NIAAA Research Priorities in Adolescent and Young Adult Drinking

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Milwaukee, Wisconsin
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NIAAA’s Strategic Plan Considers Alcohol Use Across the Life Span

- Embryo and Fetus
- Birth to Age 10
- Youth/Adolescence
- Young Adult
- Mid life
- Senior Adult
NIAAA Research Priorities for Adolescence to Young Adulthood

Background

• For biological and sociological reasons, there is a dramatic expansion of the period referred to as adolescence.
• Adolescence is a time of heightened risk-taking
• Adolescence is a time of increasing socialization, often involving alcohol
• Therefore, alcohol use has become intertwined with the normal developmental process of adolescence.
• Alcohol use both affects and is effected by developmental processes.
Late teens and early 20’s see completion of important maturational changes to the prefrontal cortex, as well as the organization of goal-directed behavior.

Independence from parental care is self-directed.

Post-secondary education, military, workforce.

Assuming financial obligations.

Marriage and career initiation is delayed longer compared to other periods of history.

The prevalence of high-risk drinking in greatest in age 18-24.
Adolescents Drink Less Frequently than Adults But More Per Occasion

Source: SAMHSA National Survey on Drug Use and Health 2005
## Alcohol Attributable Deaths: Acute Conditions 43,731

<table>
<thead>
<tr>
<th>Category</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Vehicle Traffic</td>
<td>13,819</td>
</tr>
<tr>
<td>Homicide</td>
<td>7,787</td>
</tr>
<tr>
<td>Suicide</td>
<td>7,235</td>
</tr>
<tr>
<td>Falls</td>
<td>5,532</td>
</tr>
<tr>
<td>Poisoning (Not alcohol)</td>
<td>5,416</td>
</tr>
<tr>
<td>Poisoning (Alcohol)</td>
<td>370</td>
</tr>
<tr>
<td>Fire Injuries</td>
<td>1,158</td>
</tr>
<tr>
<td>Drowning</td>
<td>868</td>
</tr>
<tr>
<td>Other</td>
<td>1,546</td>
</tr>
</tbody>
</table>

Source: CDC: ARDI, 2009
• Alcohol-attributable injury deaths more often involve younger people than do chronic disease deaths

• Alcohol injury deaths account for twice as many years of life lost as chronic alcohol disease deaths

(Source: CDC, ARDI, 2009)
• 2,227 alcohol attributable deaths are ages 18-20
  – <3% of total
  – <4% of preventable years of life lost

• 9,625 alcohol attributable deaths are ages 25 or younger
  – 12% of deaths
  – ¼ of preventable years of life lost

Source: CDC: ARDI, 2009
Youth Ages 18-24 Are Most Likely to Exceed Low-Risk Drinking Limits

- 9% of people age 18 and older exceed both daily and weekly limits for low-risk drinking as established by the National Institute on Alcohol Abuse and Alcoholism (20 million people)
- The problem is greater among youth ages 18-24

<table>
<thead>
<tr>
<th>Ages</th>
<th>Percent</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ages 18-20</td>
<td>24%</td>
<td>2,984,000</td>
</tr>
<tr>
<td>Ages 21-24</td>
<td>25%</td>
<td>4,193,000</td>
</tr>
<tr>
<td>Total 18-24</td>
<td></td>
<td>7,177,000</td>
</tr>
</tbody>
</table>

- Youth 18-24 are 16% of the population age 18 and older, but more than 1/3 of that population who exceed both daily and weekly limits

Sources: NIAAA, Rethinking Drinking: Alcohol and Your Health, 2009; National Epidemiologic Survey on Alcohol and Related Conditions
Youth Ages 18-24 Are Most Likely to Experience Alcohol Dependence

- 4% of the adult U.S. population met alcohol dependence criteria in the past year, representing 7.9 million people
- Youth are most affected
  - 12.5% of persons ages 18-20 (1.6 million)
  - 11% of persons ages 21-24 (1.8 million)
  - Total ages 18-24 (3.4 million)
  - Youth 18-24 are:
    - 16% of the population age 18 and older
    - 43% of that population who met alcohol dependence criteria in the past year

Source: NIAAA, NESARC, 2002
### Numbers of College Students 18-24 Experiencing Alcohol Problems 2001

<table>
<thead>
<tr>
<th>Event</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol Related Injury Deaths</td>
<td>1,700</td>
</tr>
<tr>
<td>Injured under influence of alcohol</td>
<td>599,000</td>
</tr>
<tr>
<td>Assaulted by another college student</td>
<td>690,000</td>
</tr>
<tr>
<td>Sex assault/date rape</td>
<td>97,000</td>
</tr>
<tr>
<td>Full time 4 year college students</td>
<td>6.4 million</td>
</tr>
</tbody>
</table>

Sources: College Alcohol Survey, National Household Survey on Drug Use and Health
<table>
<thead>
<tr>
<th>Behavior</th>
<th>College</th>
<th>Non College</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drank 5+ on an occasion past month</td>
<td>4.4 million (45%)</td>
<td>7.9 million (40%)</td>
<td>12.3 million</td>
</tr>
<tr>
<td>Past year drove under the influence of alcohol</td>
<td>2.8 million (29%)</td>
<td>4.5 million (23%)</td>
<td>7.3 million</td>
</tr>
<tr>
<td>Died of alcohol-related unintentional injury</td>
<td>1,825</td>
<td>3,575</td>
<td>5,500</td>
</tr>
</tbody>
</table>
Research Priorities for Adolescent Alcohol Use

• A central question is whether consuming alcohol during this stage can alter development in ways that have long term consequences.

