NEUROLOGIC
IMPAIRMENT, ATAXIA,
PROLONGED REACTION, MENTAL
IMPAIRMENT,
INCOORDINATION

200 - 299 mg%: NAUSEA, VOMITING,
ATAXIA

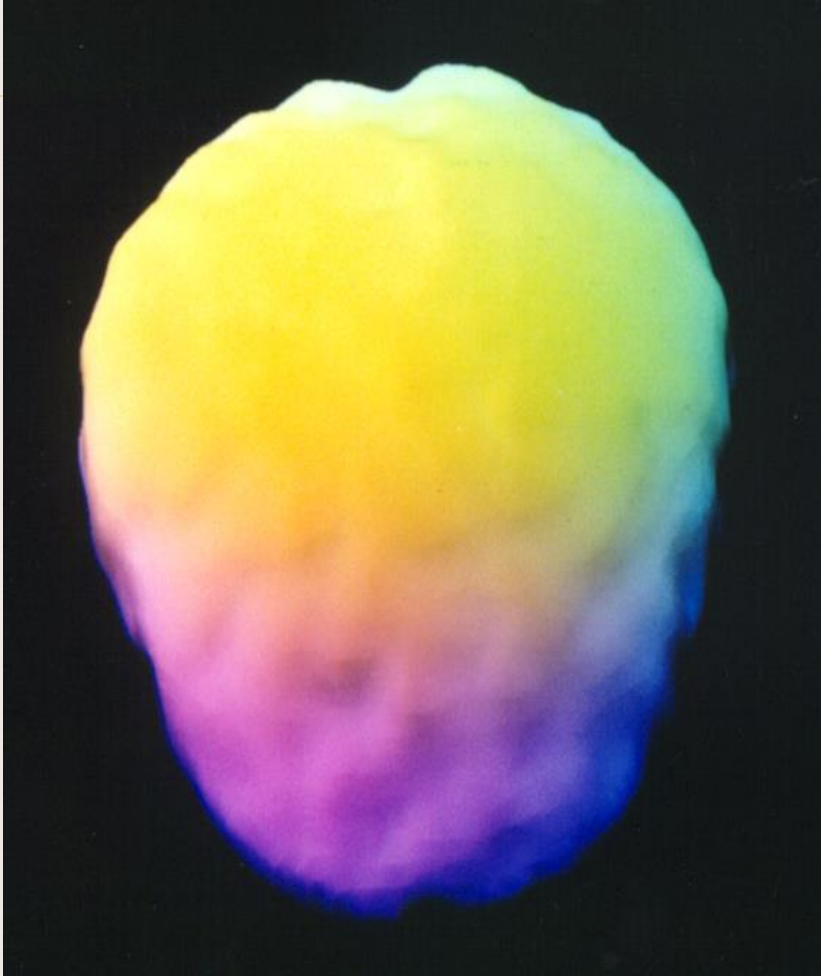
300 - 399 mg%: HYPOTHERMIA,
DYSARTHRIA, AMNESIA, STUPOR

400 - > mg%: COMA

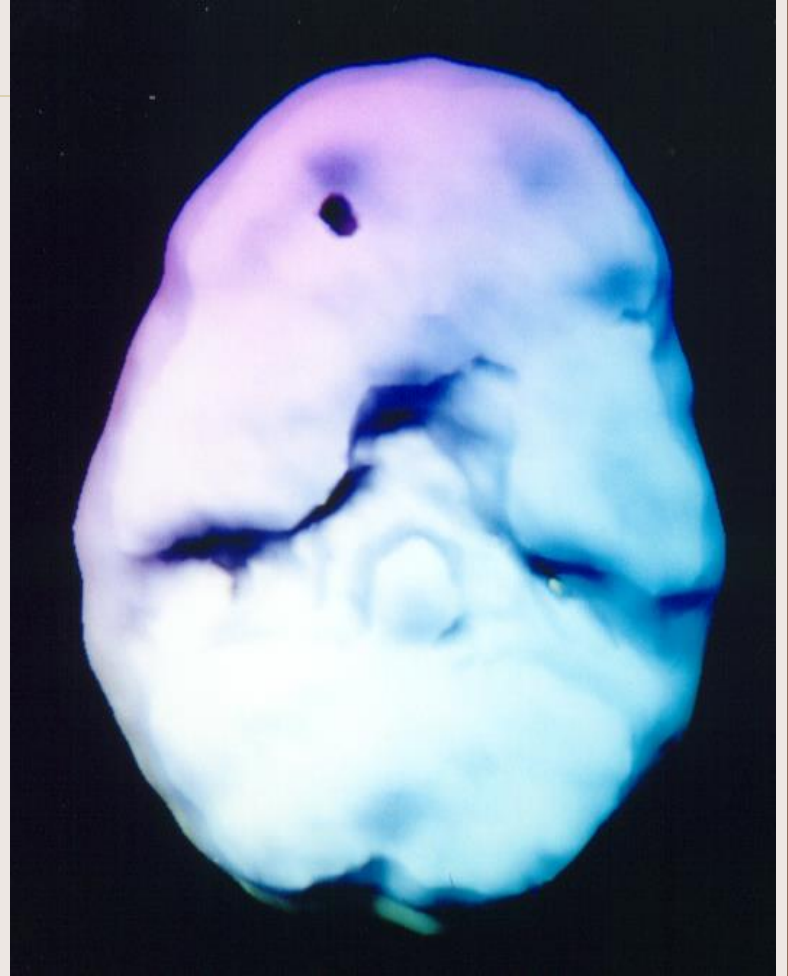
* BAC GREATER THAN 150 IF NOT
SHOWING SIGNS OF INTOXICATION
OR ANY TIME BAC IS > 300 EQUALS
A DIAGNOSIS OF **ALCOHOL
DEPENDENCE**



HEALTHY SURFACE VIEWS SPECT SCAN

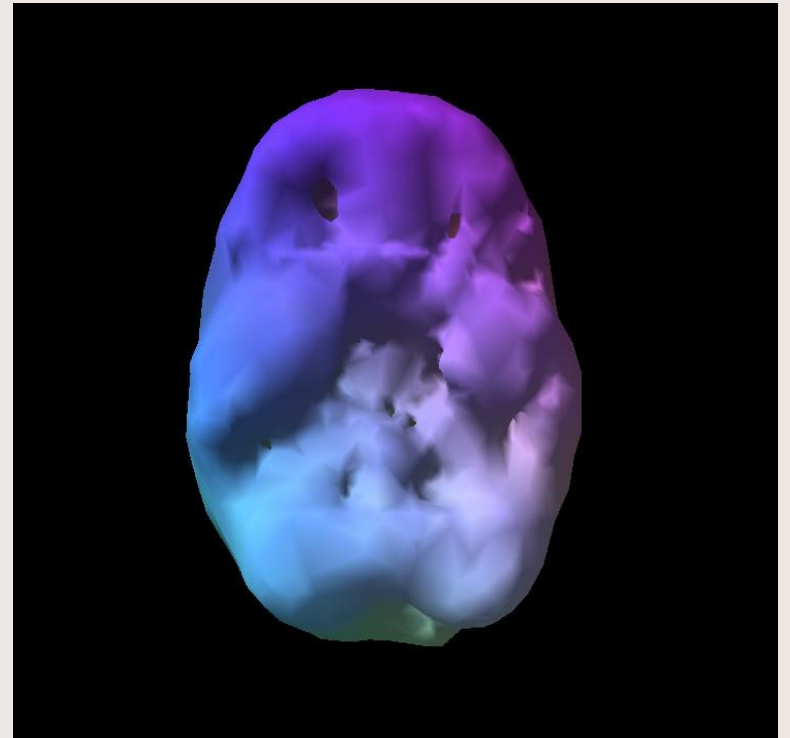
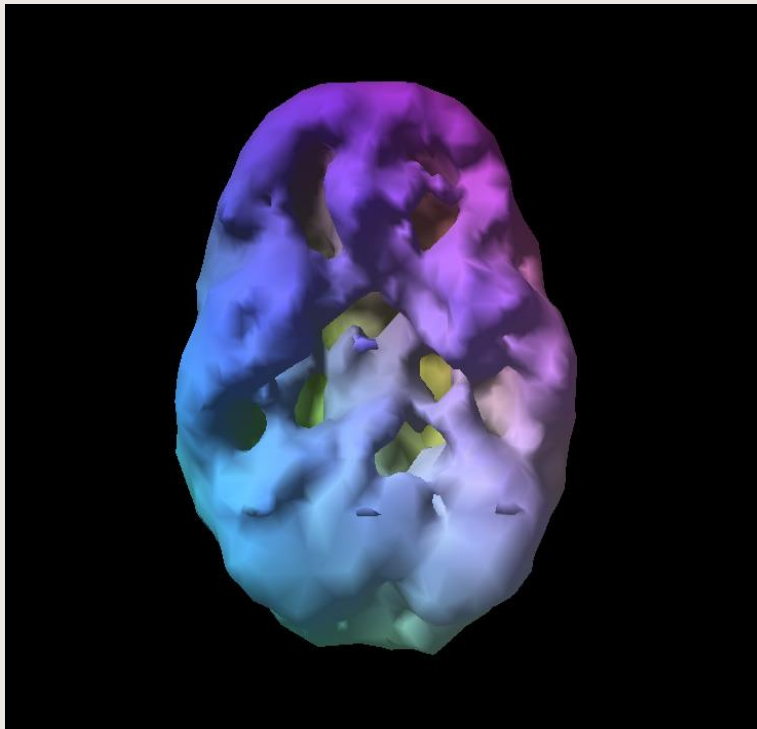


TOP DOWN VIEW



UNDERSIDE VIEW

ALCOHOL INTOXICATION / SOBER

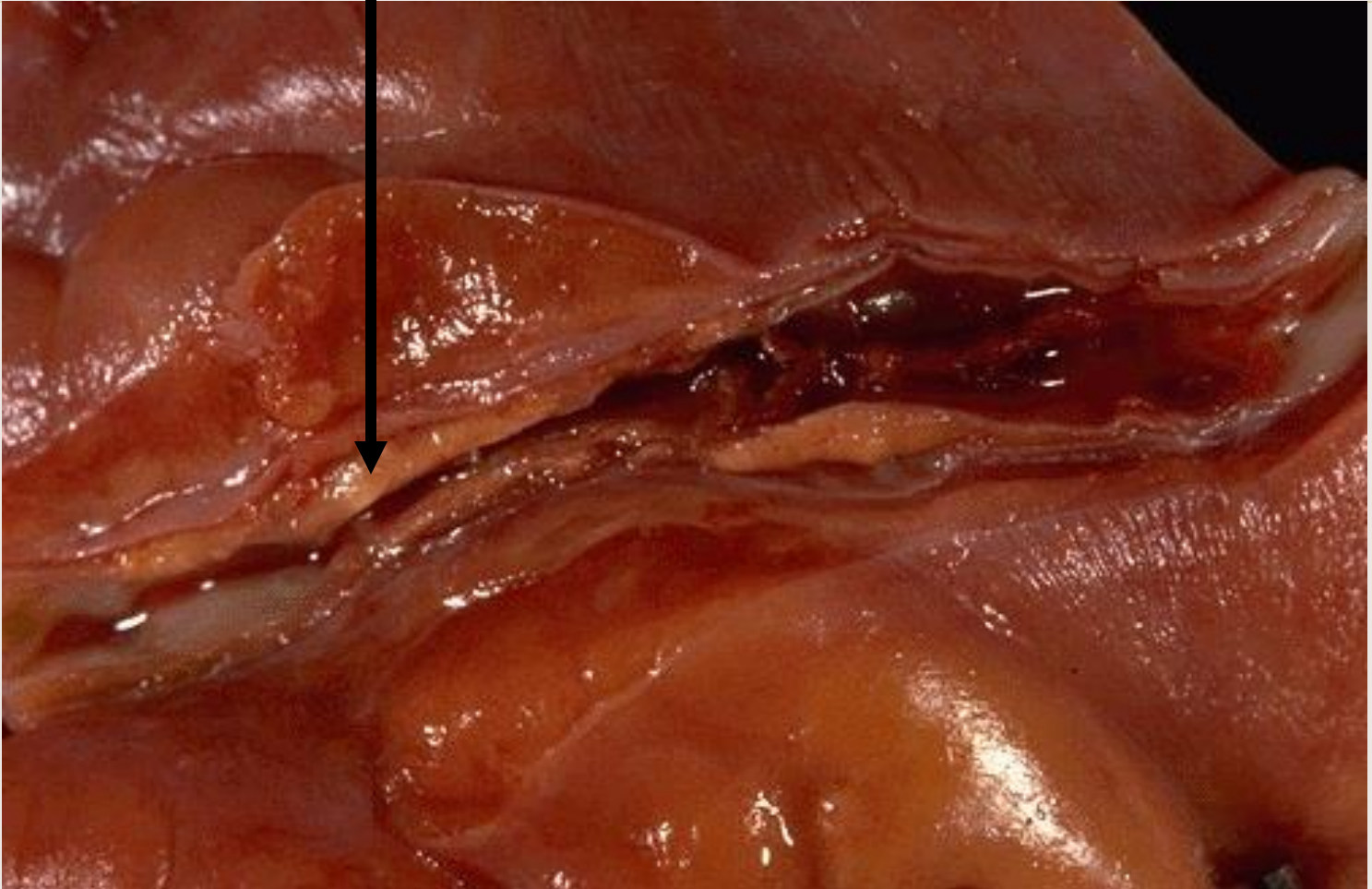


Alcohol Effects

- Greater than 3 drinks at one time – direct effect on the heart
- High intake of alcohol can lead to:
 - High blood pressure
 - From withdrawal
 - Without withdrawal
 - Arrhythmias – Holiday Heart Syndrome (a. fib)

