



**Department of Physical and Rehabilitation Medicine with the postgraduation  
course**

**Historical basis of alcohol.  
Cultural grounds of alcoholism.  
Reasonable doses of alcohol.**

***Head of Department, Doctor of Medical Sciences, Associate  
Professor E.Yu. Mozheiko***

***Year 2022***

# Lecture plan

1. The concept of alcohol. Concepts of psychoactive substances and narcotic substances.
2. Alcoholism and alcoholic (methal alcohol) psychoses
  - 2.1 Acute alcohol intoxication
  - 2.2 Alcoholism
  - 2.3 Stages of alcoholism
  - 2.5 Somatic and neurological disorders in alcoholism
  - 2.6 Age and sex characteristics
  - 2.7 Symptomatic alcoholism
  - 2.8 Development and pathogenesis of alcoholism
  - 2.9 Prevalence of alcoholism
  - 2.10 Treatment of alcoholism
3. Alcoholic (methal alcohol) psychosis
4. Alcoholic encephalopathic psychosis

# Alcohol

- “The mind stealer” is what alcohol has been called since ancient times.
- People learned about the intoxicating effects of alcoholic beverages no less than 8000 years BC as the ceramic tableware occurred, which helped make alcoholic beverages from honey, fruit juices and wild grapes.
- Perhaps winemaking was before cultural land planting.
- The famous traveler N.N. Miklukho-Maklay observed the Papuans of New Guinea, who did not know how to make fire yet, but already knew the techniques of making intoxicating drinks.

A psychoactive substance is understood to be any substance (natural or synthetic) capable of changing mood, physical condition, self-perception, perception of the environment, behavior, or giving other psychophysical effects desirable from the consumer's point of view, and with systematic intake to cause mental and physical dependence.

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A  
psychoactive  
substances

Alcohol

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Drugs

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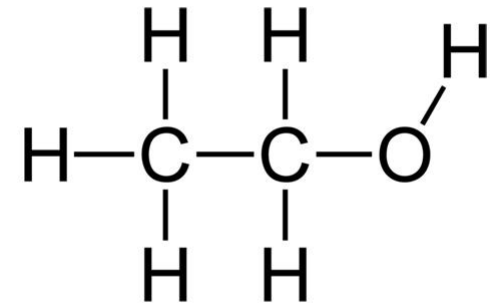
Toxic substances

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The latter also include drugs with a psychotropic effect approved for medical use by the Pharmacological Committee of the Russian Federation and not included in the official “List of narcotic drugs, psychotropic substances subject to control in the Russian Federation”

# Alcohol

- Alcohol is the most commonly used psychoactive substance. From the standpoint of pharmacology and toxicology it is narcotic substance. But since alcohol is not included in the list of substances taken under control as drugs, legally alcoholism is not considered an addiction.
- Alcoholism occupies a leading place in the addict assistance and represents the main form of diseases in this group.



# Drugs

A narcotic (drug) is understood to be a substance that meets the following criteria:

1. has a specific effect on mental processes - stimulating, euphoric, sedative, hallucinogenic, etc. (medical criterion);
2. non-medical consumption of the substance has a large scale, the consequences of this acquire social significance (social criterion);
3. in accordance with the procedure established by law, it is recognized as narcotic and included by the Ministry of Health of the Russian Federation in the list of narcotic drugs (legal criterion).

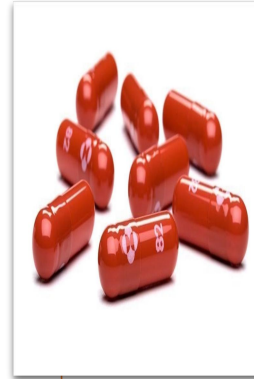
# Toxic substances

Psychoactive substances that are not included in the list of drugs are usually **called toxic**. They have all the psychotropic properties of drugs, have patterns of addiction. Moreover, dependence on the abuse of toxic substances is often more pronounced. If the Criminal Code of the Russian Federation does not provide for criminal liability, then they are not considered drugs.

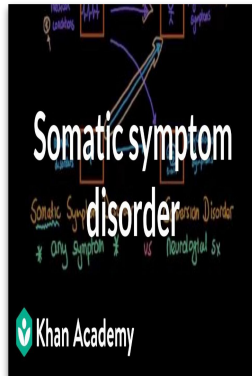
# Red flags - how to find addict patients



Drugs are often coexist with mental disorders (depression, anxiety), which in itself is also the cause of their occurrence. Patients can self-medicate using both prescribed and not prescribed means.



When examining a patient with symptoms of depression, anxiety or psychosis, it is necessary to exclude the possibility that these disorders could be caused by the use of drugs.



Symptoms of HIV infection, abscesses, bacterial endocarditis, hepatitis, thrombophlebitis, tetanus, abscesses, scars from intravenous or subcutaneous injections are suspected or detected. Patients who inhale cocaine or heroin often experience displacement or perforation of the nasal septum, nasal bleeding, rhinitis. Patients who smoke purified cocaine, crack, marijuana or other drugs (including inhaling inhalants) often suffer from bronchitis, asthma, and chronic respiratory diseases.

# How to check patient

- Express-tests with a high degree of probability to detect narcotic substances in the urine can be used.
- Domestic tests have proven themselves well, with high reliability whether the patient uses certain narcotic substances. The simplicity of diagnostic testing, the ability to determine narcotic substances of the opium group within five days, and cannabioids - within 2 weeks after the last use makes it possible to use them in medical institutions, everyday life, educational institutions, during examination, etc.

# Why we need to do it?

- In the medical records, it is necessary to give a detailed description of the substance used, the category to which it belongs. Also indicate the method, dose and frequency of consumption. If rapid testing was carried out, its results must be filed.
- The rapid tests, as well as laboratory research methods in the diagnosis of drugs consumption, have only an auxiliary value, since the very fact of detection of drugs in the patient's body is not the basis for diagnosis. The main method of clinical examination remains the main one in the diagnosis of the disease.

## As Blood Alcohol Concentration (BAC) Increases, So Does Impairment

### Life Threatening

- Loss of consciousness
- Danger of life-threatening alcohol overdose
- Significant risk of death in most drinkers due to suppression of vital life functions

0.31–0.45%

### Severe Impairment

- Speech, memory, coordination, attention, reaction time, balance significantly impaired
- All driving-related skills dangerously impaired

### Increased Impairment

- Perceived beneficial effects of alcohol, such as relaxation, give way to increasing intoxication
- Increased risk of aggression in some people

0.16–0.30%

- Judgment and decision-making dangerously impaired
- Blackouts (gaps in memory)
- Vomiting and other signs of alcohol overdose common
- Loss of consciousness

- Speech, memory, attention, coordination, balance further impaired
- Significant impairments in all driving skills

0.06–0.15%

- Increased risk of injury to self and others
- Moderate memory impairments

0.0–0.05%

### Mild Impairment

- Mild speech, memory, attention, coordination, balance impairments
- Perceived beneficial effects, such as relaxation
- Sleepiness can begin

# How Alcohol Affects The Brain

## CEREBRAL CORTEX:

- Loss of Emotional Control
- Reduced ability to learn new information
- Affected Senses (Blurred Vision)

