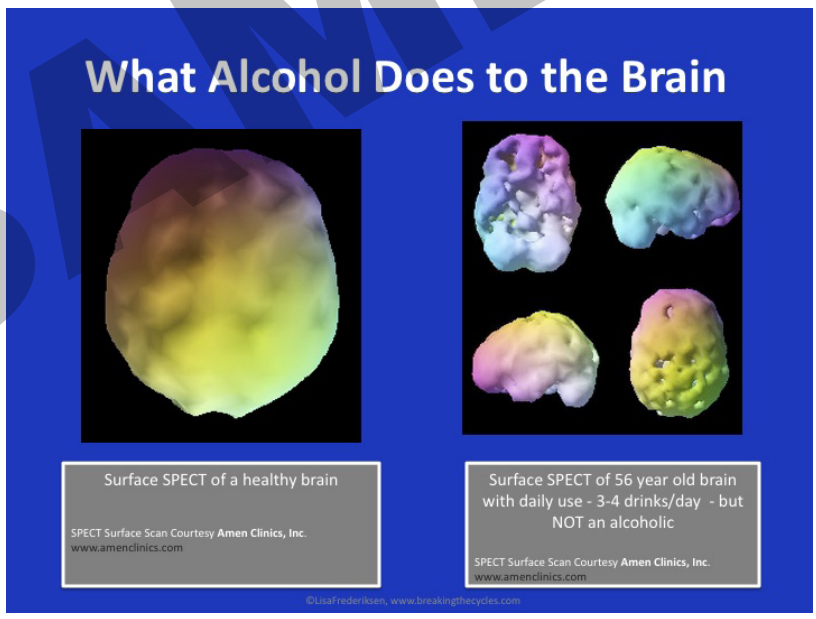
NEW RESEARCH on ALCOHOL and the BRAIN and SECONDHAND DRINKING (SHD)

We hear people ask:

- How can alcoholism be a disease? Cancer is a disease – just put down the bottle!
- All kids drink – what's the big deal? Lower the drinking age, and you get rid of the problem.
- What's she got to complain about? He works hard – so what if he has a few drinks to unwind at night?

Fortunately, new brain and addiction-related research provides science-based answers to these types of questions thanks to new brain imaging technologies of the past 10-15 years. These imaging technologies allow neuroscientists and medical professionals to study the live human brain in action, over time, and under the influence. The resulting new brain and addiction-related research makes it clear there are many factors that interact to produce different drinking patterns in people. These drinking patterns range from no drinking to alcohol use to alcohol abuse to alcoholism. The key factors producing these different drinking patterns, also referred to as key **Risk Factors**, include: genetics, social environment, brain changes caused by childhood trauma (such as verbal, physical or emotional abuse), brain changes caused by mental illness (such as ADHD, PTSD, anxiety, depression), and early use (such as repeated adolescent binge drinking).



Left is a top-down view of a healthy brain. The bottom, right-corner scan (of the four on the right), is the top-down view of the brain of a man engaged in "at-risk" drinking. What appear to be holes (but aren't really) show areas of the brain that are not working well.

Alcohol use is considered **low-risk** or "normal" or moderate **drinking** and is **defined as** *no more than* 3 standard drinks on any day or 7 per week for women and no more than 4 standard drinks on any day or 14 per week for men. A standard drink equals 5 ounces of wine, 12 ounces of beer, 1.5 ounces of "hard liquor" (such as 80-proof vodka, gin, bourbon or scotch), or 8-9 ounces of malt liquor (ale or lager beers, for example).

Alcohol abuse is caused by repeated at-risk drinking patterns, such as binge drinking (defined as 5 or more standard drinks on an occasion for men and 4 or more for women) or heavy social drinking (defined as more than 2 standard drinks on a day for men and more than 1 on a day for women). Thus, **at-risk drinking** is **defined as** *more than* 3 standard drinks on any day or 7 per week for women or 4 standard drinks on any day or 14 per week for men. Alcohol abuse is not **alcoholism**, which is **defined as** a chronic, often relapsing brain disease. Alcohol abuse causes