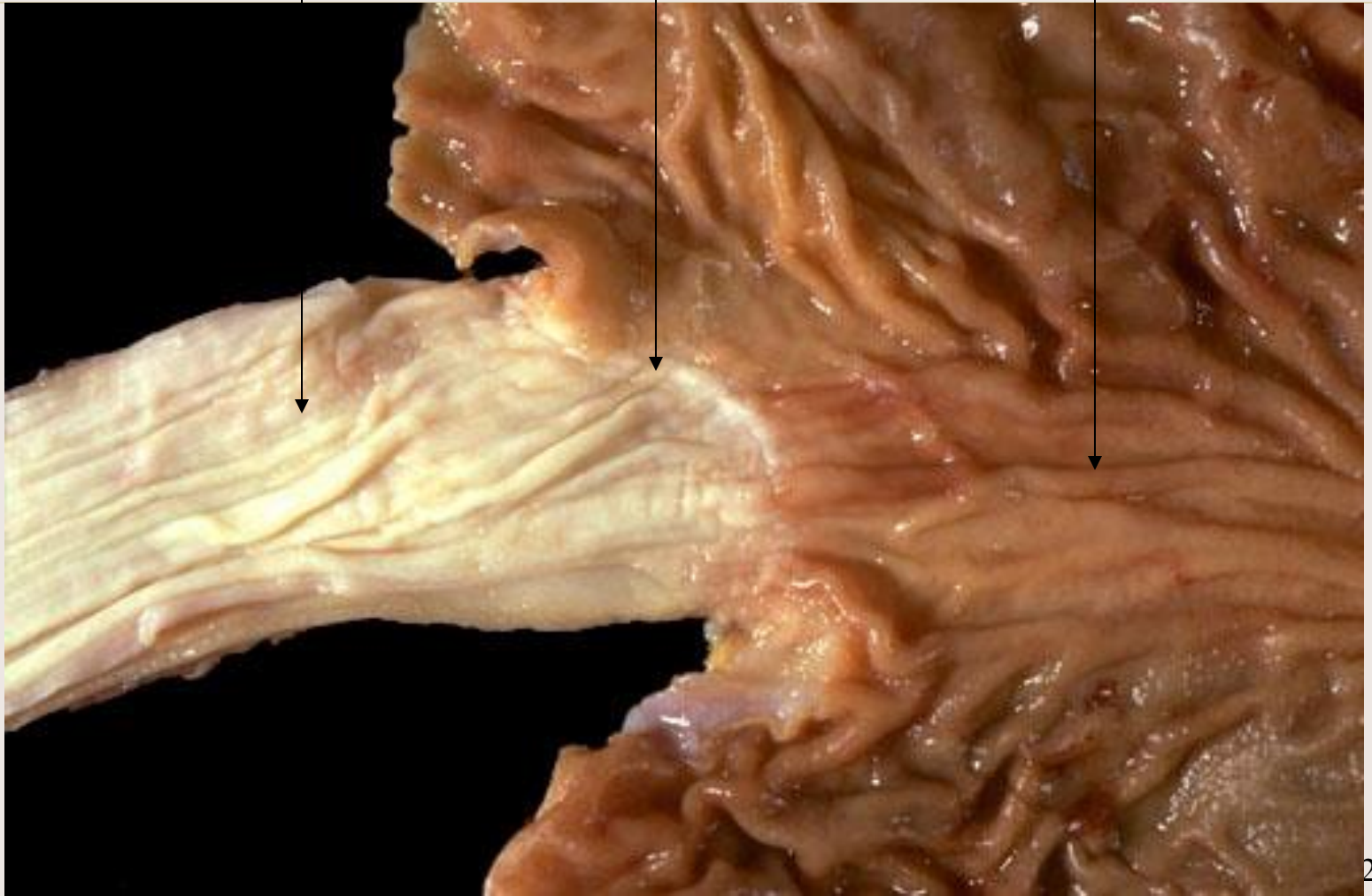
Alcohol Effects

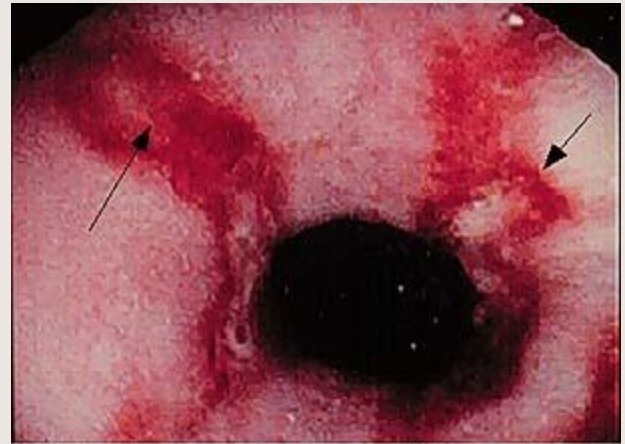
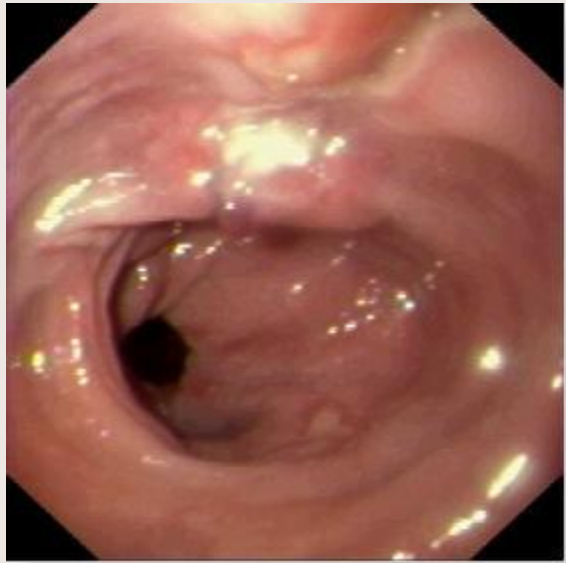
- High intake of alcohol can lead to:
 - High triglycerides
 - Congestive heart failure
 - Increased incidence of heart disease and stroke



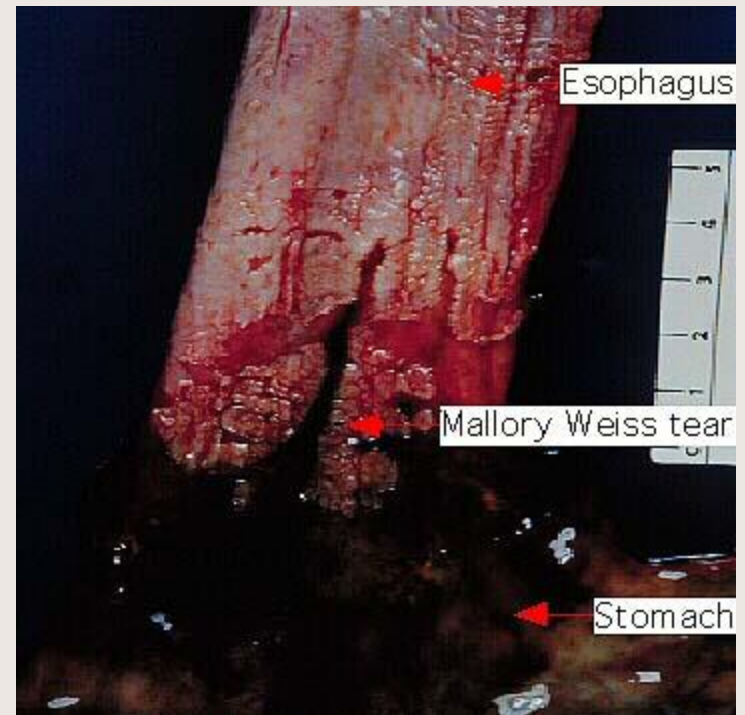
Alcohol Effects

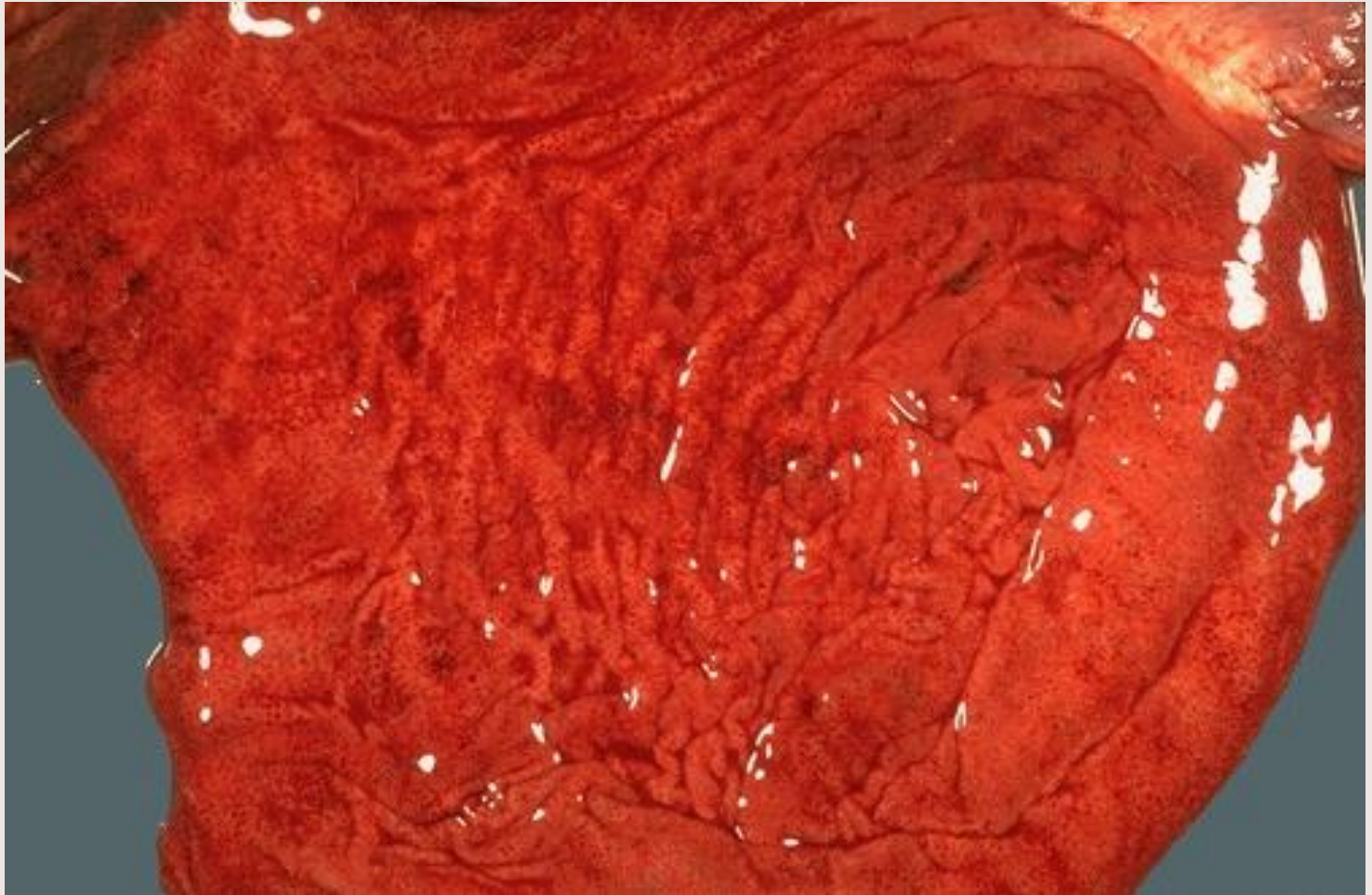
- High intake of alcohol can lead to:
 - Infections:
 - Pneumococcal
 - Pseudomonas
 - Gram Negatives
 - Risky Behaviors
 - STD
 - Hep C
 - HIV

