



ADDICTION & BRAIN INJURY:
A FOCUS ON YOUTH & FAMILIES
Third Annual Addiction & TBI Conference
May 25, 2011

**Specialized In-Patient
Substance Use Treatment
for Individuals with a
Traumatic Brain Injury**

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What Is OASAS?

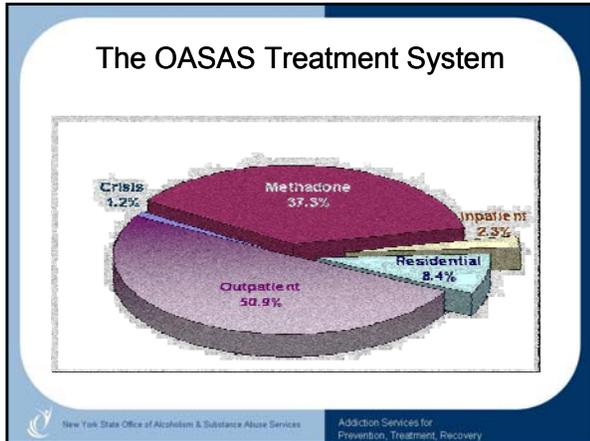
- Office of Alcoholism and Substance Abuse Services

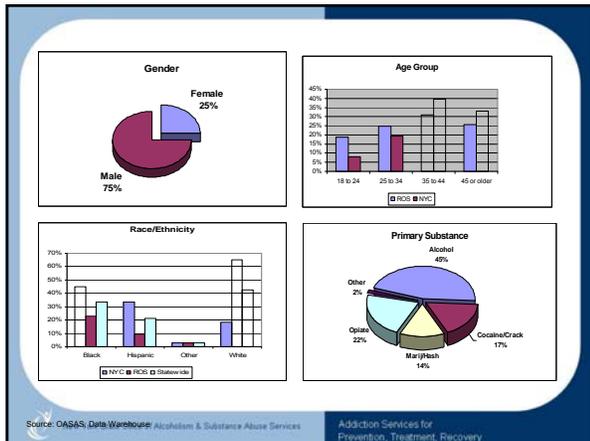
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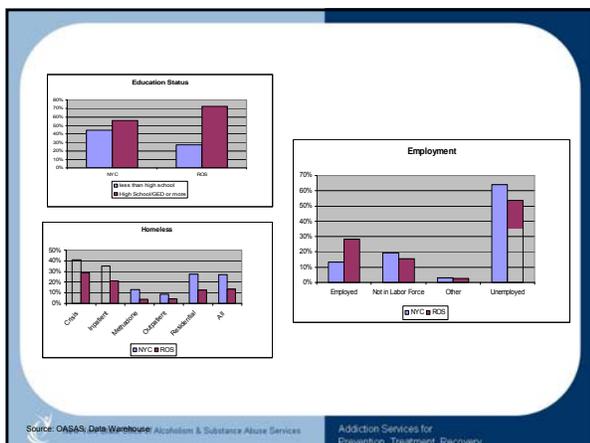
What Is OASAS?

- One of the nation's largest addiction services system
- More than 1,000 employees
- 60% employed in the 12 ATCs
- \$1.7 billion in Medicaid, Federal Block Grant and state funds
- 1,550 prevention and treatment programs
- Treatment system serves 110,000 persons daily
- 90% in outpatient or methadone programs

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• TBI incidence

- ??????????

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OASAS Response

OASAS TBI Advisory Council
First meeting June 9, 2008

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Website - Conferences



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ASSESSMENT

- Screening Tool: **ICD HELPS**
 - H** Did you ever HIT your head? Were you ever HIT on the head?
 - E** Were you ever seen in an EMERGENCY room, by a doctor or hospitalized? For what reason?
 - L** Did you ever LOSE consciousness? For how long? For what reason?
 - P** Did you have any PROBLEMS after you were hit on the head? Headache? Dizziness? Anxiety? Depression? Difficulty concentrating? Difficulty Remembering? Difficulty reading, writing or calculating? Difficulty performing your old job at work? Difficulty with school work? Poor judgment? Poor problem solving?
 - S** Any other SIGNIFICANT SICKNESS? Look for hospitalizations for brain cancer, meningitis, stroke, heart attack, diabetes. Screen for domestic violence and child abuse