## HIPPOCAMPUS:

- Blackouts
- Impaired Memory
- Reduced Reception to Learn New Information

## HYPOTHALAMUS:

- Slowed Heart Rate

## MEDULLA:

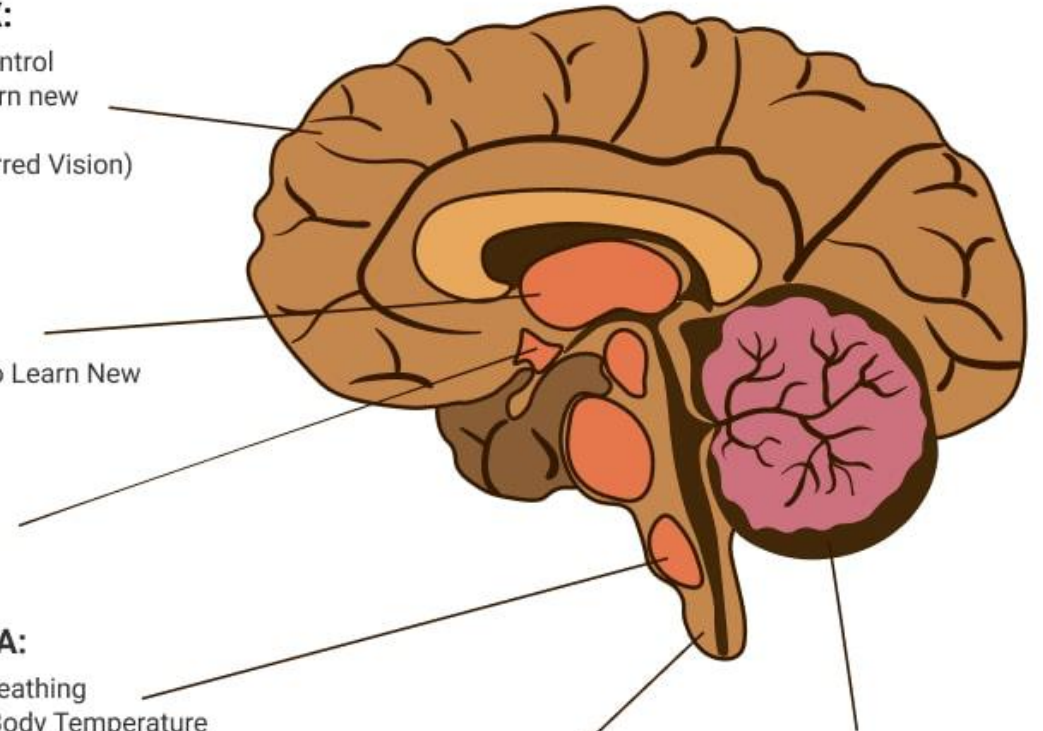
- Slow Breathing
- Lower Body Temperature
- Coma

## CENTRAL NERVOUS SYSTEM:

- Slurred Speech
- Poor muscle Control
- Slower Reaction

## CEREBELLUM:

- Affected Coordination and Balance
- Slowed Reflexes
- Shaking and Tremor



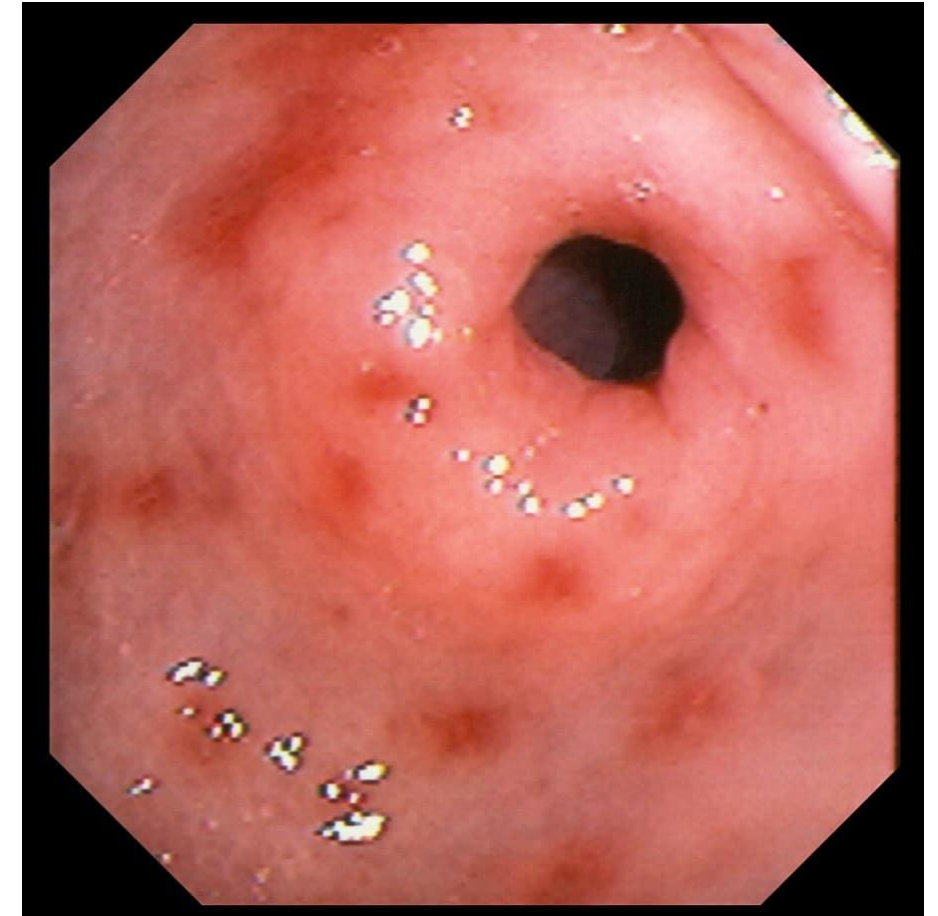
About 20% of the alcohol consumed is absorbed in the stomach, and the remaining 80% is absorbed in the small intestine. -> Alcohol diffuses into the wall of the stomach and small intestine, more of it enters unchanged directly into the bloodstream.