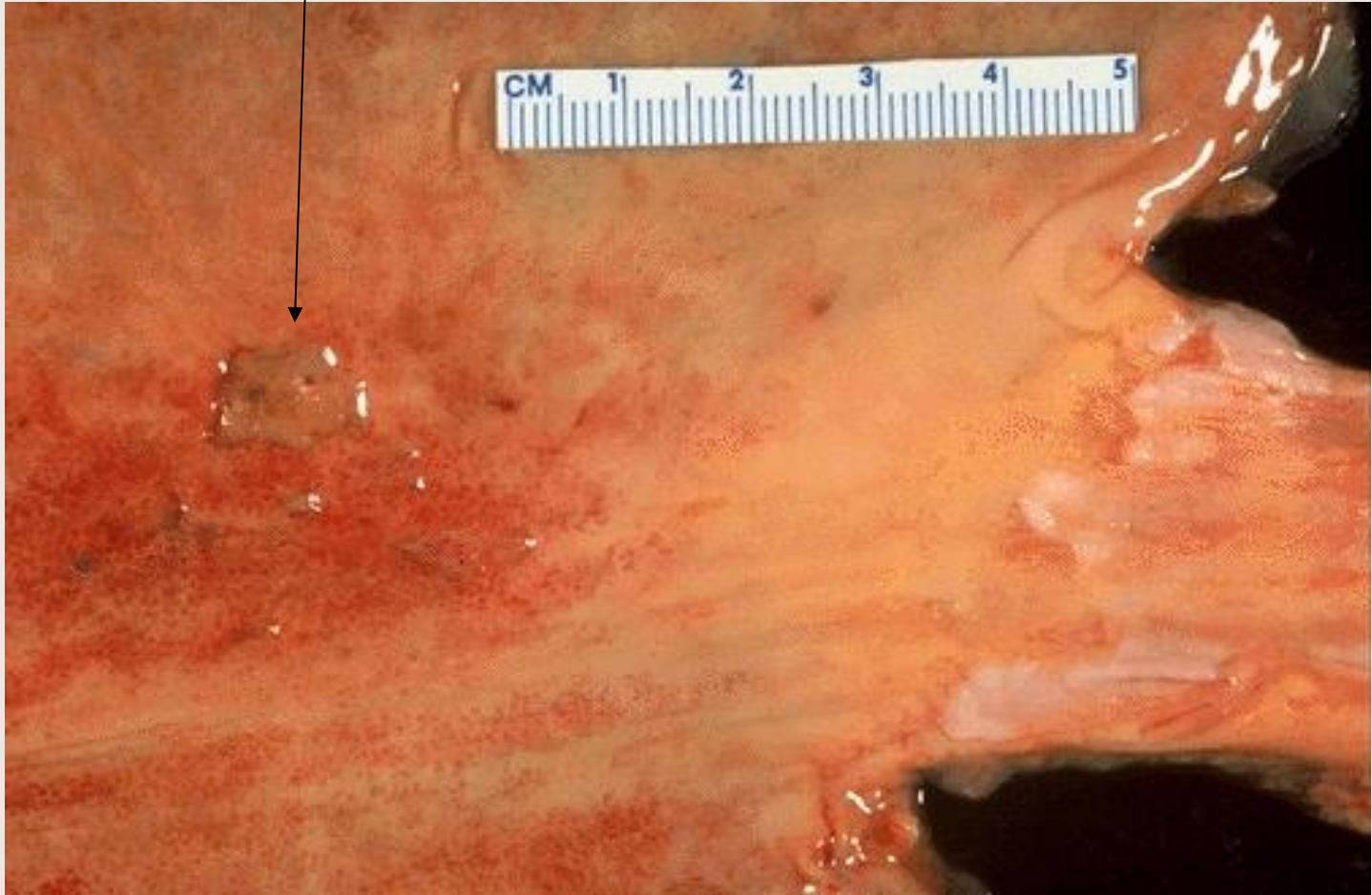




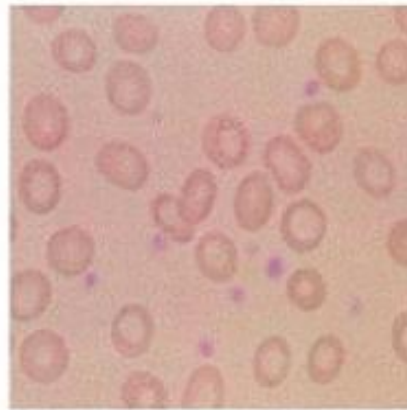
MALLORY WEISS TEAR



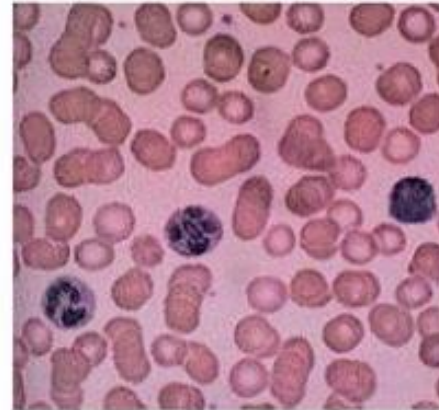




Iron Deficiency Anemia



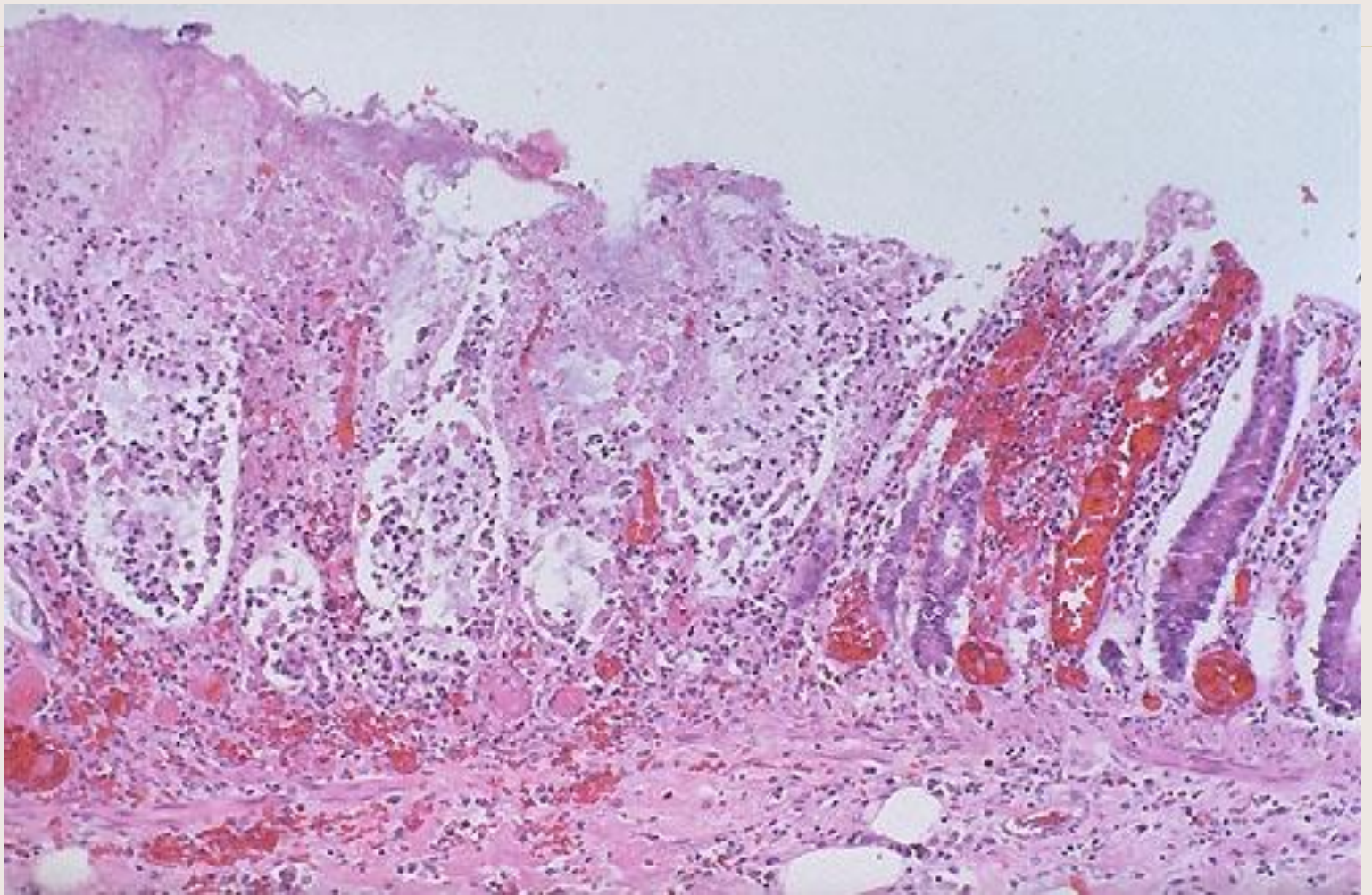
anemia

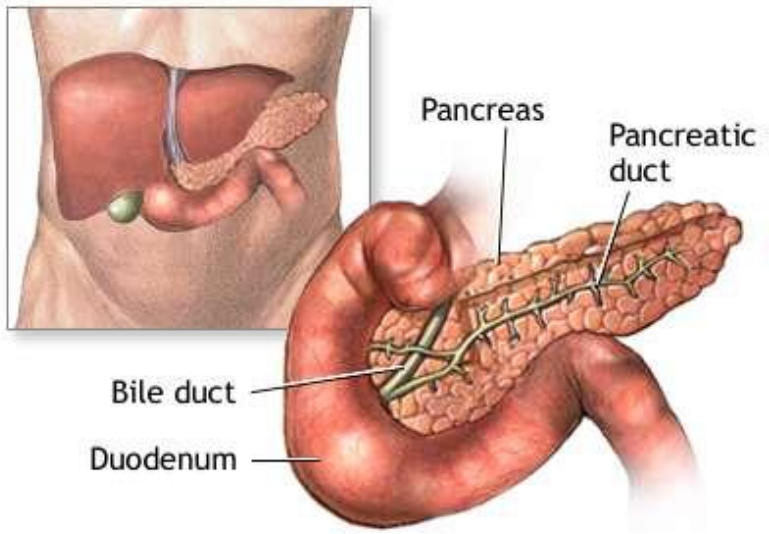


normal blood

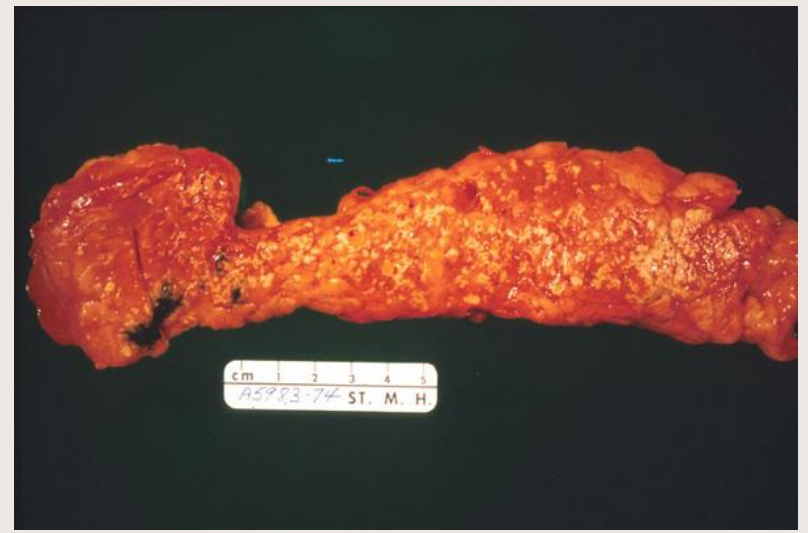




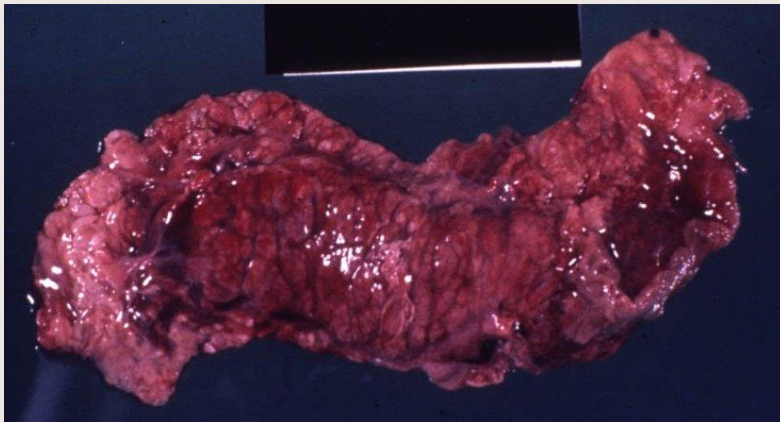




adam.com



ACUTE PANCREATITIS



MINOR WITHDRAWAL

TIME

- 6 - 60 HOURS

SYMPTOMS

- TREMULOUS
- INSOMNIA
- NAUSEA
- ANOREXIA
- ANXIETY
- WEAKNESS

MINOR WITHDRAWAL

SIGNS

- ACTION TREMOR
- INATTENTION
- EASY STARTLE
- PLETHORA
- CONJUNCTIVAL INJECTION
- INCREASED REFLEXES

TREATMENT

- PHARMACOLOGIC SUBSTITUTE

PROGNOSIS

- EXCELLENT

Most Commonly Prescribed Mood Altering Drugs

- **BENZODIAZEPINES**

- Ativan, Librium, Serax, Valium, Xanax
- For anxiety, insomnia and alcohol withdrawal
- Physiological dependence can occur even when taken at therapeutic dosage
- **Benzodiazepine use for more than 4 months is not recommended for older adults**

Benzodiazepine Use

11% of population use a benzodiazepine annually

- 80% for < 4 months
- 5 % for 4 - 12 months
- 15% > 12 months

Sedative Withdrawal Symptoms

- Psychological
- Central nervous system
- Gastrointestinal
- Cardiovascular and respiratory system
- Miscellaneous