ICD-International Center for the Disabled; Picard, Scarrick, Paluck, 1993

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Scoring the HELPS Screening Tool

A HELPS screening is considered positive for a possible TBI when the following 3 items are identified:

- 1.) An event that could have caused a brain injury (yes to H, E or S), **and**
- 2.) A period of loss of consciousness or altered consciousness after the injury or another indication that the injury was severe (yes to L or E), **and**
- 3.) The presence of two or more chronic problems listed under P that were not present before the injury.

Note:

- A positive screening is **not sufficient to diagnose TBI** as the reason for current symptoms and difficulties - other possible causes may need to be ruled out

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THE DRUG AND ALCOHOL CONNECTION TO ACQUIRED BRAIN INJURY

- Alcohol and drugs can cause brain injury directly or indirectly.
 - Alcohol is a **neurotoxin**, though its effect and extent of damage depends on the amount of alcohol consumption, the age and sex of the consumer, genetic vulnerability and other factors.
- **Binge drinkers may be less prone to alcohol related cognitive deficits than heavy daily users, though they are still vulnerable to alcohol intoxication related events.**

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ACQUIRED BRAIN INJURY

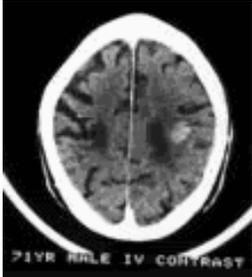
- Alcohol can cause
 - Direct brain damage** (alcohol dementia, Wernicke – Korsakoff's Syndrome, and atrophy of the cerebrum and cerebellum).
 - There can be some improvement in deficits with abstinence
 - Indirect damage** can be associated with
 - Falls and accidents
 - Intracerebral bleeds due to alcohol effect on platelets and blood pressure
 - Hepatic encephalopathy due to alcohol's effect on the liver



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ACQUIRED BRAIN INJURY

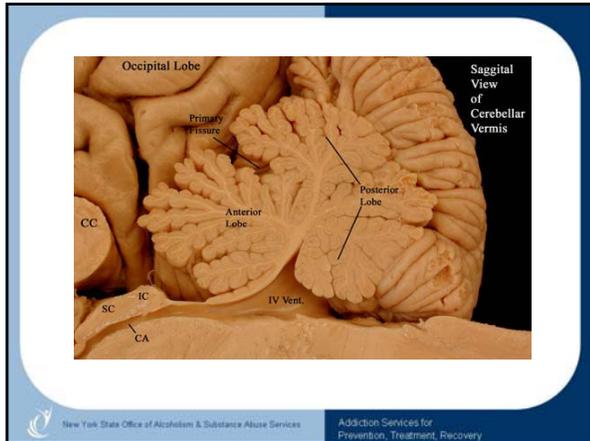
- FEMALE DRINKERS LOSE BRAIN VOLUME MORE QUICKLY THAN MEN, ACCORDING TO RESEARCHERS AT THE UNIVERSITY OF HEIDELBERG.**
 - PREFORMED 150 CT SCANS
 - AMOUNT OF BRAIN VOLUME LOSS WAS EQUAL TO MEN, ONLY QUICKER ONSET