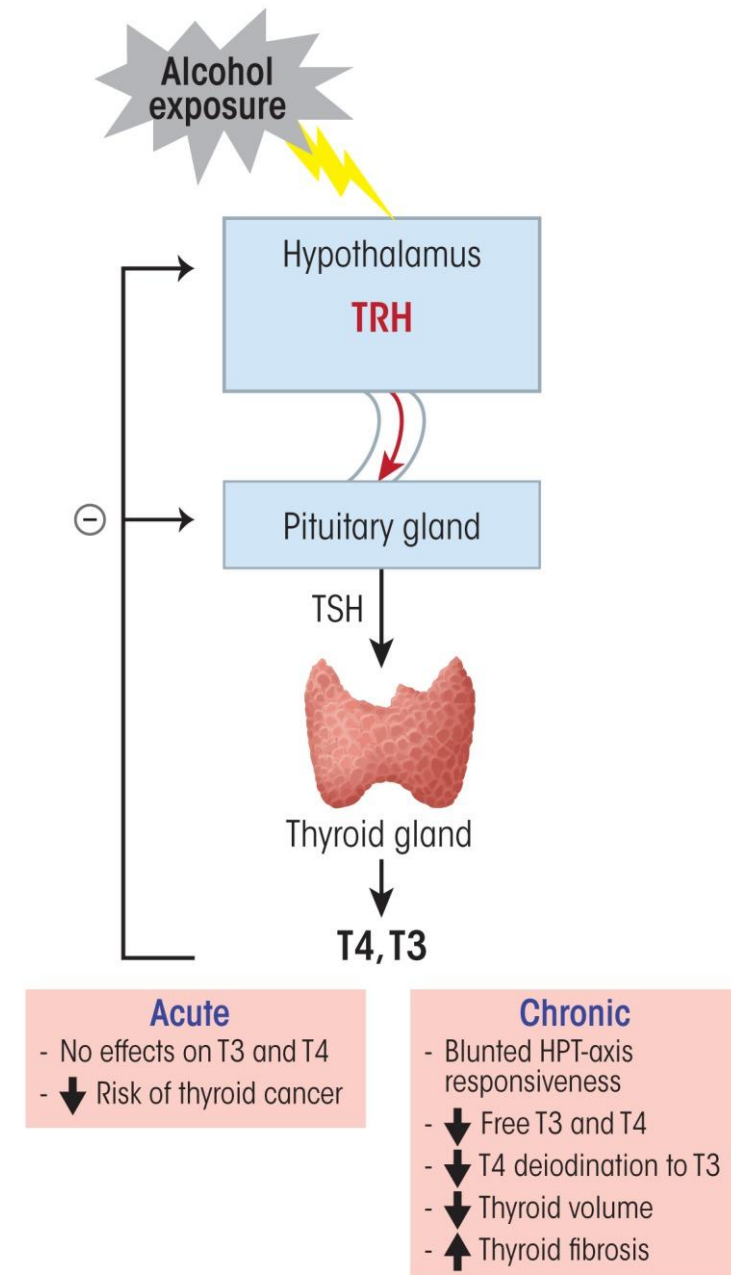
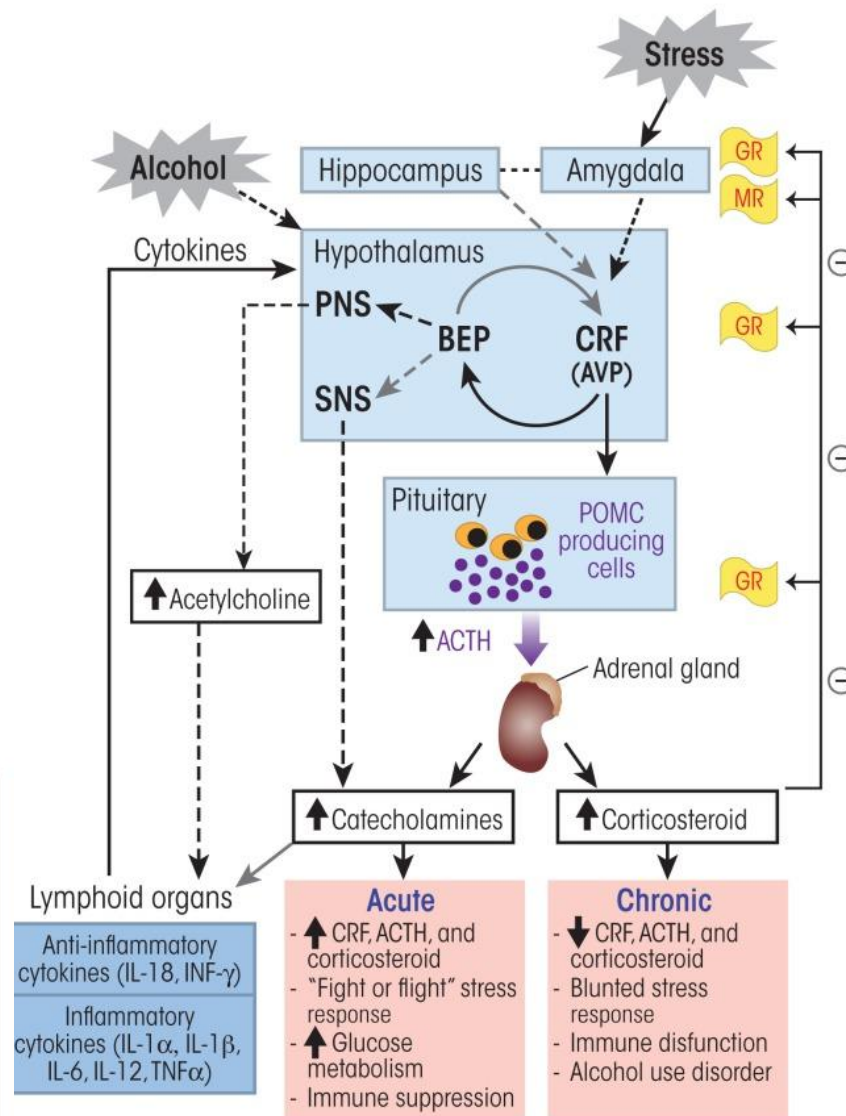
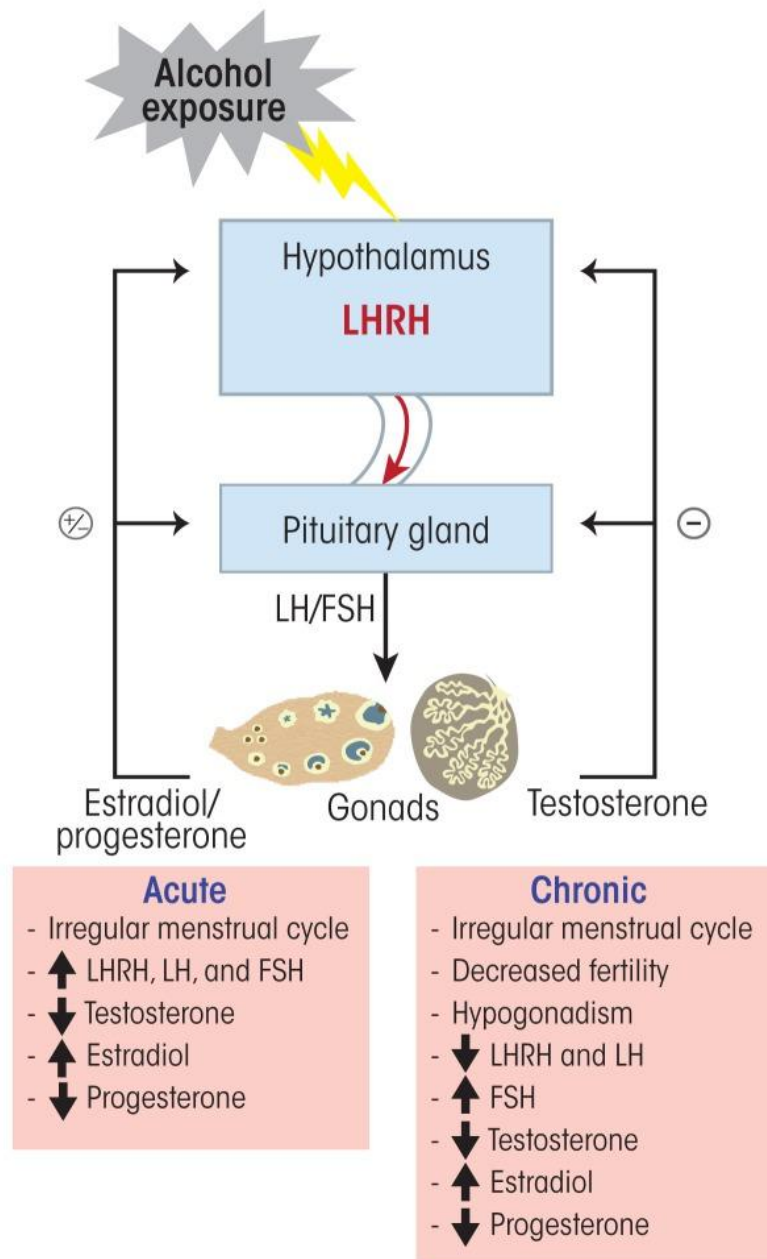
Another part of alcohol penetrates through the wall of the stomach and small intestine and enters the abdominal cavity, from there it is absorbed by the large surface of the peritoneum and only then enters the blood stream.