CNS

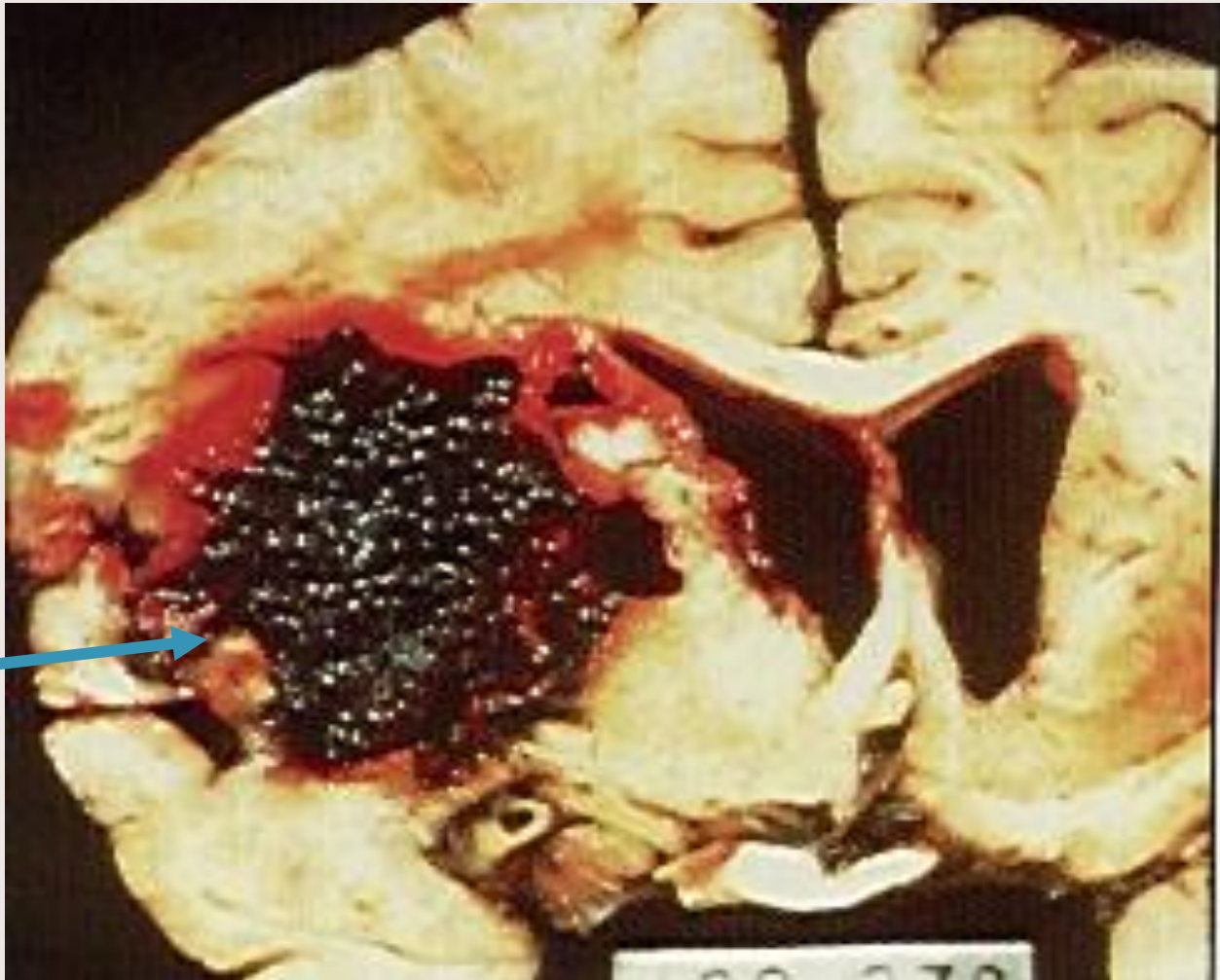
- Headache
- Pain
- Parasthesia
- Stiffness
- Weakness
- Tremor
- Muscle twitches and fasciculation
- Convulsions
- Ataxia
- Dizziness, lightheadedness
- Blurred or double vision
- Tinnitus
- Speech difficulty
- Hypersensitivity to light, sound, taste, smell
- Insomnia, nightmares

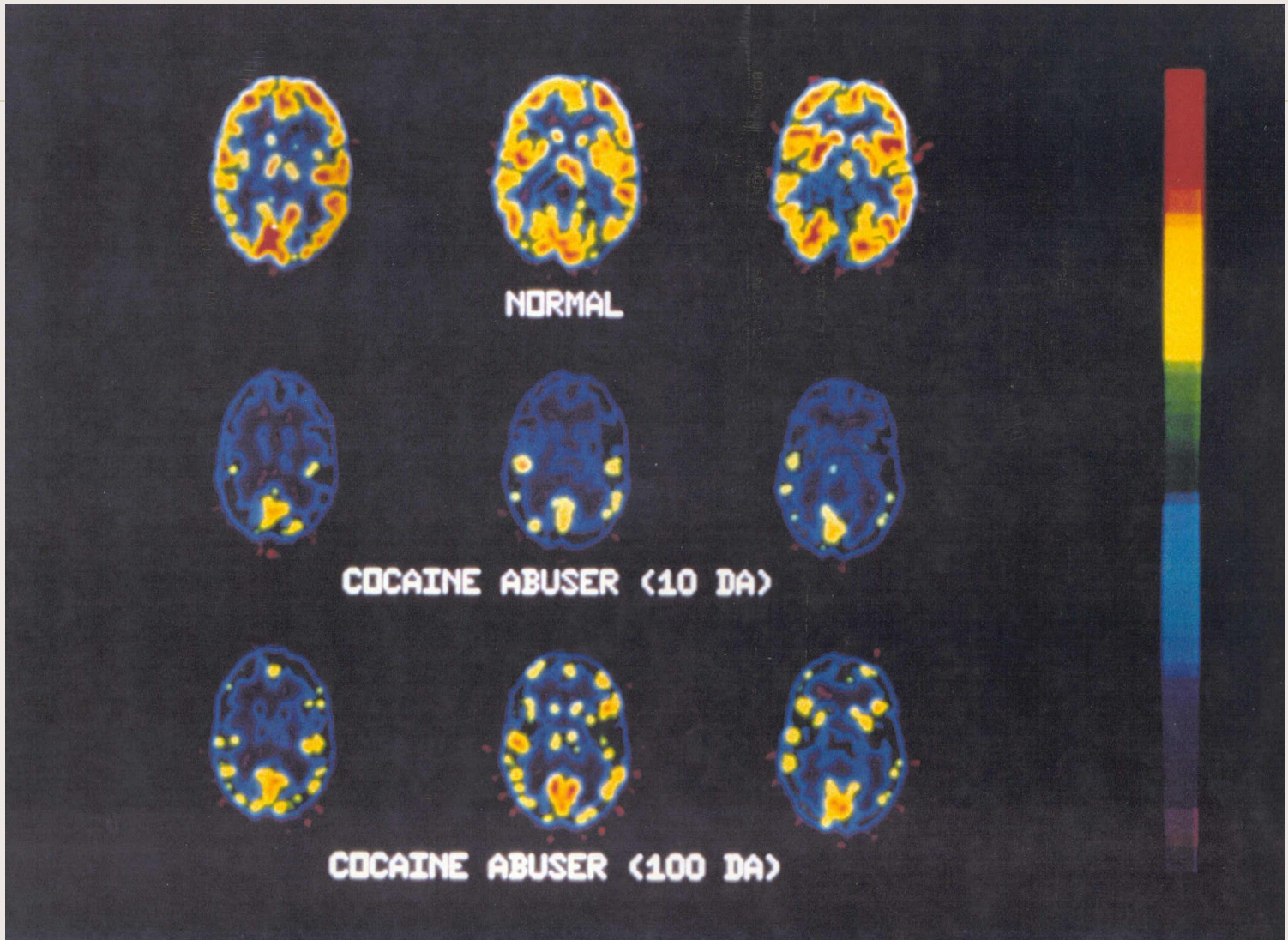
SEDATIVE/HYPNOTICS

BENZODIAZEPINE WITHDRAWAL

- PERCEPTION CHANGES
 - ILLUSIONS
 - HALLUCINATIONS
 - DEPERSONALIZATION
 - SENSORY HYPERACTIVITY (LIGHTS BRIGHTER, NOISE LOUDER, ETC.)