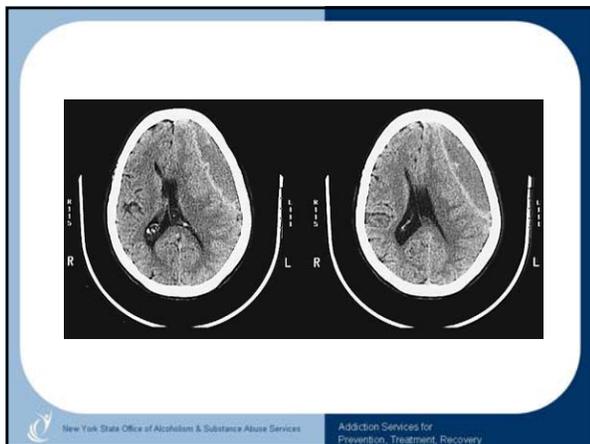
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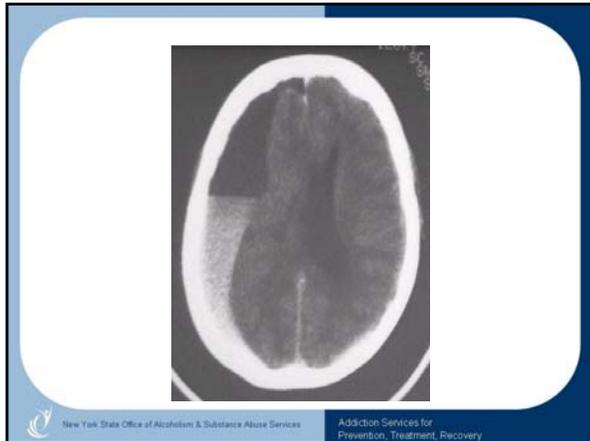


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Wernicke's Encephalopathy- Korsakoff Syndrome

It is estimated that between 10 and 24% of all cases of dementia in the United Kingdom are alcohol related. The mechanisms of alcohol related brain damage include:

- Direct neurotoxin effects of alcohol
- Direct neurotoxin effects of Acetaldehyde (an alcohol metabolite)
- Thiamine depletion
- Metabolic factors associated with intoxication
- Metabolic factors associated with withdrawal
- Cerebrovascular disease
- Hepatic encephalopathy
- Head injury related to alcohol use

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Wernicke's Encephalopathy- Korsakoff Syndrome

- Wernicke's encephalopathy is an acute neuropsychiatric reaction to thiamine deficiency.
 - It is characterized by confusion, ataxia, nystagmus (rhythmical oscillation of the eyeballs) and ophthalmoplegia (lateral gaze paralysis).
 - Only 20% of patients with Wernicke's are identified before death.
 - Wernicke's encephalopathy is a medical emergency and leads to death in up to 20% of cases or goes onto Korsakoff's syndrome in 85% of the survivors.
 - Up to 25% of the Korsakoff group will require long-term institutionalization.

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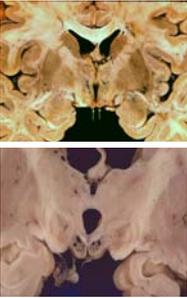
Wernicke's Encephalopathy- Korsakoff Syndrome

- The Korsakoff syndrome includes confusion in a setting of the patient being totally awake with severely impaired conversation. The patient has impaired current and short-term memory loss and tends to invent recollections (confabulation) during conversation.
- The onset of Korsakoff syndrome is after a Wernicke event but can be insidious.

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Wernicke's Encephalopathy- Korsakoff Syndrome

- It is known that thiamine depletion affects at least 6 neurotransmitter systems including GABA.
- The neuropathy that can be seen with these disorders include neuronal loss, micro-hemorrhages, and gliosis (overgrowth of glial cells in the paraventricular, periaqueductal grey matter and mammillary body. There can also be variable degrees of cortical atrophy, especially of the frontal lobes.



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Wernicke's Encephalopathy- Korsakoff Syndrome

- **Treatment of Wernicke's is high dose parental thiamine.** The ocular signs recover in days to weeks after the treatment. The ataxia responds in the first week but can take 1-2 months to resolve. Acute confusion improves in the first 1 – 2 days but can take months to totally clear.

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NUTRITIONAL OPTIC NEUROPATHY
TOBACCO-ALCOHOL AMBLYOPIA



DECREASED VISUAL ACTIVITY

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CIGARETTE SMOKING EXACERBATES ALCOHOL INDUCED BRAIN DAMAGE

- **CHRONIC ALCOHOL USE DAMAGES THE BRAINS OF ALCOHOLICS, PARTICULARLY THE FRONTAL LOBES WHICH ARE CRITICAL FOR HIGH – ORDER COGNITIVE FUNCTIONING (PROBLEM SOLVING, REASONING, ABSTRACTION, PLANNING, FORESIGHT)**
- **CHRONIC CIGARETTE USE INCREASES THE SEVERITY OF THIS BRAIN DAMAGE**
 - MEASUREMENTS MADE ON SMOKERS, LIGHT SMOKERS, ABSTINENT ALCOHOLICS AND LIGHT DRINKERS USING FUNCTIONAL MRI'S (DURAZZO ET AL., ALCOHOLISM:CLINICAL AND EXPERIMENTAL RESEARCH DEC 2004)