The intensity of absorption is determined by many factors:

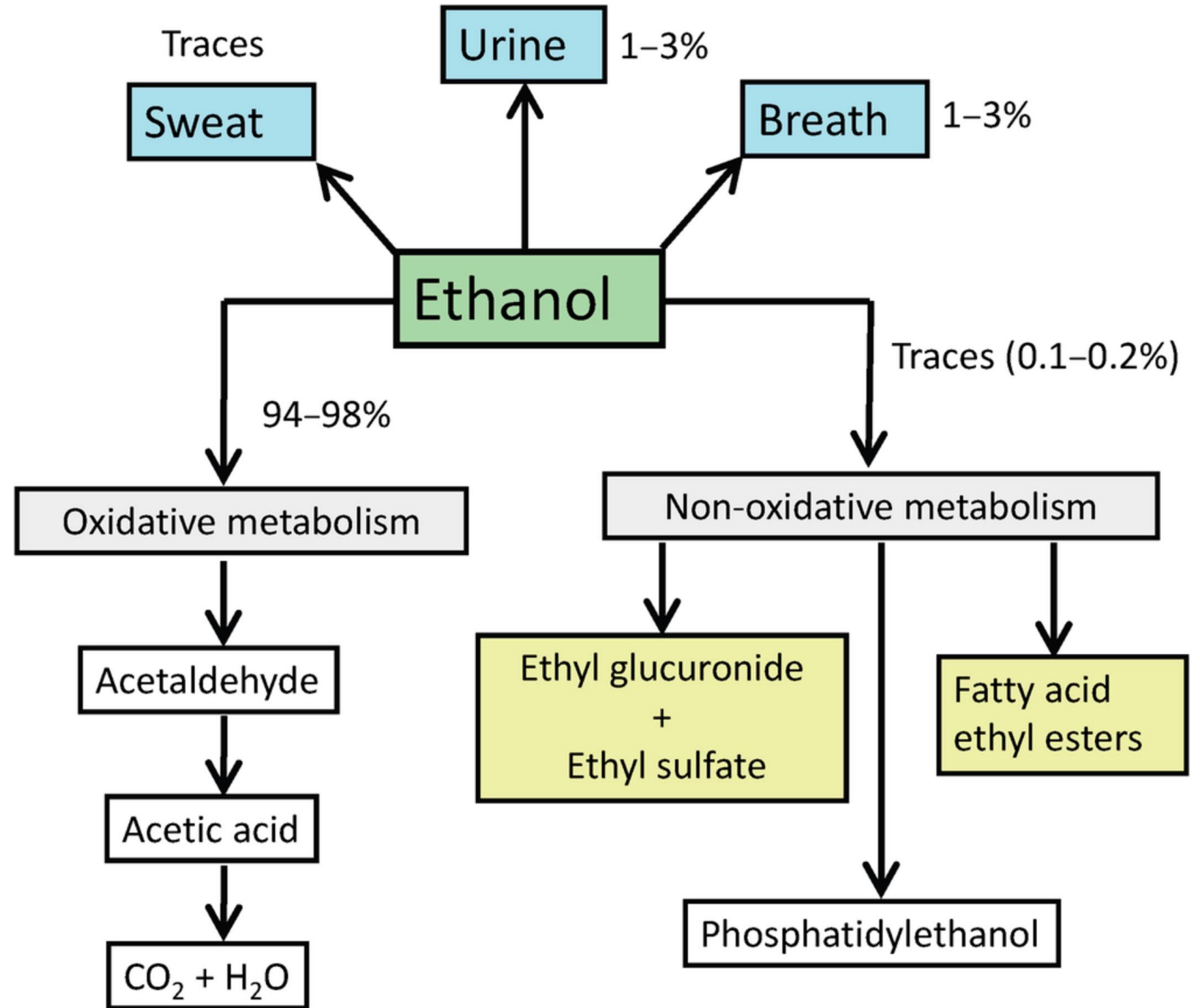
- the area of alcohol contact with the wall of the gastrointestinal tract,
- the rate of evacuation of contents from the stomach into the intestine,
- the nature of consumption (once or fractional), the type of drink ( its %, the presence of carbon dioxide).

In healthy people, alcohol can remain in the gastrointestinal tract from 45 minutes to 3 hours, this should be taken into account when providing first aid for acute alcohol poisoning.





# Excreted ways of ethanol



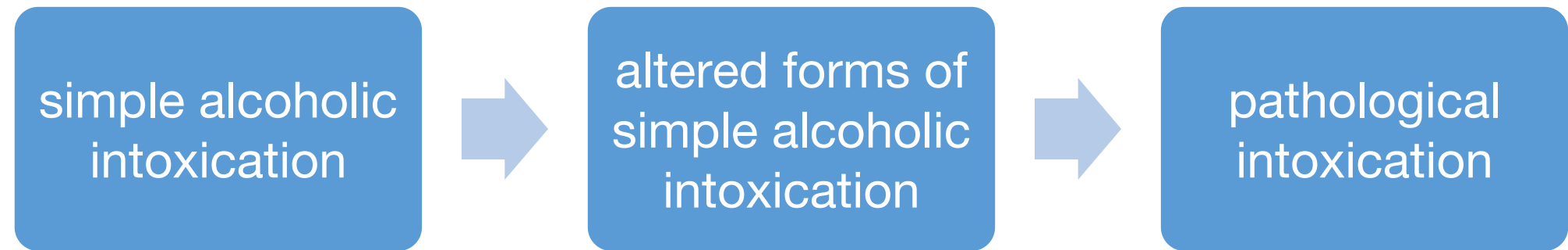
# Alcohol intoxication

Alcohol intoxication is an acute intoxication caused by the psychotropic effect of drinks containing ethyl alcohol (spirit), causing inhibition of the central nervous system.

| Intoxication Assessment Tool                   |                                                               |                                                                                                                                      |                                                                                                                            |
|------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Indicators may include but are not limited to: |                                                               |                                                                                                                                      |                                                                                                                            |
|                                                | SOBER                                                         | INFLUENCED                                                                                                                           | INTOXICATED                                                                                                                |
| <b>S</b> peech                                 | Coherent, clear speech, normal tone/volume, may be talkative. | May be overly talkative, opinionated and interrupts, may stumble over words, becoming loud, inappropriate language, jokes, comments. | Slurring, difficulty forming words, loud, repetitive, loses train of thought, nonsensical, unintelligible.                 |
| <b>C</b> oordination                           | Coordinated, balanced, standing without help or support.      | Slowed or delayed reactions, swagger or occasional staggers or sways.                                                                | Spills drinks, stumbles, trips, weaves, walks into objects, unable to stand un-aided or sit straight.                      |
| <b>A</b> pppearance                            | Tidy, clear eyes, alert.                                      | Vacant or blank expression, smell of alcohol on breath, may look untidy.                                                             | Bloodshot eyes, eyes glazed, inability to focus, tired, asleep, dishevelled.                                               |
| <b>B</b> ehaviour                              | Behaving sensibly but may be more relaxed.                    | Over friendly or withdrawn, inappropriate or risky actions, argumentative, annoying, fading attention, increased consumption rate.   | Seriously inappropriate actions or language, aggressive, rude, belligerent, obnoxious behaviour affecting other customers. |
|                                                | Monitor & serve responsibly                                   | Intervene                                                                                                                            | Deny & remove                                                                                                              |

AL804 | June 2013

Clinical manifestations of alcoholic intoxication are divided into the following main types:



# The simple alcoholic intoxication

a concentration of alcohol  
in the blood of 1-1,5%

Vegetative system - a feeling of warmth, hyperemia of the skin, increased pulse, increased appetite, sexual desire

Attention - easily distracted, the pace of thinking accelerates, inconsistency and superficiality begin to prevail in it

Speech - becomes louder and faster, but there are either no violations of articulation, or, less often, they are expressed slightly

Coordination - a large sweep, impetuosity, a decrease in accuracy

Emotion - a feeling of cheerfulness and contentment arises, pleasant thoughts and associations prevail, the perception of the audible and visible has a predominantly positive coloring

Result - the elated mood gradually gives way to lethargy and indifference, motor activity gives way to relaxation; thinking becomes more slowed down.