COCAINE

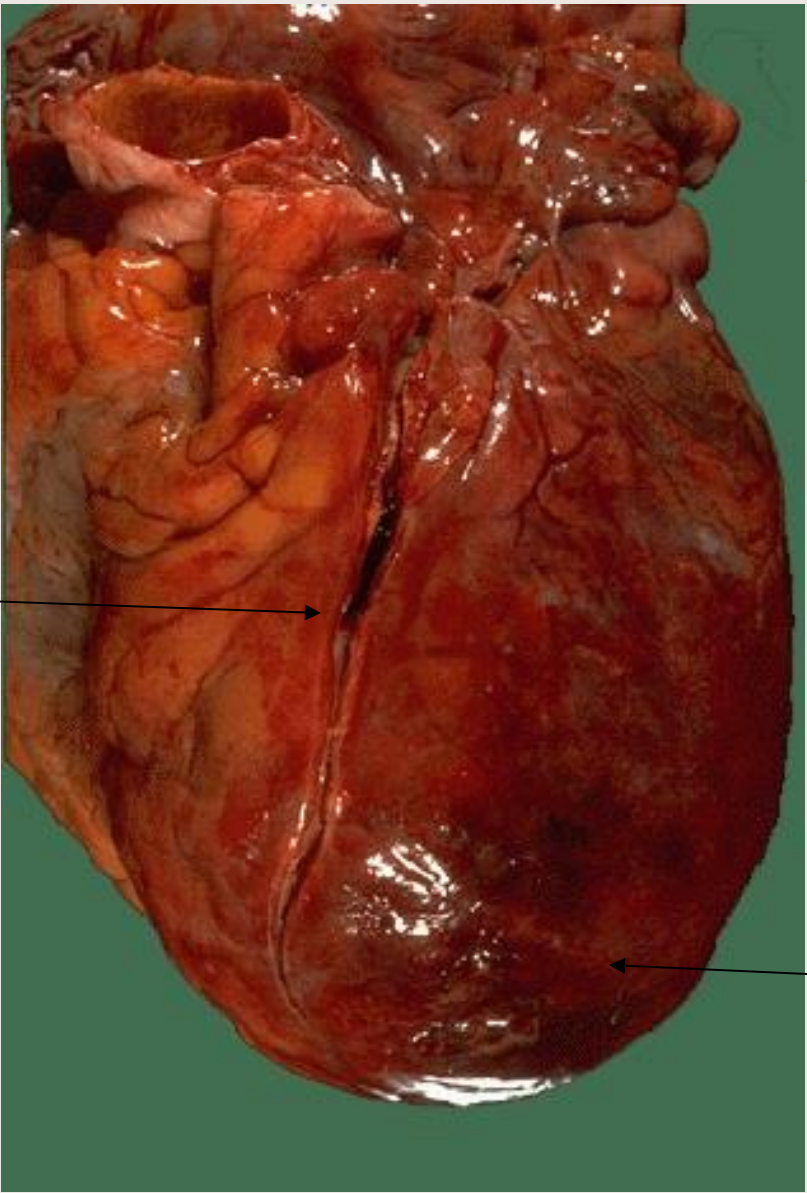




PET SCAN

“CRACK” LUNG

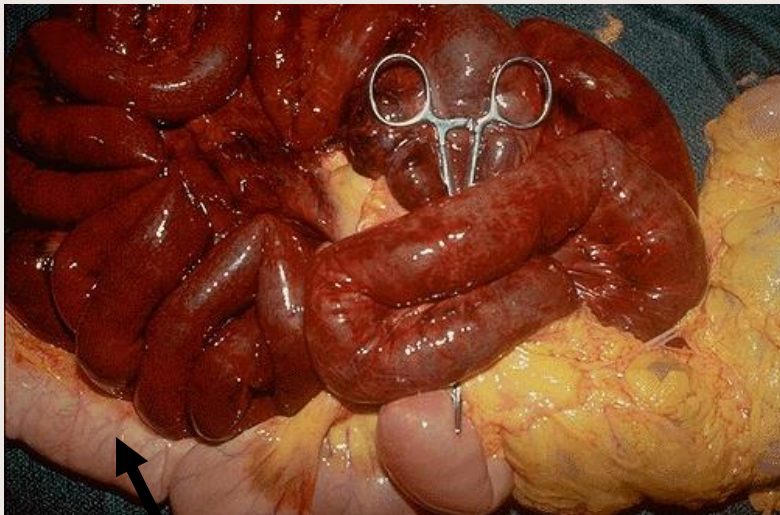




1

2





Normal pink small intestine



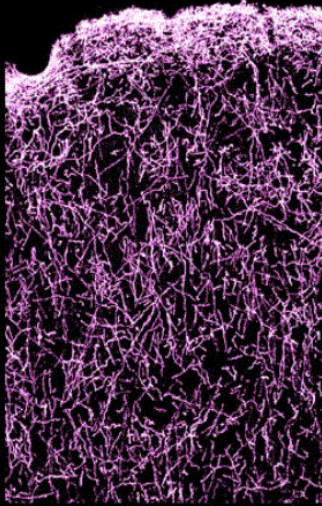




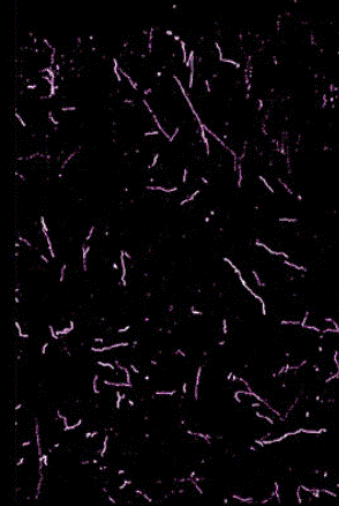
METHAMPHETAMINE

Serotonin Present in Cerebral Cortex Neurons

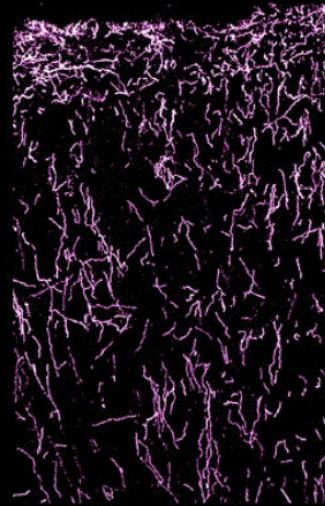
Normal

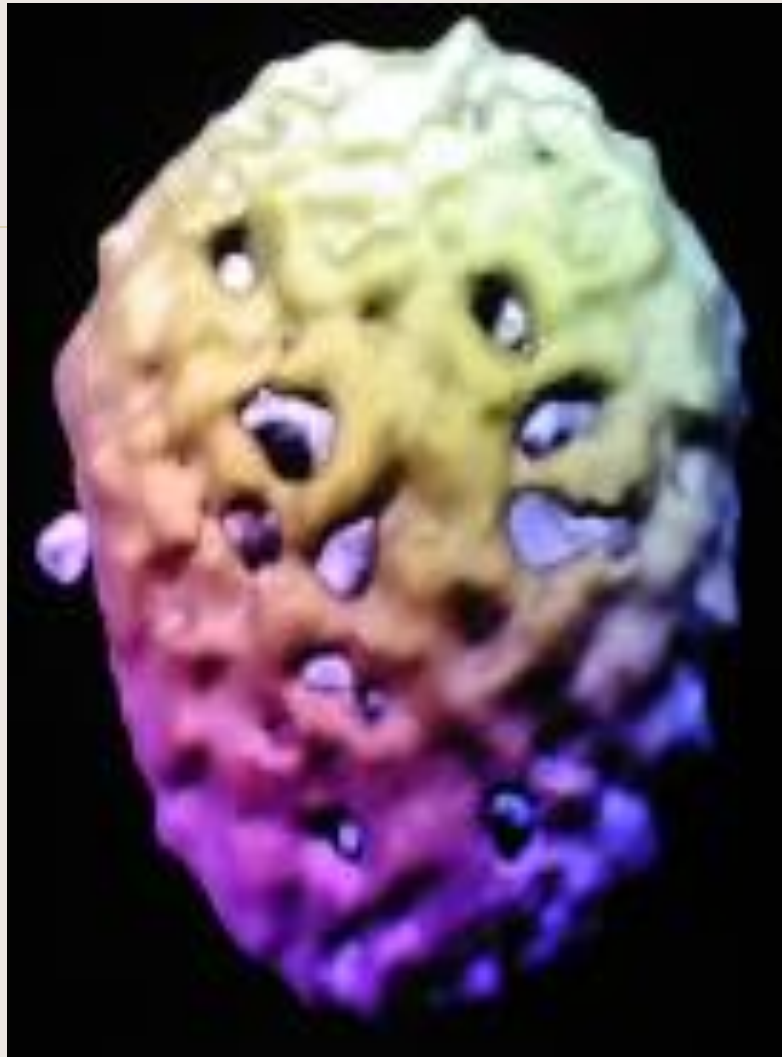


2 weeks after Ecstasy



7 years after Ecstasy





METHAMPHETAMINE

METHAMPHETAMINE



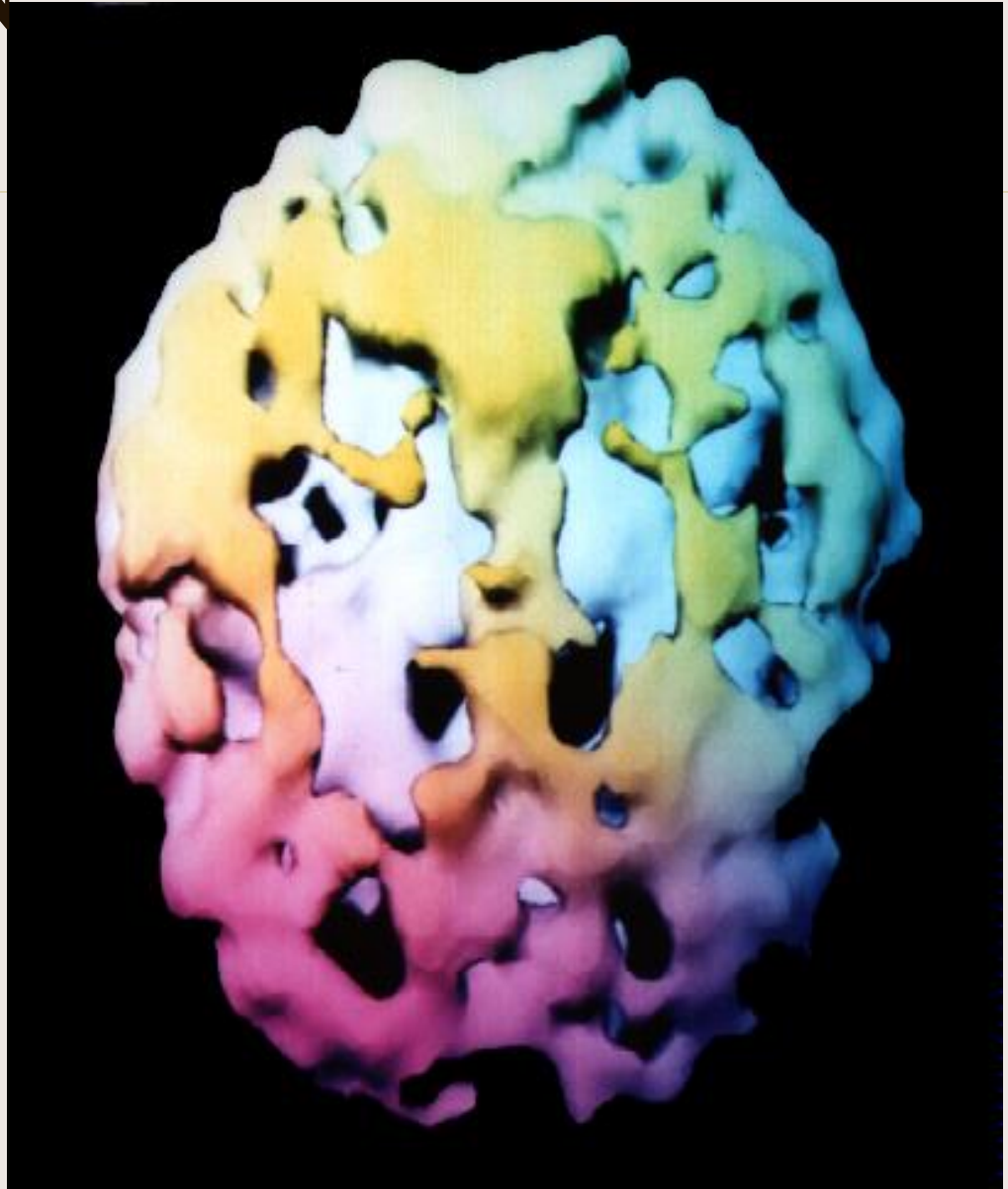
BURNS



OPIATES/HEROIN

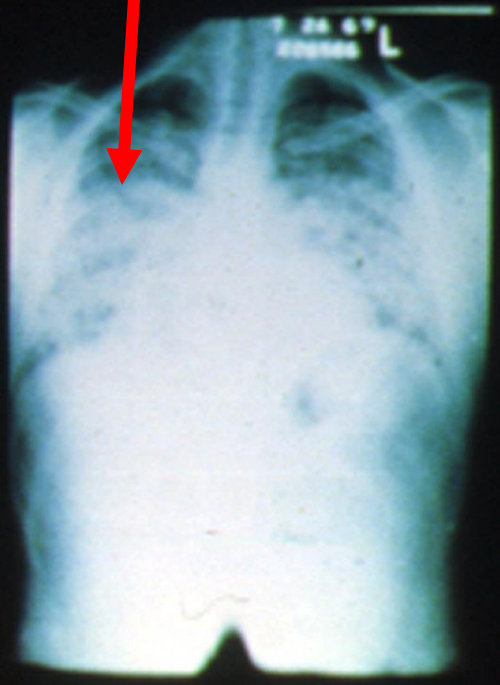
- Opiates were the **second most commonly reported primary substance of abuse**, reported most frequently by individuals **aged 50 to 59** (SAMHSA)