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ALCOHOLIC SMOKERS LOSE MORE BRAIN MASS

- **THE STUDY RAISES THE QUESTION OF WHETHER ALCOHOLISM TREATMENT PROGRAMS SHOULD ALSO ADDRESS SMOKING, ESPECIALLY SINCE IT MAY CAUSE COGNITIVE IMPAIRMENT AS CLIENTS GET OLDER.**

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FETAL ALCOHOL SYNDROME

Discriminating Features	Associated Features
Short palpebral fissures	Epicantal folds
Flat midface	Low nasal bridge
Short nose	Minor ear anomalies
Indistinct philtrum	Micrognathia
Thin upper lip	

- THE NUMBER ONE PREVENTABLE DISEASE TRIAD OF:
 - GROWTH DEFICIENCY
 - MENTAL RETARDATION
 - ALTERED MORPHOLOGY

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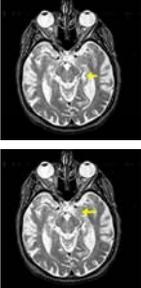
- Solvents such as glue can lead to ataxia (impaired gait) and cognitive problems.
- Metabolic syndromes can also be seen especially with inhalation of substances that effect the kidney.



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ACQUIRED BRAIN INJURY

- Cannabis dependence is associated with impaired attention, concentration and motivation
 - The average volumes of both the hippocampus (top) and amygdala were reduced in the long-term cannabis users compared with controls; the average hippocampal volume was 12% less and the amygdala volume 7.1% less in the cannabis users compared with controls.



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ACQUIRED BRAIN INJURY

- Stimulant use can be associated with strokes, seizures and long – term memory and concentration problems.

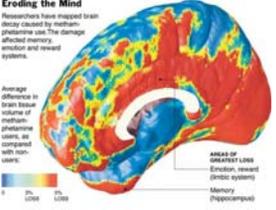


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METHAMPHETAMINE

- Journal of Neuroscience June 2004 – Dr. P. Thompson MRI research
 - Limbic system (craving, reward, emotion, mood) lost 11% of tissue
 - Hippocampus (new memories) lost 8% = to early Alzheimers

Eroding the Mind
Researchers have mapped brain decay caused by methamphetamine use. The damage affected memory, emotion and reward systems.

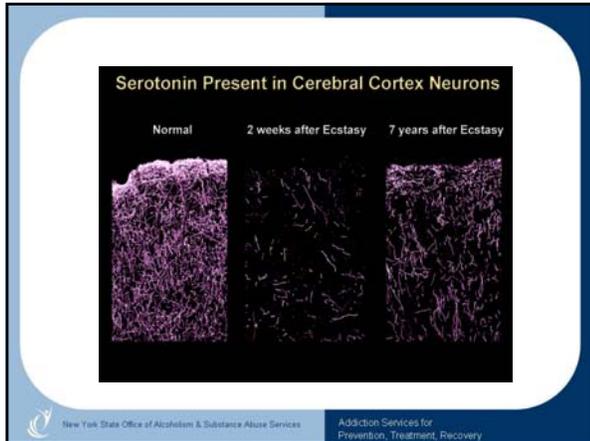


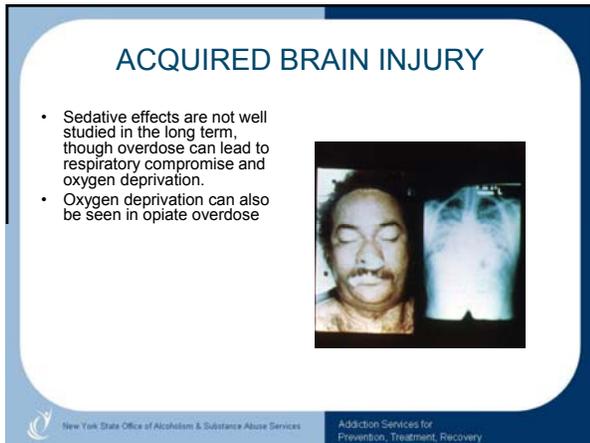
Average difference in brain tissue volume of methamphetamine users, as compared with non-users.