# The average degree of simple alcoholic intoxication

a concentration of alcohol  
in the blood of 1.5 to 3%

Attention - switches slowly, only under the influence of strong stimuli.

Speech - becomes dysarthric and louder due to an increase in the threshold of auditory perception.

Coordination - unclear and monotonous; become uncertain, motor skills become even more upset and symptoms of ataxia occur.

Emotion - This leads to the emergence of various kinds of conflicts, which are caused by the overestimation of the intoxicated person's own personality and perverse of drives and desires.

Result - deep sleep. Upon awakening, the effects of intoxication are felt: weakness, lethargy, bruising, dry mouth, thirst, a feeling of heaviness in the head, in some cases irritability or depressed mood. Physical and mental performance are reduced. About the events that took place during the period of intoxication, especially those that were not emotionally significant, memories are vague, with the forgetting of individual episodes.



# The severe degree of simple alcohol intoxication

a concentration of alcohol  
in the blood of 3-5%

Vegetative system - respiration is reduced up to its pathological forms, the tone of the cardiovascular system decreases, cyanosis of the extremities, hypothermia appear

Attention - the appearance of various symptoms of stunning consciousness

Coordination - cerebellar ataxia, muscular atony.

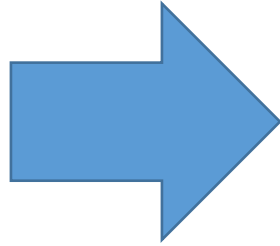
Vestibular disorders are often observed: dizziness, nausea, vomiting

Result - ataxia, dysarthria and various vegetative disorders. Anorexia and night sleep disorders.

Complete amnesia – the so-called narcotic amnesia



# Pathological intoxication



There is detachment from the environment, accompanied by disorientation of all kinds, but the usual automated actions remain, in particular the ability to move on foot or by transport. As a rule, the episode is completely amnesic.

The psychotic disorders that have arisen, the real situation does not matter for their actions.

Two main tendencies are usually revealed in the behavior in a state of pathological intoxication: defense with the desire to destroy the source of danger and escape from a life-threatening situation. Often both of these trends coexist.

# Treatment of acute alcohol intoxication

- For mild to moderate degrees, general and local warming is recommended, inside 10-15 drops of ammonia in 100 ml of water.
- In moderate and severe cases: gastric lavage, subcutaneous injection of 0.25-0.5 ml of hydrochloric acid apomorphine solution (to induce vomiting), catheterization of the bladder in case of urinary retention. In a comatose state - administration of cardiac drugs, intravenously 100 mg of pyridoxine (vitamin B6), up to 1 liter of saline solution with 15-20 ml of 40% glucose.
- With strong motor arousal, vitamin B12 of 50-100 mg is recommended. The introduction of barbiturates is contraindicated! In cases of severe coma – venipuncture with withdrawal of up to 200 ml of blood, subcutaneous saline solution - 800-1000 ml.
- In case of asphyxia - inhalation of oxygen, artificial respiration, cytitone (1 ml of 0.15% solution in / in), lobelin (1 ml of 1% solution n / a), inhalation of a mixture of 90% oxygen and 10% carbon dioxide.

# Alcoholism



**World Health  
Organization**

According to WHO criteria, alcoholism is a chronic mental illness characterized by a syndrome of drug addiction to alcohol, that is, a set of symptoms caused by excessive alcohol consumption, as a result of which specific mental, somatic and neurological disorders occur, as well as social conflicts.

The disease is represented by a combination of three syndromes

- the syndrome of altered reactivity,
- the syndrome of mental dependence
- the syndrome of physical dependence.

# Age and sex characteristics

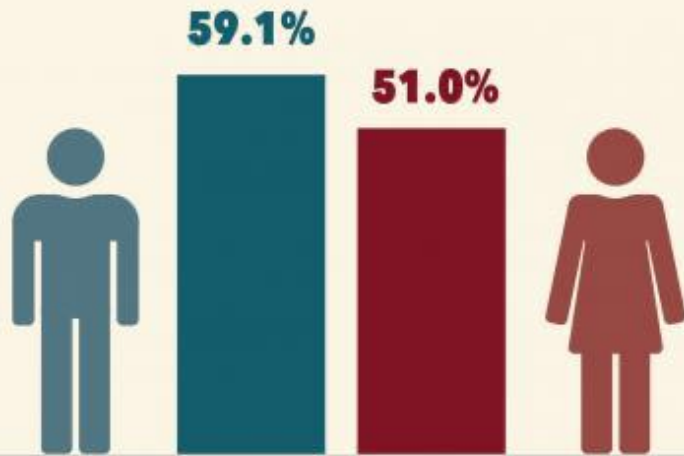
- For typical occasion quantity, percentages of heavier-typical quantity drinking in men are higher than for women in all countries.
- Higher percentages of heavier-typical quantity drinking are found in the younger age groups in four high-income countries (Australia, England, Scotland and New Zealand) and one middle-income country (South Africa). A clear monotonic decrease with age is found in the four high-income countries

Surasak Chaiyasong et al. Drinking patterns vary by gender, age and country-level income: Cross-country analysis of the International Alcohol Control Study. Special Issue: International Alcohol Control Study. 13 June 2018 <https://doi.org/10.1111/dar.12820>

# Alcoholism in women

## MONTHLY ALCOHOL USE

Percentage of U.S. men and women who reported drinking alcohol in the past month.