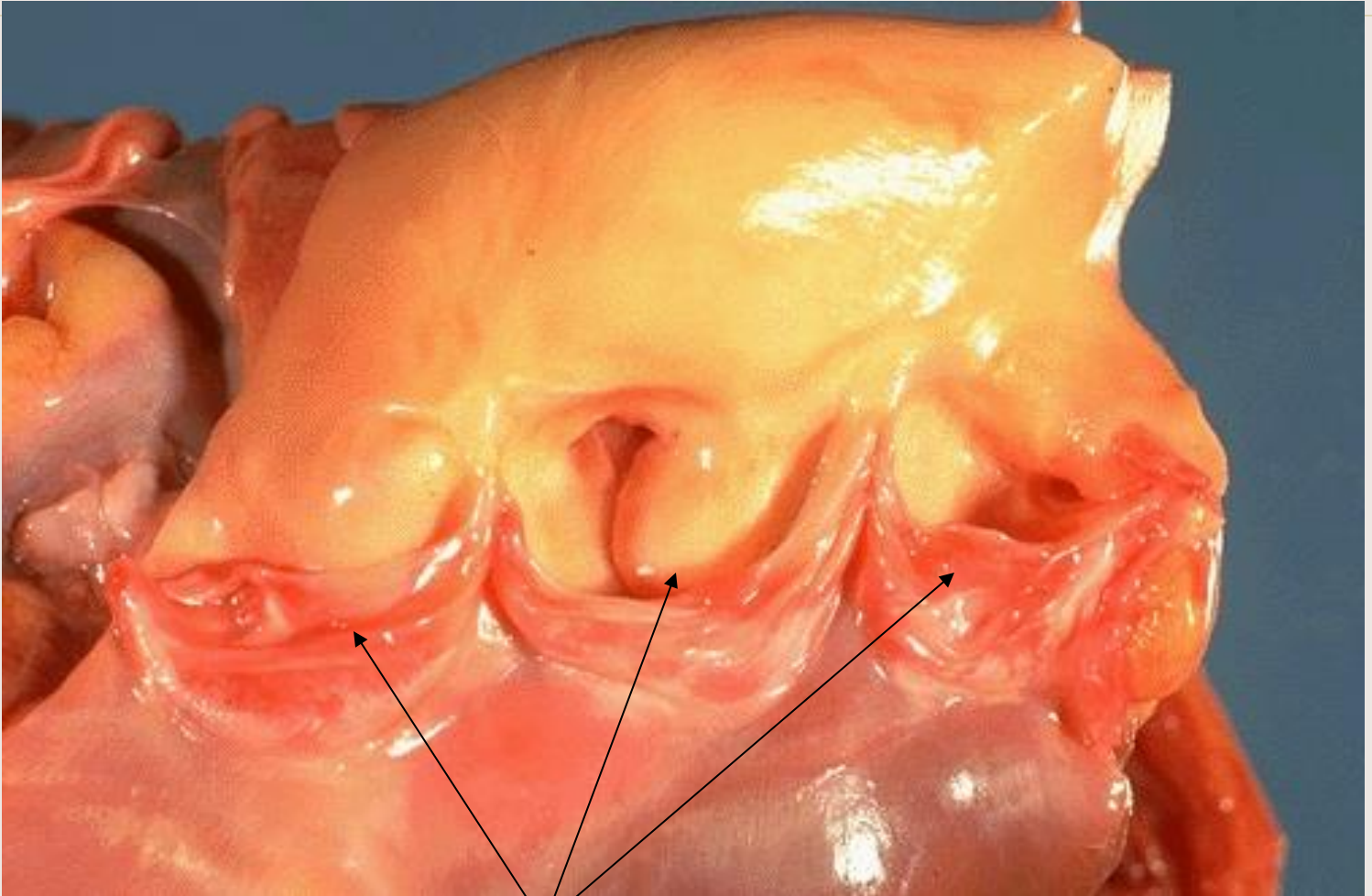
HEROIN ABUSE

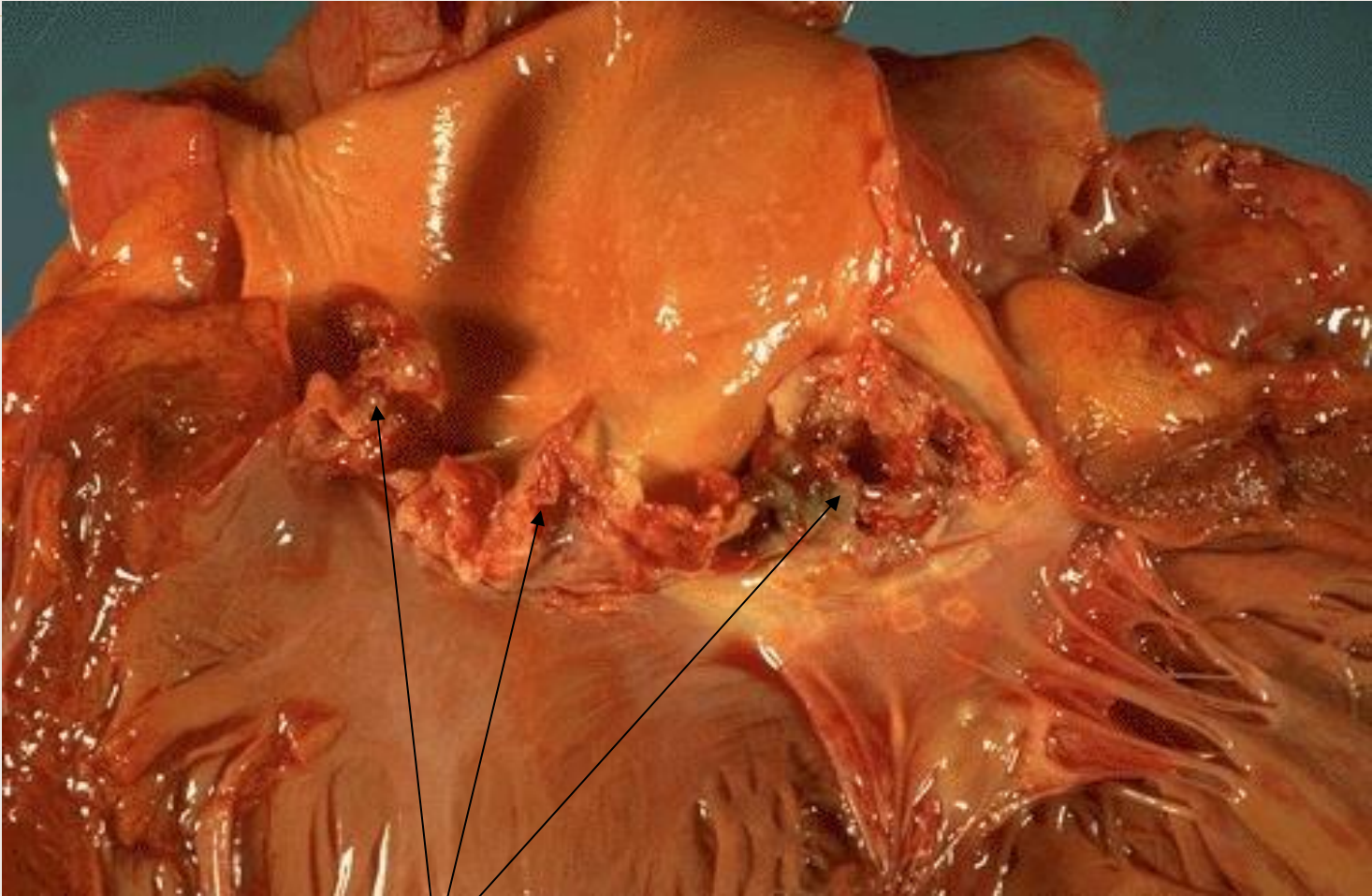


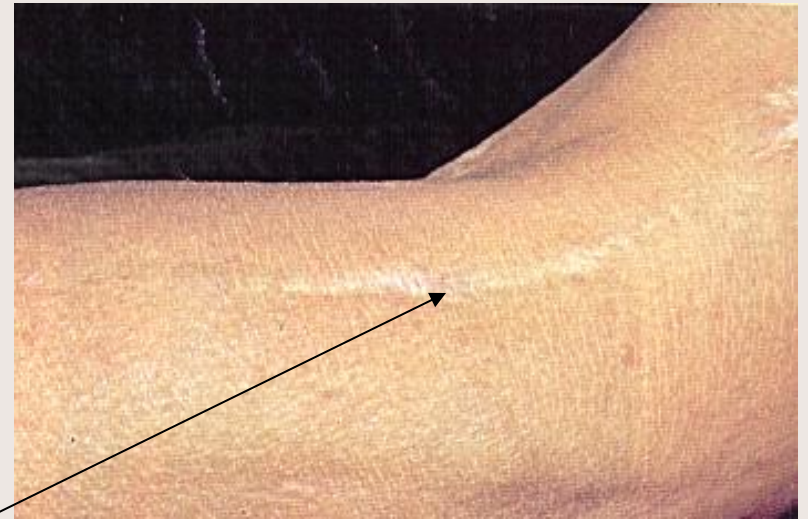
LEUKOENCEPHALOPATHY DUE TO SMOKING HEROIN

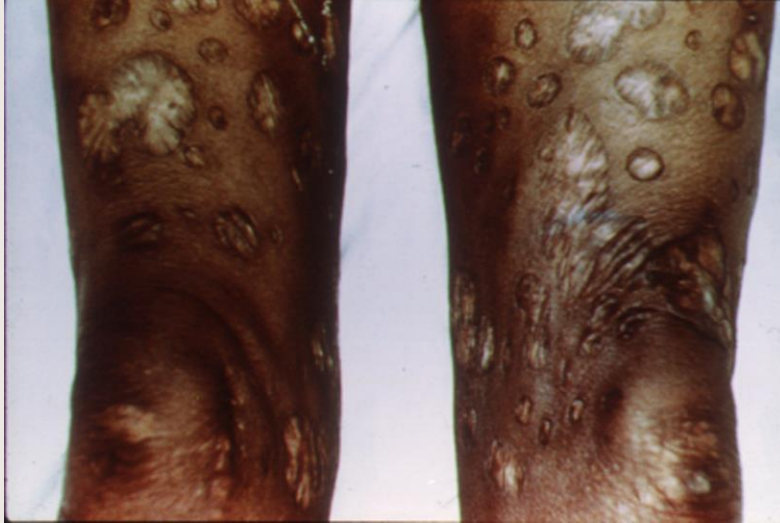














INJECTED MATERIAL EXTRAVESATED INTO THE SKIN



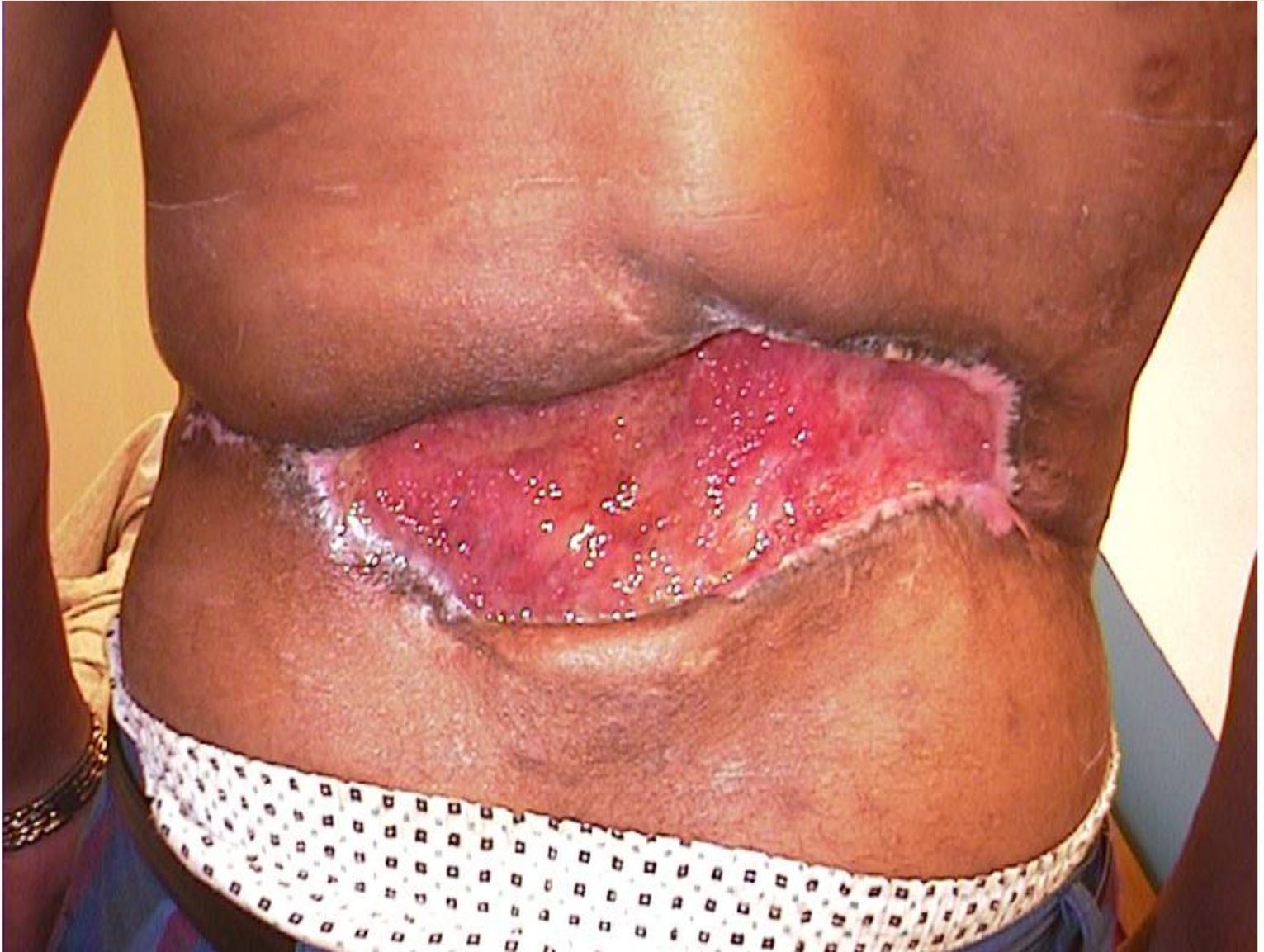


IVDU ABSCESS



ARTERIAL INJECTION





Overdoses

- Related to dose of opioid used
- Related to tolerance
- Almost all patients continue to receive prescription opioids after a nonfatal overdose. Discontinuation after the overdose is associated with lower risk for repeat overdose
 - Larochelle et al, Annals of Internal Medicine 2016)

OPIATE WITHDRAWAL - EARLY

- LACRIMATION
- YAWNING
- RHINORRHEA
- SWEATING

**SENSE OF ANXIETY AND DOOM,
THOUGH NOT LIFE THREATENING**

OPIATE WITHDRAWAL - MIDDLE PHASE

- RESTLESS SLEEP
- DILATED PUPILS
- ANOREXIA
- GOOSEFLESH
- IRRITABILITY
- TREMOR

OPIATE WITHDRAWAL - LATE PHASE

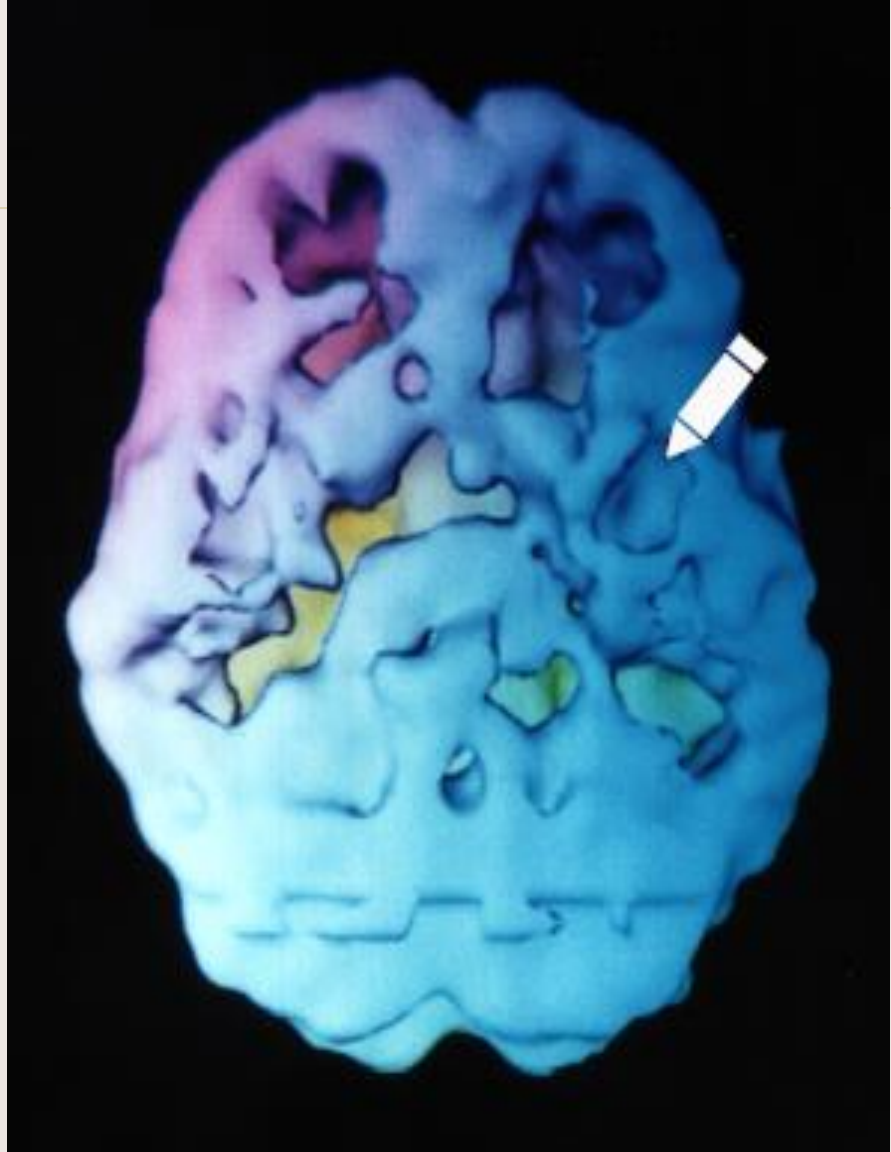
- INCREASE IN ALL PREVIOUS SIGNS AND SYMPTOMS
- INCREASE IN HEART RATE
- INCREASE IN BLOOD PRESSURE
- NAUSEA AND VOMITING
- DIARRHEA
- ABDOMINAL CRAMPS
- LABILE MOOD
- DEPRESSION
- MUSCLE SPASM
- WEAKNESS
- BONE PAIN

MARIJUANA



MEDICINE OR DRUG?