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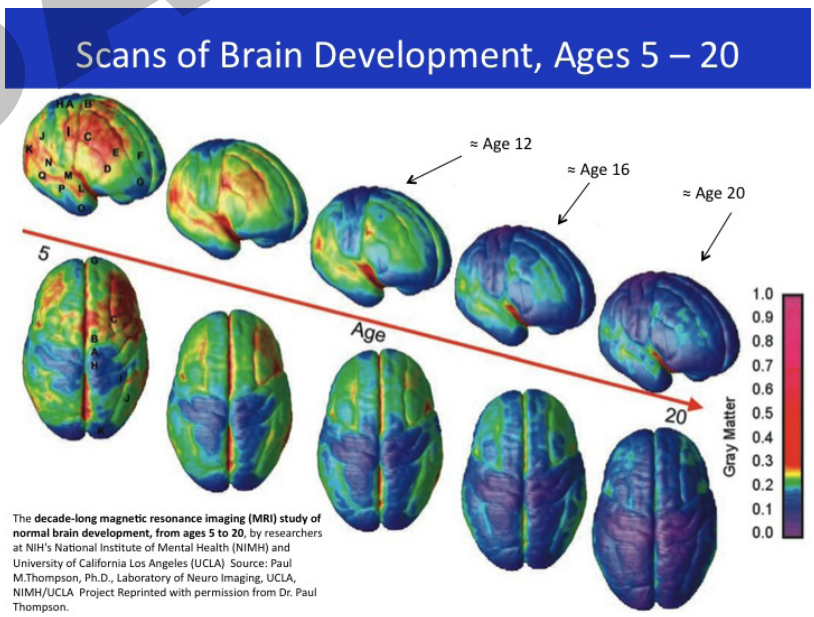
chemical and structural changes in the brain and makes one's brain more susceptible to the five key Risk Factors (described above) for developing the brain disease of alcoholism. Alcoholism is a developmental disease.

Key discoveries of the past 10-15 years are:

- shedding new light on how the brain controls everything a person thinks, feels, says and does, and how alcohol impairs brain functioning as a result of how the body processes alcohol. This impairment, most generally caused by at-risk drinking, results in **drinking behaviors**, such as: drunken arguments; physical fights; verbal, physical or emotional abuse of others – especially a spouse, child, boy/girlfriend; driving while impaired; problems at work or in school related to drinking or recovering from heavy drinking bouts; or engaging in risky sexual behaviors.
- providing the visual evidence of the chemical and neurological changes that occur in the brain as a result of alcohol abuse and/or alcoholism, as well as the fact that the brain can heal when alcohol abuse is stopped (returning to low risk drinking limits or stopping drinking all together) or alcoholism is treated (which requires alcohol use be stopped entirely due to the nature of this brain disease).
- helping us to understand that family members and friends who repeatedly cope with a loved one's drinking behaviors often experience psychological and physical problems that interfere with school, work, family and relationships. These problems (such as anxiety, depression, migraines, stomach ailments) are the result of the brain and physical changes caused by the chronically activated fight-or-flight stress response system. The term used to describe this concept is **secondhand drinking (SHD)**.
- providing the insights into **brain development** that explain why the **adolescent brain** handles alcohol differently than the adult brain and why early use is a key Risk Factor for developing alcoholism. [The darker colors in the brain scans below represent brain maturity.]



The **decade-long magnetic resonance imaging (MRI) study of normal brain development, from ages 5 to 20**, by researchers at NIH's National Institute of Mental Health (NIMH) and University of California Los Angeles (UCLA) Source: Paul M.Thompson, Ph.D., Laboratory of Neuro Imaging, UCLA, NIMH/UCLA Project Reprinted with permission from Dr. Paul Thompson.

Resources and Further Information:

- Centers for Disease Control and Public Health (CDC), http://tiny.cc/p1hpfw
- National Institute on Alcohol Abuse and Alcoholism (NIAAA), http://tiny.cc/k29tew
- National Institute on Drug Abuse (NIDA), http://tiny.cc/b09tew
- Substance Abuse & Mental Health Services Agency (SAMHSA), http://tiny.cc/qrmpfw & http://tiny.cc/249tew
- NIAAA's website, "Rethinking Drinking," http://tiny.cc/w09tew
- The Addiction Project, http://tiny.cc/yhxlfw
- World Health Organization (WHO), http://tiny.cc/z69tew

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