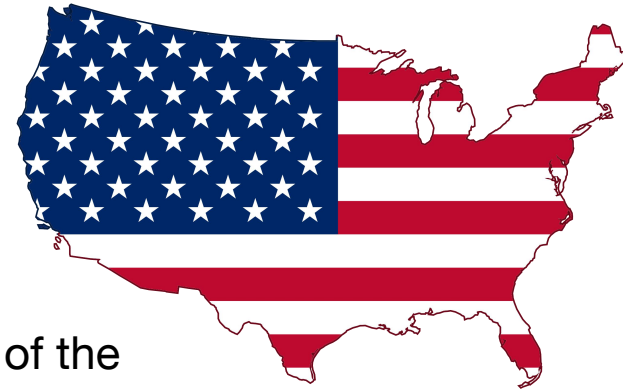


SOURCE: 2019 National Survey on Drug Use and Health

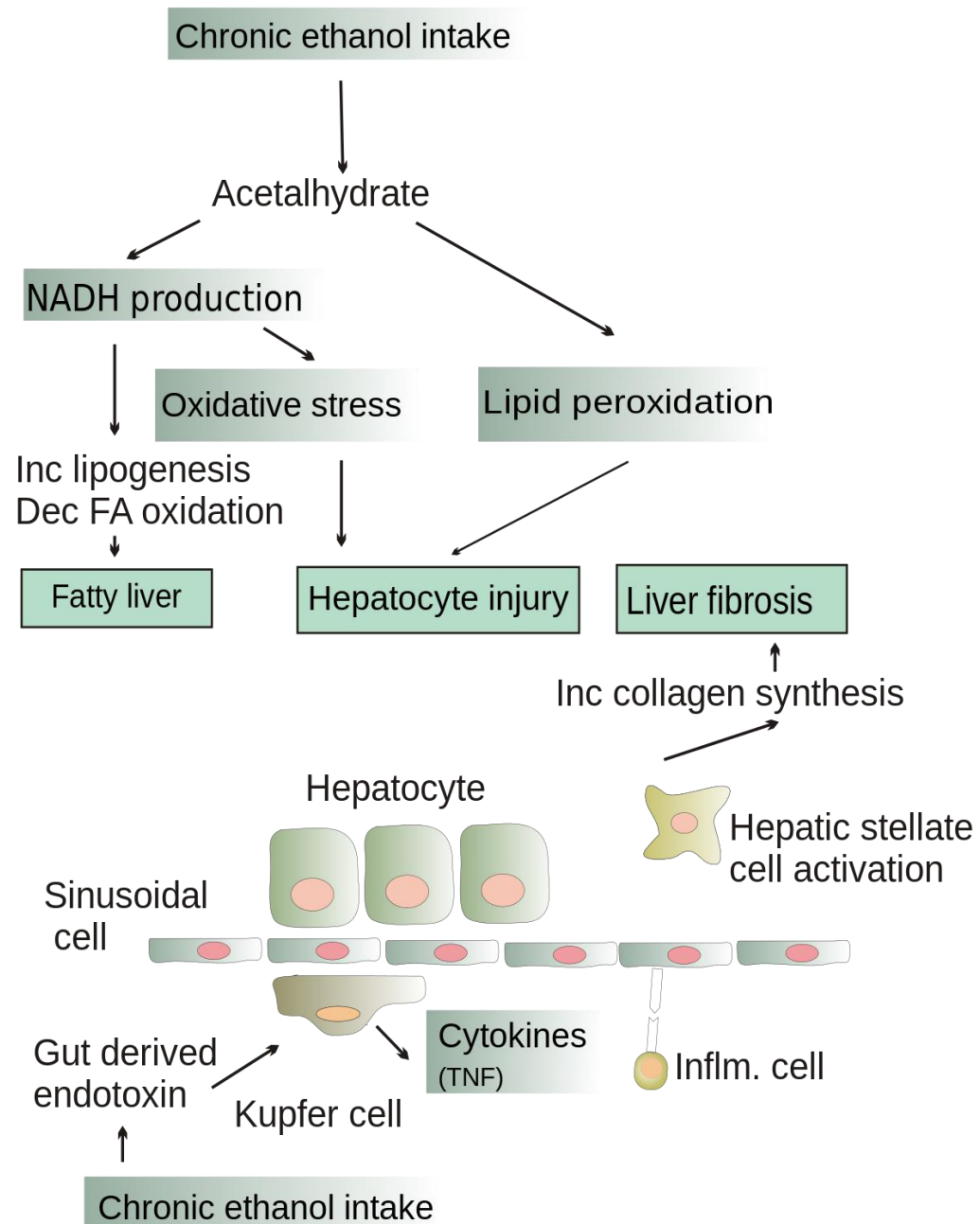
In women who abuse alcohol, children are 2 times more likely to suffer from congenital diseases, the pathology of pregnancy and childbirth is significantly more common.

In recent years, there has been a clear trend of increasing drunkenness and alcoholism in many industrialized countries, where the number of alcoholics is 7-10% in the population. Today, the problem of alcoholism is one of the main in the world.

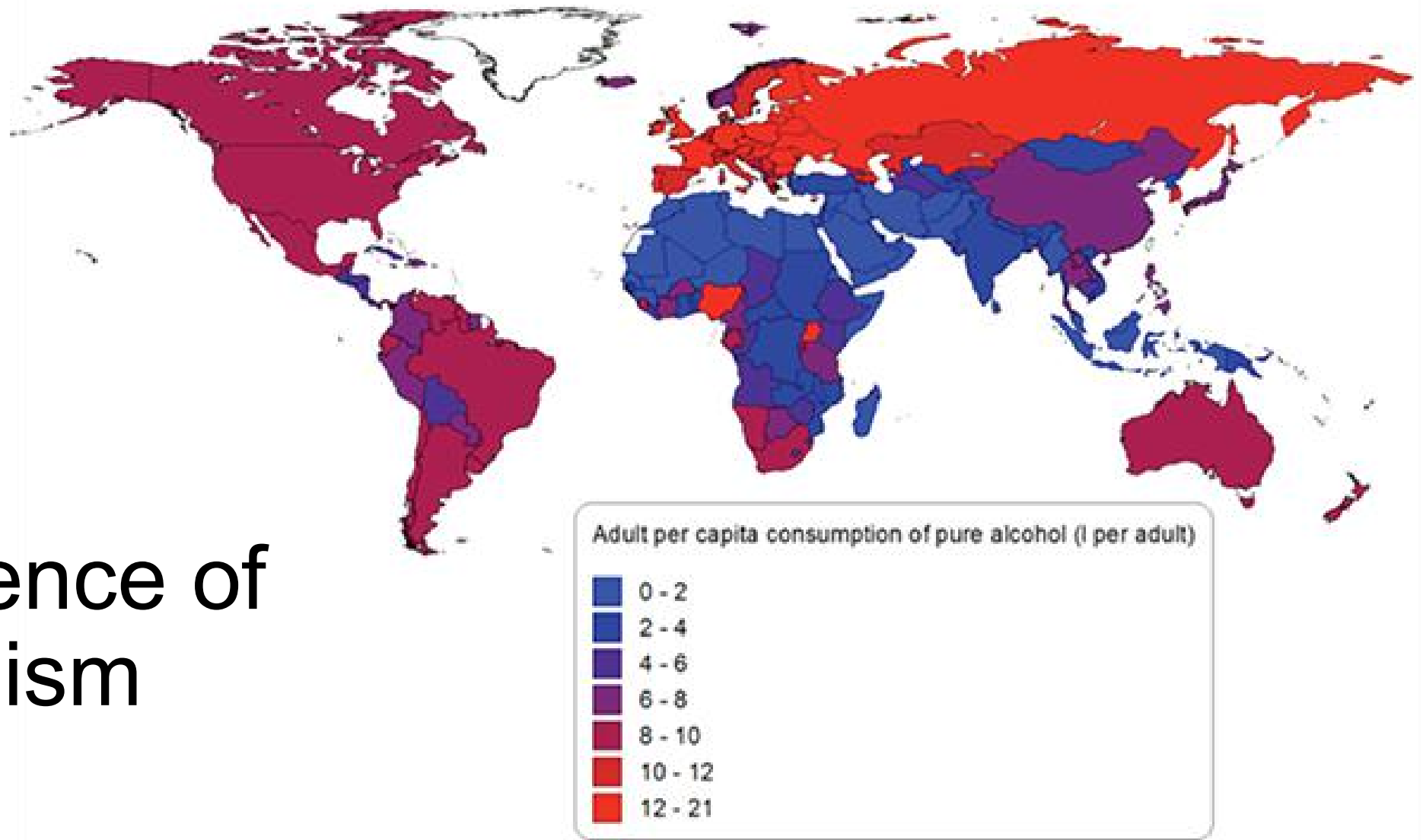
- 25.8% of people aged 18 years and older report binge drinking in the past 30 days.
- Every day, 261 Americans die as a result of excessive alcohol use.
- 80% of these deaths involve adults aged 35 or older.
- Alcohol causes 10% of deaths among 15- to 49-year-olds.
- Worldwide, up to 3.3 million people die every year as a result of alcohol abuse.
- Alcohol-related deaths account for at least 5.3% (some estimate as high as 6.0%) of the world's deaths.
- Alcohol causes 13.5% of deaths among 20- to 39-year-olds.
- Men are 3 times as likely as women to die as a consequence of alcohol abuse.
- The World Health Organization (WHO) has determined excessive alcohol use is responsible for 7.1% of disease among males and 2.2% among females.
- Collectively, Americans lose over 2.7 million years of potential life due to excessive drinking.