THC ABUSE

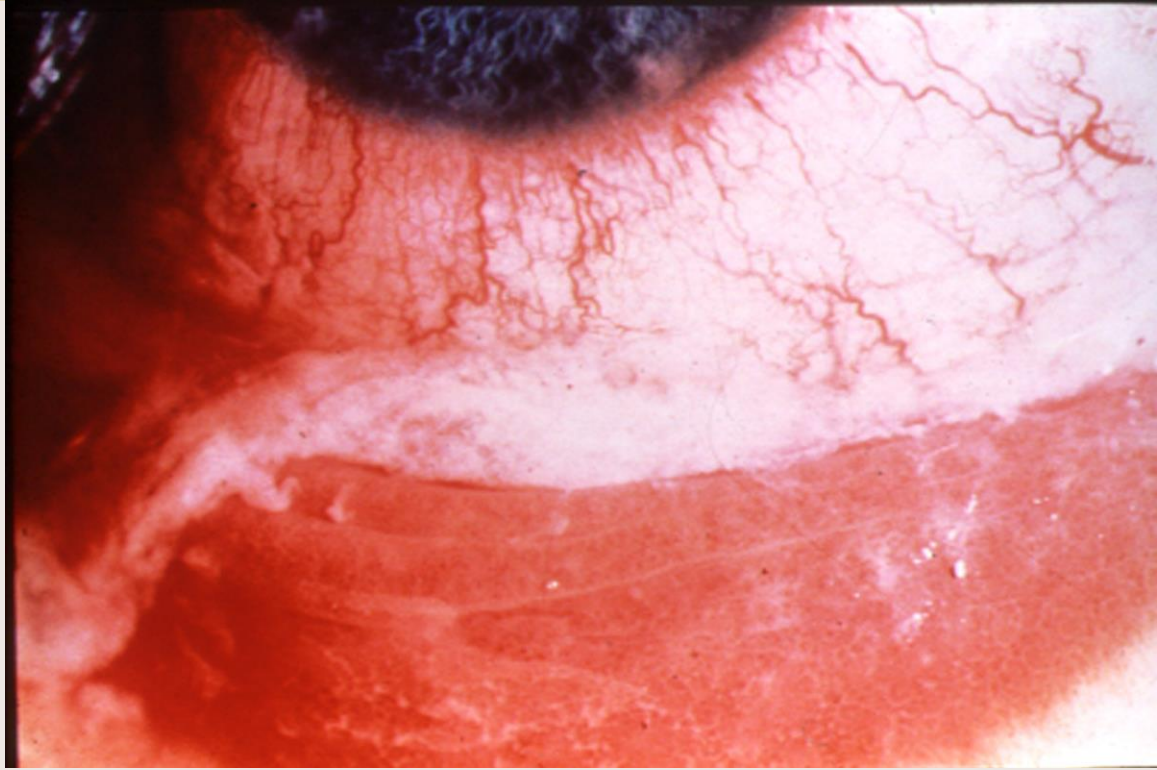


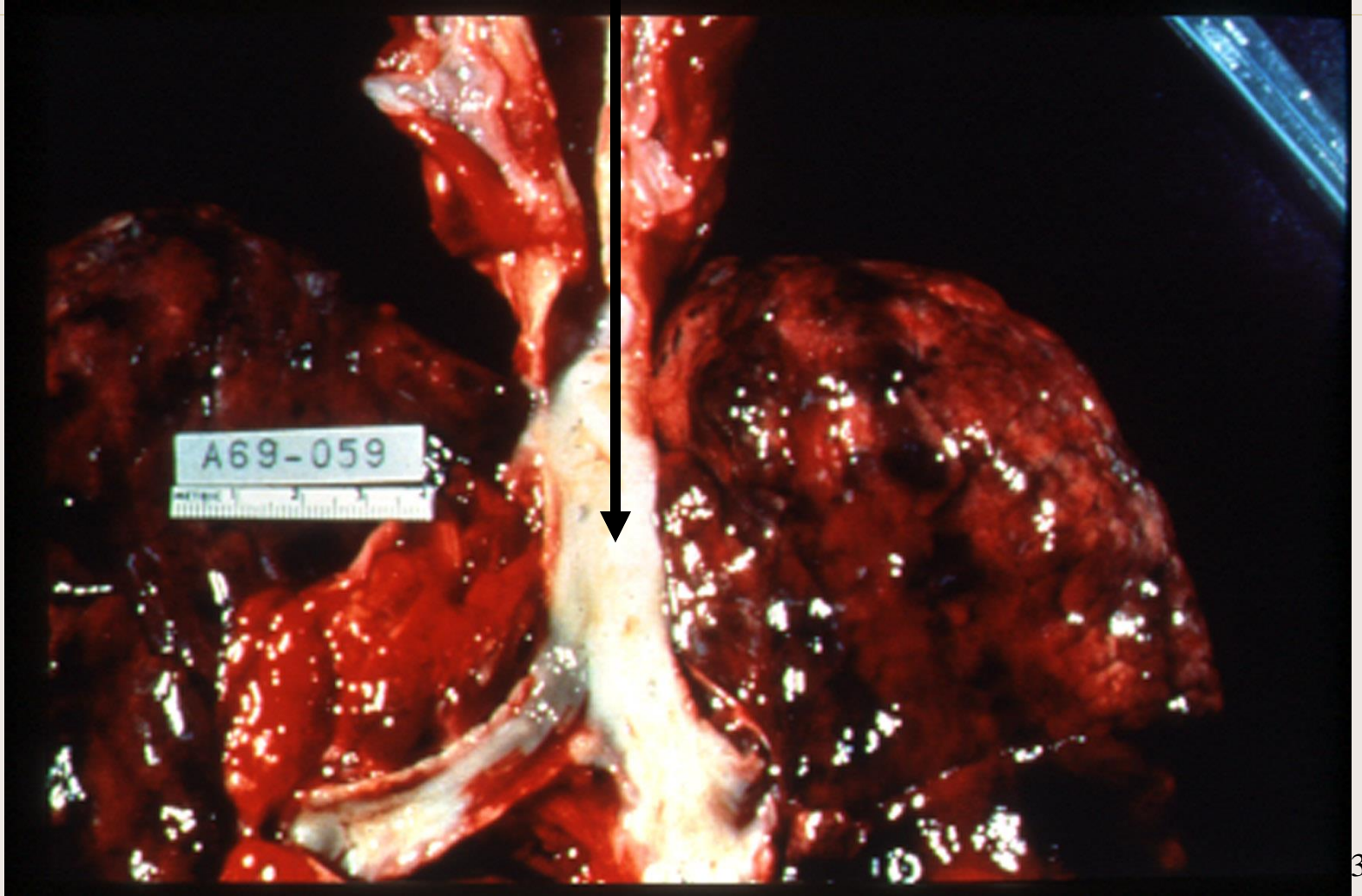
PHARMACOLOGIC ACTIONS



- PSYCHOMOTOR EFFECTS
 - OBJECT DISTANCE DISTORTION
 - OBJECT OUTLINES DISTORTED
 - INABILITY TO MAKE RAPID JUDGMENT
 - SLOWED REACTION TIME
 - IMPAIRED TRACKING BEHAVIOR
 - SLOWED TIME PERCEPTION

ALL ARE DOSE RELATED







* TOXICITY AND ADVERSE EFFECTS

- REPRODUCTIVE/ENDOCRINE SYSTEM
 - ALTERS PITUITARY HORMONES
 - DECREASES PROLACTIN
 - DECREASES GROWTH HORMONE
 - DECREASES LUTEINIZING HORMONE
 - GALACTORRHEA
 - DECREASE TESTOSTERONE IN MALES
 - DECREASE SPERM PRODUCTION
 - DECREASE SPERM MOTILITY

SYNTHETIC CANNABINOIDS

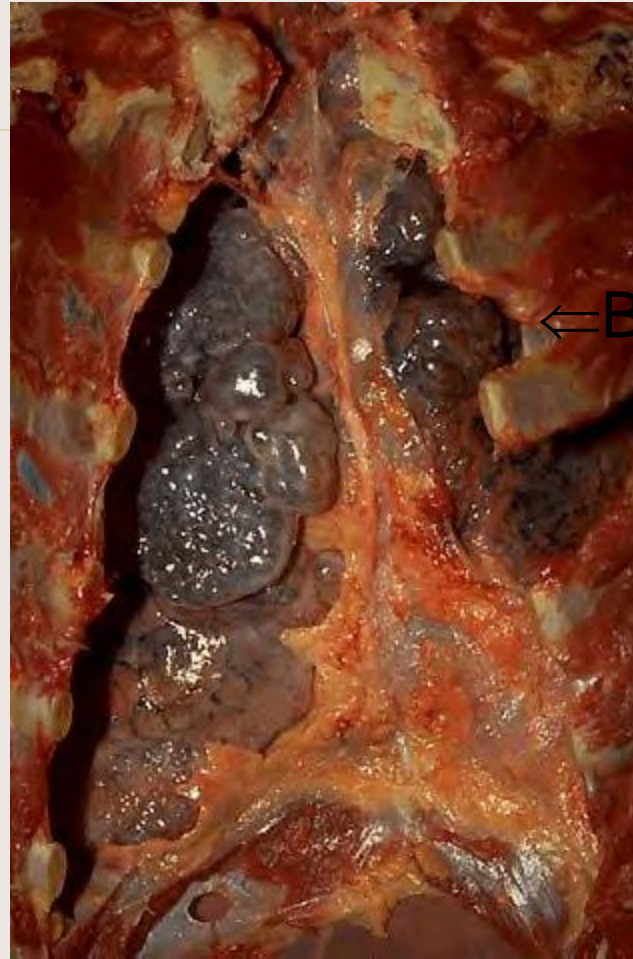
Tait et al, *Clinical Tox* Jan 2016

- Severe adverse events of synthetic cannabinoids
 - stroke
 - seizure,
 - myocardial infarction
 - rhabdomyolysis,
 - acute kidney impairment
 - psychosis
 - hyperemesis
 - death