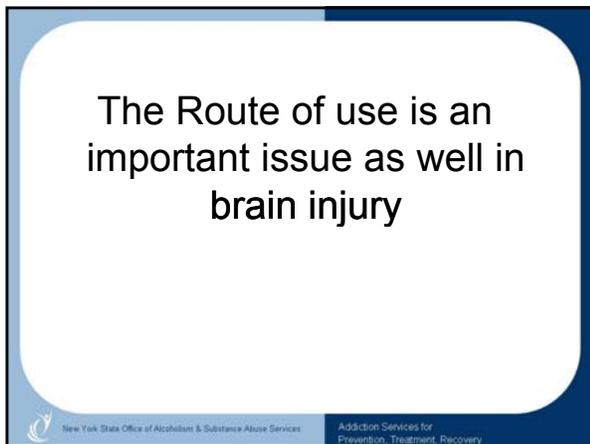
AREAS OF GREATEST LOSS: Emotion, reward (limbic system), Memory (hippocampus)

Source: Dr. Paul Thompson, UCLA.

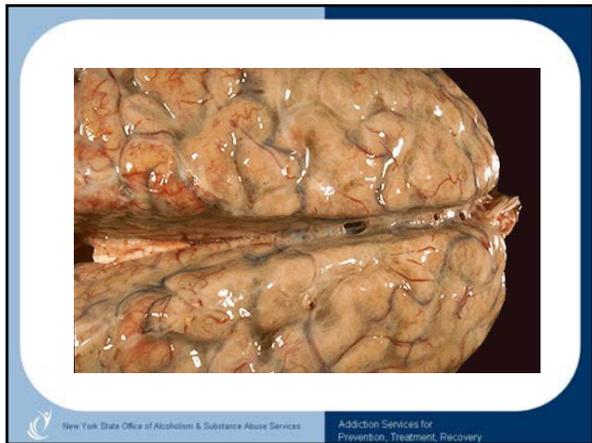
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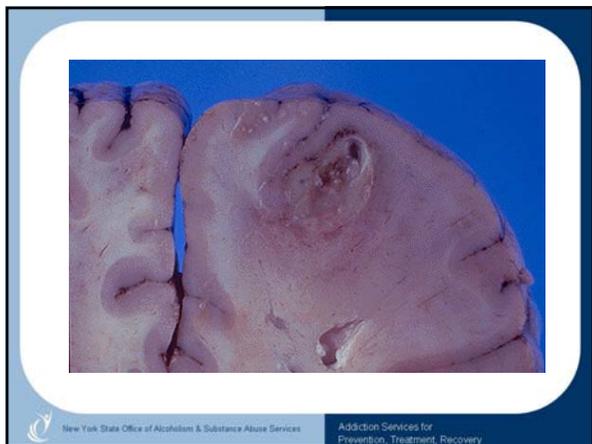












LEUKOENCEPHALOPATHY DUE TO SMOKING HEROIN



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- The CDC estimated that 5.3 million Americans live with disabilities due to brain injury
- 67% of people in rehabilitation for brain injury have a previous history of substance abuse (Thurman, 1998).
 - 50% of these people will return to using alcohol and drugs after the injury (Corrigan, 1995).

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- 20% of persons with brain injuries who did not use alcohol or drugs prior to the injury, were vulnerable to alcohol and drug use after the injury (Corrigan, 1995).
- 50% of clients enrolled in OASAS Programs were affected by probable TBI (N=647) (Fenske, Gordon, Perez, Hibbard, Brandau, submitted for publication)

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The Problem:

- Diagnosis is missed
- Patients with a TBI in Substance Use Treatment programs are more likely to prematurely discontinue treatment and are often characterized as non – compliant.

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