# Pathogenesis



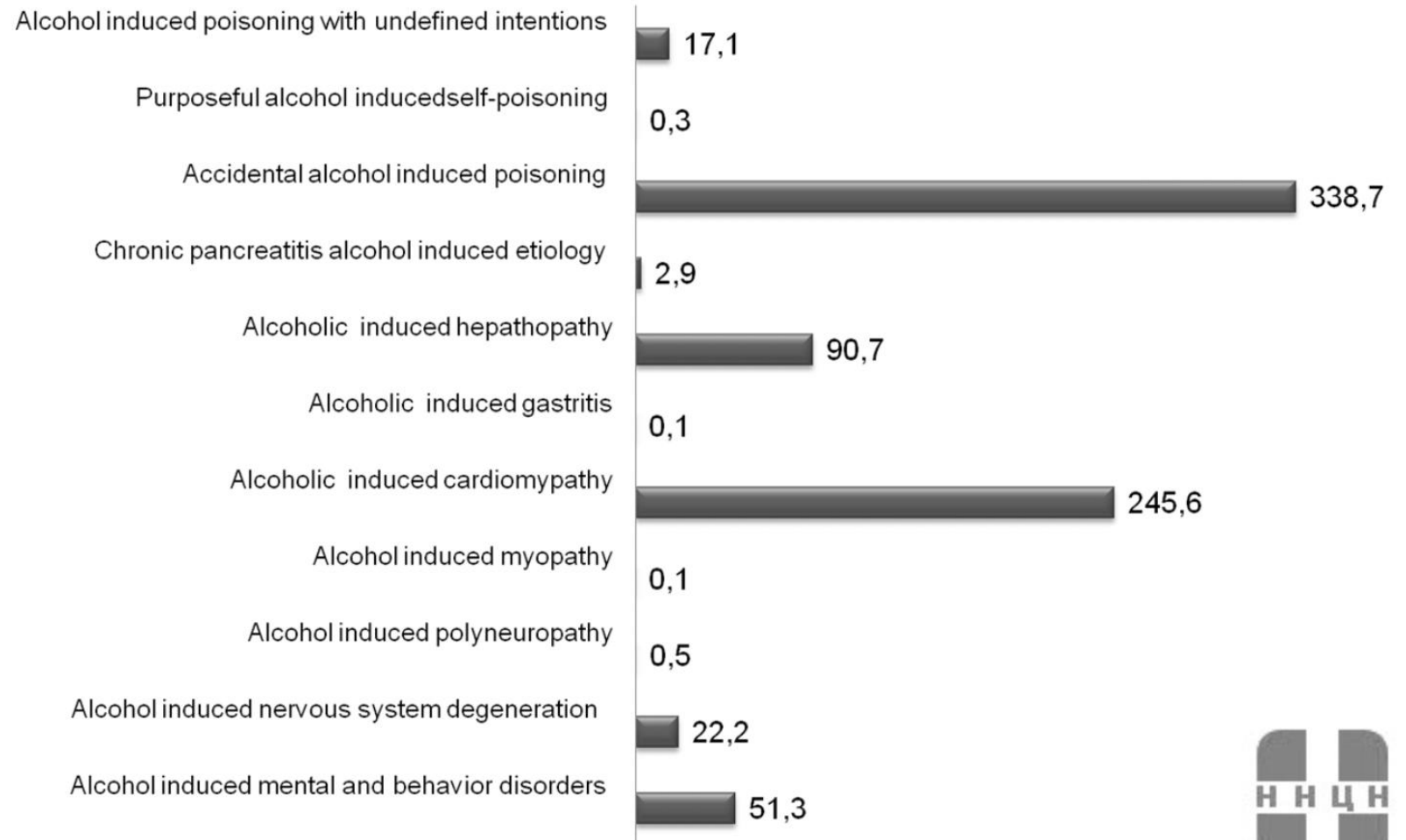
# Prevalence of alcoholism



# Prevalence of alcoholism

## Alcohol-Related Mortality in 1999-2007

(in 1000, EAndreev& I. Zbarskaya)



# There are three consecutive stages of alcoholism:

0 -Pre-alcoholic stage

1 - initial, neurasthenic

2 - middle, addicted

3 - final, encephalopathy

Each of the stages is characterized by typical signs for it - symptoms and syndromes



# Domestic drunkenness

The repeated and regular drinking damages somatic health or creates social problems in society, in the family, at work. Many experts recognize this form of alcohol abuse as a prenosological stage of alcoholism, it is often given different names: "alcohol abuse", "prenosological alcoholism", "domestic drunkenness", etc.

In a global study of intimate partner violence, the odds were higher worldwide in relationships where one or both partners had problems with alcohol, compared to relationships where neither of them did.



In several years it would be first stage of alcoholism

# Pre-alcoholic stage

## **Signs of the pre-alcoholic stage:**

- Relying on alcohol to unwind or relax
- Needing a drink to engage in social situations
- Using alcohol to cope with uncomfortable feelings or emotions

## How to help

It's often difficult to determine whether someone is in the pre-alcoholic stage. Their drinking hasn't veered far from regular social drinking. People in the pre-alcoholic stage may enjoy drinking more frequently than those around them but it isn't overtly noticeable in most people.

# The first (initial) stage of alcoholism

## Signs of early-stage alcoholism:

- Regular binge drinking
- “Blacking out” (memory loss caused by drinking)
- Difficulties controlling the amount they drink
- Swearing they’ll cut back or stop but having troubles doing so

## How to help

If you notice they continue drinking heavily and blacking out, you have a right to be concerned. Keep an eye on their drinking behaviors to see whether they progress further. Even if they never progress past this stage, regular binge drinking is not a healthy way to consume alcohol.

# The second (middle) stage of alcoholism

Signs of middle-stage alcoholism:

- lack of control
- regularly hungover
- more irritable
- you'll need to drink more to achieve the same effects you used to feel and often pass out from alcohol
- facial redness, stomach bloating, shaking, sweating and memory lapses

How to help

Treatment is most beneficial for those at the point of middle-stage alcoholism. They haven't reached a place where their health declined too far and they can make some extreme changes in their lives. Attending alcohol rehab at this stage will be incredibly beneficial.

# Withdrawal syndrome

- Withdrawal syndrome in alcoholism is a painful condition that occurs in the second stage due to the cessation of the usual dose of alcohol. Withdrawal is manifested by mental, somatic-vegetative and neurological disorders. Patients complain of headache, palpitations, dyspeptic disorders, loss of appetite, alternating chills and pouring sweat. Blood pressure is often elevated, sometimes significantly. Muscle tremor is characteristic, especially large-scale tremor of the fingers). Asthenia, irritability, causeless anxiety are combined with insomnia or restless sleep, nightmarish dreams, early awakening.
- Depending on the type of personal accentuation, there may be ideas of jealousy, persecution, relationships, hysterical behavior with demonstrative suicidal attempts or depression with true suicidal intentions.
- Symptoms of alcohol withdrawal appear 12-24 hours after the last drink, its duration depends on the severity - from 1-2 days to 1-2 weeks.
- In severe cases, alcoholic delirium ("delirium tremens") and convulsive seizures ("alcoholic epilepsy") may develop.
- The duration of the second stage is 5-15 years.

# The third (final) stage of alcoholism

## Sign of end-stage of alcoholism:

- Alcohol consumption becomes an all-day affair, and your priorities change to facilitate drinking as the most important aspect of your life.
- Mental disorders, in addition to dementia, are represented by affective pathology - dysphoria, depression.
- the need for mental and physical comfort in intoxication
- Alcoholic degradation is personality changes

## How to help

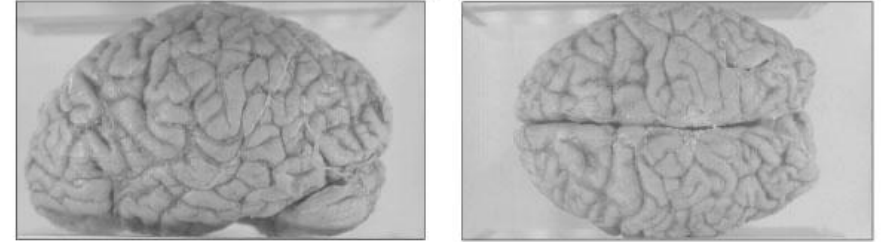
- Someone who is at the point of end-stage alcoholism needs treatment as soon as possible. If they choose not to address their drinking problem, they're likely to drink themselves into an alcohol-induced illness, such as cirrhosis or cancer.