CIGARETTES

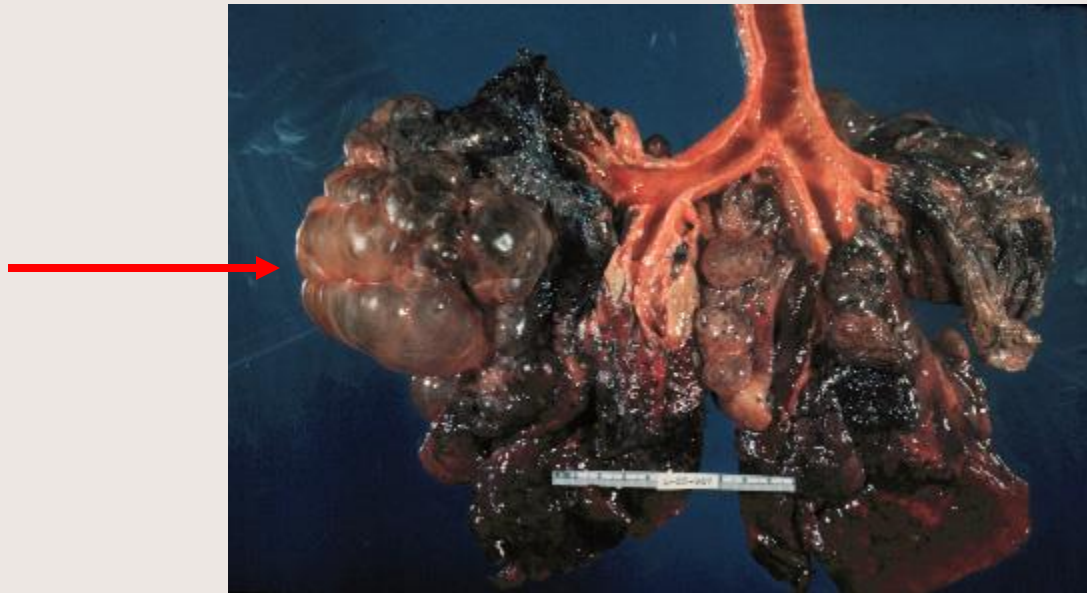


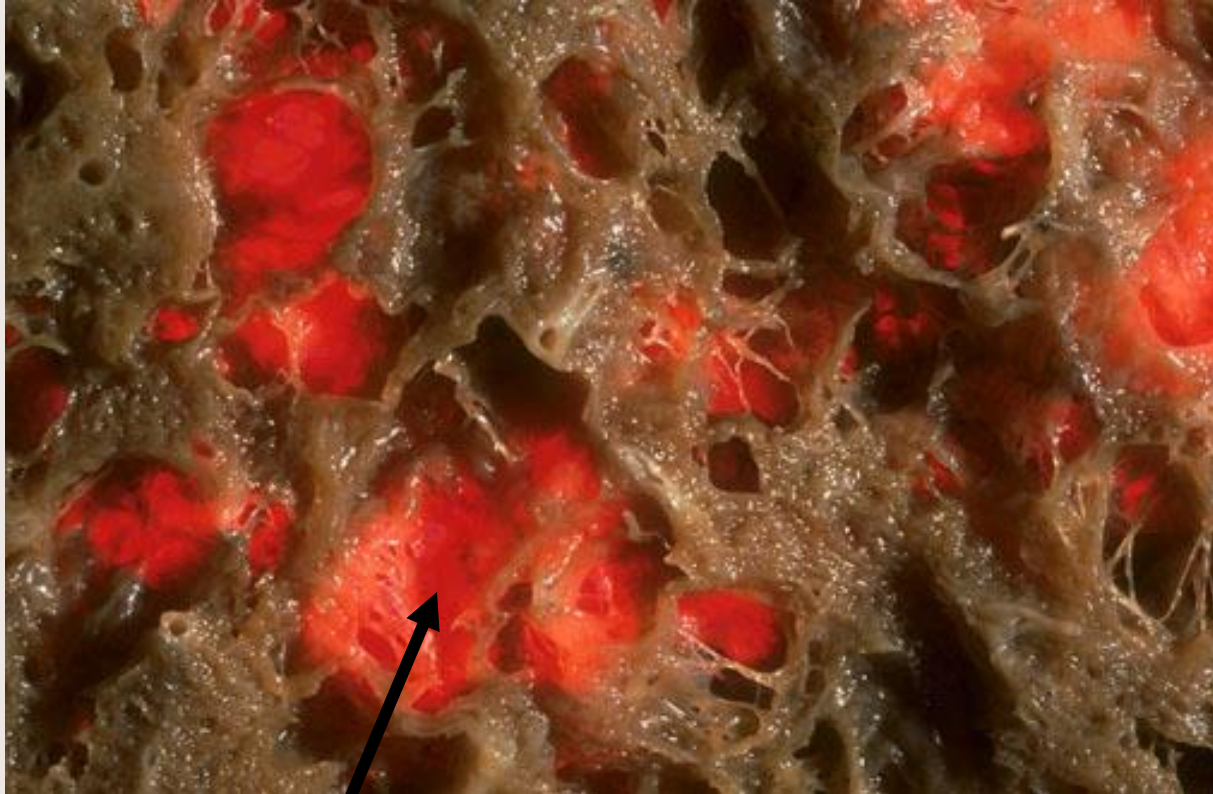
NORMAL LUNG



BULLOUS EMPHYSEMA

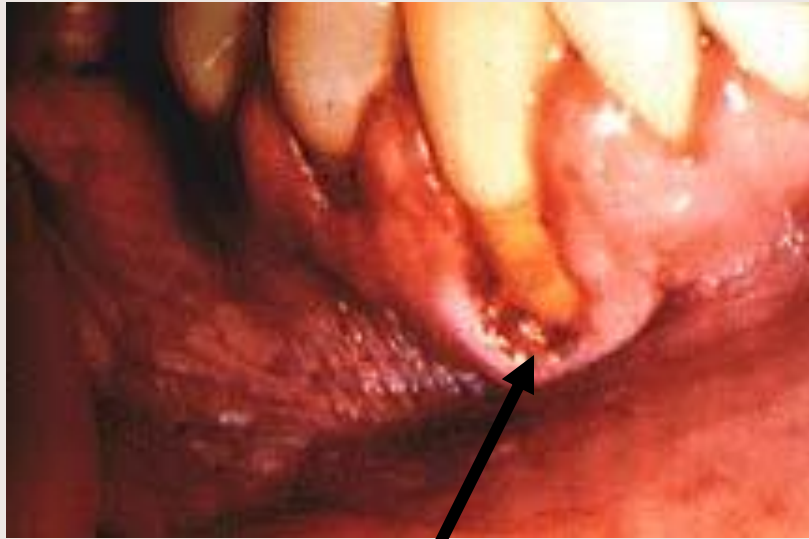
BULLOUS EMPHYSEMA





SMOKELESS TOBACCO

















ANABOLIC STEROIDS









ANABOLIC STEROIDS

WITHDRAWAL

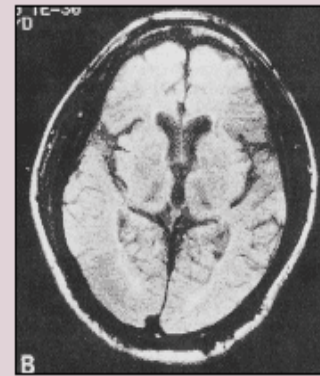
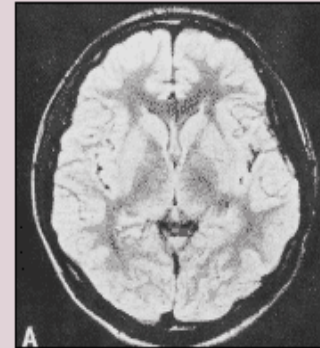
- CRAVING
- FATIGUE
- DEPRESSION
- RESTLESS
- ANOREXIA
- INSOMNIA
- DECREASE IN LIBIDO
- HEADACHES

MISCELLANEOUS

* INHALANTS/SOLVENTS

COMMON PROBLEMS

- NERVOUS SYSTEM
 - OTOTOXICITY - DIMETHYL BENZENE (TOLUENE)
 - PERIPHERAL NEUROPATHY - HEXANE (GLUE), KETONES AND TOLUENE
 - MULTIPLE SCLEROSIS LIKE SYNDROME - NITROUS OXIDE
 - SLOWLY REVERSIBLE TRIGEMINAL NEUROPATHY - TRICHLOROETHYLENE
 - VERTICAL NYSTAGMUS
 - SLURRED SPEECH
 - ATAXIA
 - IMPAIRED JUDGMENT
 - LACK OF COORDINATION



Courtesy of Neil Rosenberg, M.D.

Brain images show marked atrophy (shrinkage) of brain tissue in a toluene abuser (B) compared to a nonabusing individual (A). Note the smaller size and the larger empty (dark) space within the toluene abuser's brain. (The white outer circle in each image is the skull.)



* INHALANTS/SOLVENTS

COMMON PROBLEMS

- OTHER SYSTEMS
 - RENAL
 - ACUTE TUBULAR NECROSIS
 - CHRONIC RENAL FAILURE
 - HEPATIC
 - CANCER
 - PULMONARY
 - PULMONARY HYPERTENSION
 - BRONCHOSPASM
 - CARDIAC
 - “SUDDEN SNIFFING DEATH
 - DILATED CARDIOMYOPATHY (TRICHLOROETHYLENE)
 - HEMATOLOGIC
 - METHHEMOGLOBINEMIA (AMYL NITRITES)



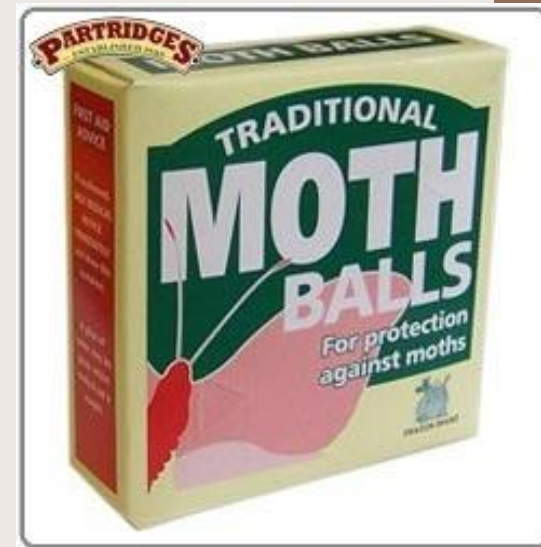
* INHALANTS/SOLVENTS

COMMON PROBLEMS

- MISC.
 - LEAD POISONING IN GASOLINE INHALERS
 - PIGMENTED HANDS AND FACE IN VOLATILE HYDROCARBON INHALERS
 - WEIGHT LOSS
 - MUSCLE WEAKNESS
 - IMPULSIVE BEHAVIOR

* Mothball Abuse Comes Out of the Closet

- Users place mothballs, which contain paradichlorobenzene, in a bag and **inhale** from it for about 10 minutes.
- Some users also **chew mothballs**. The term "bagging" has been used to describe the habit.
 - Mental impairment
 - loss of coordination
 - scaly skin
 - Anemia
 - Liver failure
 - Kidney failure
- Paradichlorobenzene, also found in air fresheners and insect repellents
- The report appears in the July 27, 2006 issue of the New England Journal of Medicine



NEW CRAZE THAT CAN KILL

- Involves **inhaling compressed air from sprays** used for cleaning computer keyboards.
- Just one hit can be fatal because youngsters believe there is no volatile substance involved in what they're using.
 - dust-off products contain fluorinated hydrocarbon
 - Neuro damage
 - Pulmonary damage
 - Kidney failure
 - MI



Medical Conditions Worsened by Alcohol and Drug Use

- CV disease – alcohol, stimulants, tobacco
- HTN – alcohol, stimulants, tobacco
- Hepatitis – alcohol, MJ?
- Lung disease – any smoked substance, alcohol and the immune system
- Irritable Bowel Disease – alcohol
- DM – alcohol (pancreatitis)
- Endocrine system – alcohol, MJ
- Infections – alcohol, MJ
- Depression – any of the sedatives/stimulants (withdrawal)

How and Why to Intervene

- National efforts are underway to integrate medical care and behavioral health treatment.
 - office-based opioid treatment with buprenorphine (OBOT-B)
 - Infrequently used but increase in patient capacity is on the horizon.

How and Why to Intervene

- National efforts are underway to integrate medical care and behavioral health treatment.
 - At-risk drinking, defined as alcohol use that is excessive or potentially harmful in combination with select comorbidities or medications, affects about 10% of older adults in the United States and is associated with higher mortality.
 - The Project SHARE intervention, which uses patient and provider educational materials, physician counseling, and health educator support, was designed to reduce at-risk drinking among this vulnerable population.

SCREEN FOR SUD

- CAGE or DAST
- Single question screeners:
 - In the past year, how many times have you had 5 (for women, 4) or more drinks in one day?
 - 84% sensitive, 78% specific for hazardous drinking
 - 88% sensitive, 67% specific for current AUD
 - How many times in the past year have you used an illegal drug or used a prescription medication for non-medical reasons?

Use a Survey Instrument to Assess Risk of Opioid Use

Administration

- On initial visit
- Prior to opioid therapy

Scoring

- 0-3: low risk (6%)
- 4-7: moderate risk (28%)
- > 8: high risk (> 90%)

Opioid Risk Tool (ORT)

Mark each box that applies	Female	Male
1. Family history of substance abuse		
Alcohol	<input type="checkbox"/> 1	<input type="checkbox"/> 3
Illegal drugs	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Prescription drugs	<input type="checkbox"/> 4	<input type="checkbox"/> 4
2. Personal history of substance abuse		
Alcohol	<input type="checkbox"/> 3	<input type="checkbox"/> 3
Illegal drugs	<input type="checkbox"/> 4	<input type="checkbox"/> 4
Prescription drugs	<input type="checkbox"/> 5	<input type="checkbox"/> 5
3. Age (mark if between 16-45 yrs)	<input type="checkbox"/> 1	<input type="checkbox"/> 1
4. History of preadolescent sexual abuse	<input type="checkbox"/> 3	<input type="checkbox"/> 0
5. Psychological disease		
ADO, OCD, bipolar, schizophrenia	<input type="checkbox"/> 2	<input type="checkbox"/> 2
Depression	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Scoring totals	_____	_____

How to Intervene

- National efforts are underway to integrate medical care and behavioral health treatment.
 - **SBIRT** is being adapted in different types of medical care settings, and the workflow processes are being adapted to ensure efficient delivery, illustrating the successful integration of behavioral health and medical care.
 - **Coordinate mental health and primary care services**
 - **Digital Health**
 - Computer facilitated 5As (CF-5As) model for smoking cessation (ask, advice, assess, assist, arrange)

Treatment Issues With Older Adults

- Protracted (Post Acute) Withdrawal
- Sensory Changes That Occur With Aging
- Co-occurring Mental Health Issues
- Co-occurring Medical Problems
- History Of Grief/Loss
- Probable Extensive History Of Caregiving
- Addiction In The Family
- Cultural Considerations
- Elder Abuse

Therapeutic Modalities For Older Adults

- Motivational counseling
- Cognitive-behavioral therapy
- Reminiscence therapy
- Group therapy
- Education groups
- Special issues groups
- Individual therapy
- Family therapy

Concerns Regarding 12-Step Meeting Attendance

- Being uncomfortable going out at night
- Being uncomfortable with the language at AA meetings (e.g. swearing, slang)
- Being uncomfortable with the appearance of the place where the meeting is held (e.g. having to walk through a crowd of people smoking outside the entrance to the meeting room)
- Being uncomfortable with some of the issues (such as abuse and same sex relationships, etc.) openly discussed at 12 step meetings

Engaging Older Adults in Tx

- The health care system is a typical entry point for older adults who need treatment.
 - If substance abuse is addressed in a medical setting (physician's office, hospital) that enhances the probability that older adults will make changes and/or accept a treatment referral.
- Family concern is another motivating factor for older adults to enter into treatment.
 - They typically do not want to lose relationships with their children, grandchildren or spouse.

Engaging Older Adults in Tx

- If an older person is made aware of the potential for loss of independence or functioning by a health care professional, this is a strong motivator for change; it's a quality of life issue.

Impact of an Opioid Prescribing Guideline in the Acute Care Setting

- A retrospective chart review was performed on records of adult emergency department visits from January 2012 to July 2014 for dental, neck, back, or unspecified chronic pain, and the proportion of patients receiving opioid prescriptions at discharge was compared before and after the guideline. Attending emergency physicians were surveyed on their perceptions regarding the impact of the guideline on prescribing patterns, patient satisfaction, and physician–patient interactions.
- In our sample of 13,187 patient visits, there was a significant ($p < 0.001$) and sustained decrease in rates of opioid prescriptions for dental, neck, back, or unspecified chronic pain. The rate of opioid prescribing decreased from 52.7% before the guideline to 29.8% immediately after its introduction, and to 33.8% at an interval of 12 to 18 months later.
- del Porto et al, Journal of Emergency Medicine 2015

Prevention Strategies For Older Adult Substance Abusers

- SAMHSA recommendation: Every person age 60 and older “should be screened for alcohol and prescription drug abuse as part of his or her regular physical examination.”
- Educate older adults about substance misuse and abuse in later years.
- Educate people who regularly interact with older adults about substance misuse and abuse in later years.
- Educate community based outreach people to assist in identification and intervention with at-risk seniors.

Prevention Strategies For Older Adult Substance Abusers

- Prepare people for the changes that occur once they are retired.
- Encourage development of satisfying leisure activities throughout the life span.
- Encourage older adults to become involved in a support group during difficult life transitions (e.g., bereavement, diagnosis of chronic medical condition).

Barriers to Integration, Identification & Treatment

- Stigma
- Lack of knowledge or skills by professionals
- Resistance by family members to name a problem
- Denial
- Symptoms of abuse mistakenly believed to be signs of aging

Barriers to Integration, Identification & Treatment

- Transportation
- Financial
- Sensory or mobility changes
- Co-occurring medical problems
- Co-occurring mental health problems