# Neurological disorders in alcoholism

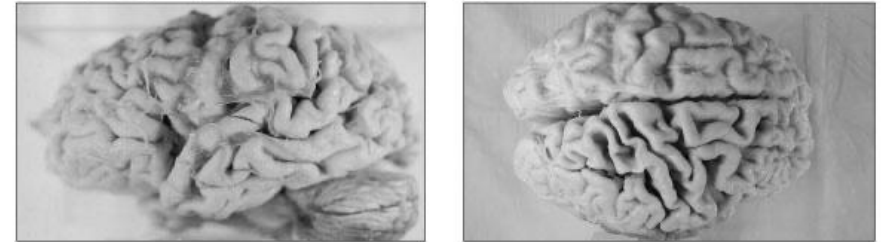
There are a number of neurologic diseases associated with alcohol consumption, including:

- Wernicke-Korsakoff Syndrome,
- alcoholic neuropathy,
- alcohol withdrawal syndrome,
- alcoholic cerebellar degeneration,
- alcoholic myopathy
- fetal alcohol syndrome.

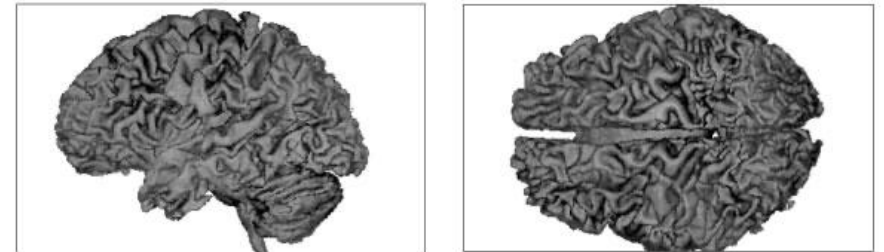
A. The brain of a normal elderly person



B. The brain of a person with Alzheimer's disease

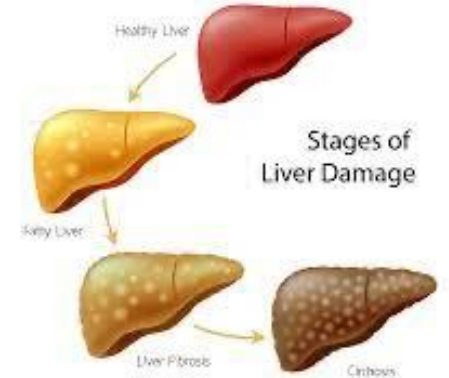


C. The brain of a person with alcoholism



# Liver dysfunction

Different factors, such as metabolic, genetic, environmental, and immunological, collectively play a role in alcoholic liver disease.



- The liver tolerates mild alcohol consumption, but as the consumption of alcohol increases, it leads to disorders of the metabolic functioning of the liver. The initial stage involves the accumulation of fat in the liver cells, commonly known as fatty liver or steatosis. If the consumption of alcohol does not stop at this stage, it sometimes leads to alcoholic hepatitis. With continued alcohol consumption, the alcoholic liver disease progresses to severe damage to liver cells known as "alcoholic cirrhosis." Alcoholic cirrhosis is the stage described by progressive hepatic fibrosis and nodules.
- Quantity and duration of the patient's alcohol intake are the highest risk factors for the development of liver disease. The beverage type plays a minimal role. Women are more susceptible than men. Obesity and high-fat diet also increase the risk of alcoholic liver disease. Concurrent hepatitis C infection is associated with younger age of onset, more advanced histological damage, and decreased survival. PNPLA3-like phospholipase domain-containing protein 3 (PNPLA3) is associated with alcoholic liver cirrhosis.

# Treatment of alcoholism

Given the polyetiological nature of the disease, the basic principles of alcoholism treatment are as follows:

- ✓ voluntariness,
- ✓ maximum individualization,
- ✓ complexity
- ✓ and refusal to drink alcohol.

- If the principle of voluntariness is not observed, then it is not about treatment. **The main condition is consent to treatment.**
- If the principle is observed, then the cooperation of the doctor with the patient begins.
- In practice, the patient comes to treatment, as a rule, in a state of abstinence, his consent to treatment is unstable.
- It is during this period that the most effective application of a psychotherapeutic approach to the patient, aimed at overcoming anosognosia and forming a treatment attitude. This is the professionalism of the doctor.

- The second principle is the **maximum individualization of treatment**, based on the study of all components of the internal picture of the disease and a competent assessment of the clinical features of the disease in a particular patient.
- At the same time, the specific weight of social, psychological and biological factors in the clinical picture of the disease is estimated.
- Based on the study of these factors, an individual treatment plan for a particular patient is built, targets, methods and means of therapeutic effect are determined.

- **The principle of complexity** in treatment implies an integrated therapeutic effect, despite the predominance of certain etiological factors in the clinical picture of the disease. In all cases, it should include medical, psychotherapeutic and social effects.
- For some patients, at the first stages of treatment, the drug effect is minimal, and then we are talking about readaptation: psychotherapy and the implementation of a social program.
- For another category of patients, the medical part determines the entire program, it is the main and leading one. Only after a certain time, the psychotherapeutic and social parts of the program are strung on the drug part, as on a rod.

- In the treatment of alcoholism, compliance with the fourth principle - the rejection of a psychoactive substance - **implies a complete refusal to drink alcohol.**
- However, the implementation of this principle in practice does not always lead to success. The fact is that the absolute majority of those who "voluntarily" applied for treatment give only formal consent to "be treated", meeting the requests or ultimatum of loved ones. Unconsciously, they are looking for an excuse to refuse treatment, motivated by the fact that "they realized everything", "they don't get it all", etc. When such a patient is told at the first visit that he should stop drinking alcohol for the rest of his life, the patient is shaken. He is not ready for this, he did not even imagine that the question would be posed in this way. To comply with this principle, medical tactics should be more flexible.
- During the first conversations, it is necessary to make the patient aware of his illness so that the patient gets used to the idea of the need for treatment. And then, step by step, begins the voluntary refusal to drink alcohol for a real period, for example, for six months or a year.

# Prevention of alcoholism

According to WHO recommendations, there are 3 stages of prevention.

- ✓ Primary prevention is the prevention of drunkenness and the occurrence of alcoholism; secondary is complex treatment with subsequent courses of anti-relapse therapy and tertiary is social rehabilitation and readaptation of patients.
- ✓ Currently, the goal of prevention is persistent alcoholic traditions , moderate, controlled alcohol consumption.
- ✓ The most important and effective measure of primary prevention of alcoholism is the upbringing of the younger generation from a positive perspective. This means that the main thing here is to instill high spiritual values, life-affirming needs and skills in the child as early as possible, to develop the ability to achieve social well-being, the ability to receive joy in sports, creativity, work. In other words, it is necessary to form a cult of a healthy lifestyle in society, the values of family, education, sports, the topics of psychoactive substances should not be pushed to the fore, they can be subordinated (by contrast) to the formation of positive life attitudes.
- ✓ In the complex of secondary prevention, individual prevention is particularly important, which consists in preventing relapses of alcoholism. At the same time, psychotherapeutic work is carried out not only with patients, but also with members of his family, other people close to him.
- ✓ Tertiary prevention includes the prevention of the development of gross, irreversible disorders in alcoholism. Secondary and tertiary prevention of alcoholism is determined by a set of medical measures carried out mainly by the narcological service.

Thank you for attention!