• We must understand more about the impact of alcohol on the physiological, neurophysiological, and functional development of the brain.
Research Priorities for Adolescent Drinking: Prevention

• Long-term consequences may result from alcohol exposure

• The challenge is to reduce underage drinking despite strong psychosocial influences that lead young people toward drinking
Research Priorities for Adolescent Alcohol Use

• Research on adolescent decision making using multiple methodologies
  – Examining the interplay of environment and biological traits related to temperament and socialization through longitudinal and clinical studies
  – Use of time-line follow backs as a tool to assess decisional changes
  – Laboratory simulated environments
  – Animal research, particularly primates
Research Priorities on Adolescent Alcohol Use

• Research on diagnosis of and screening for adolescent alcohol problems
  – Development of better diagnostic criteria for adolescent alcohol problems
  – More highly sensitive and specific screening and diagnostic instruments
  – Testing of new instruments in real world settings
  – Better interventions with high risk adolescent drinkers
Research Priorities on Adolescent Alcohol Use

• Define and study alcohol behavioral markers for problem alcohol use by youth (endophenotypes and intermediate phenotypes)
  – Research on very early markers for drinking risk
  – Identifying factors for vulnerability for very early initiation
  – Longitudinal studies of youth as they develop through adolescence into young adulthood
  – Identify behavioral, emotional and cognitive processes and neurobiological mechanisms of social behavior
  – Collaboration with investigators studying drug abuse, psychiatric disorders, obesity, and eating disorders
  – NIH Program on Normal Brain Development
Research Priorities on Adolescent Alcohol Use

• Longitudinal studies of biological factors over the course of puberty: human and animal studies

• Studies of adolescents in treatment can help answer the question of whether the adolescent brain is more or less vulnerable than the adult brain to alcohol’s acute and chronic effects
Research Priorities on Young Adult Alcohol Use (ages 18-29)

• What factors allow some young adults to discontinue harmful drinking patterns in the absence of formal alcohol treatment?

• Why do others experience protracted alcohol problems well into adulthood?
Research Priorities on Young Adult Alcohol Use (ages 18-29)

College Students

• Further research is needed to determine the robustness of changes associated with community prevention trials in college settings (i.e. DUI campaigns)

• Determining effective strategies for identifying, recruiting, and retaining students in efficacious prevention services focused on individual college students
Research Priorities on Young Adult Alcohol Use (ages 18-29)

Military

• Formal evaluation of policies and programs instituted by the U.S. military, including enforcement of alcohol regulations regarding availability, pricing, deglamorizing alcohol, promoting personal responsibility, promoting good health
Research Priorities on Young Adult Alcohol Use (ages 18-29)

Non student/non-military

- Lack of access to health and mental health care
- Lack of access to campus based prevention programs
  - Develop and test models for screening and stepped intervention practices in nonschool or non military settings, including primary medical care, workplace, and the justice system
  - Document biological changes as a result of alcohol exposure to identify early signs of alcohol-induced organ and brain injury.
Interventions

- Individually oriented
- School
- Family
- Environmental
- Comprehensive Community Interventions
One Area Where an RFA is Anticipated in the Next Year

• Comprehensive community interventions
  - Coordinate multiple city departments
  - Clear measurable Objectives and Strategic Plans
  - Combine Education and Law Enforcement
  - Include screening and early interventions
  - Use Data to Plan and Evaluate
  - Involve Private Citizens – Be Inclusive
  - Involve Youth
Key Unanswered Questions: Comprehensive Community Interventions to Reduce Youth Alcohol Problems

1) Will a combination of
   – environmental interventions to reduce alcohol availability and enforce alcohol policy, e.g. DWI and drinking age laws
   – increased alcohol screening and early intervention achieve greater problem reduction than either alone?

2) Are programs that target both underage youth and young adults more effective in reducing youth alcohol problems than underage oriented programs only?
Key Unanswered Questions: Comprehensive Community Interventions to Reduce Youth Alcohol Problems

3) Will programs that reduce youth consumption produce carry over alcohol problem reduction in adult life?

4) How can effective comprehensive community interventions be sustained over time?

5) What types of community interventions are most effective in reducing youth alcohol problems with the least cost?
END
NIH’s Mission is...

“...science in pursuit of fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to extend healthy life and reduce the burdens of illness and disability.”
NIH’s Goals are to...

1. Foster fundamental creative discoveries, innovative research strategies, and their applications as a basis to advance significantly the Nation's capacity to protect and improve health;
NIH’s Goals are to...

2. Develop, maintain, and renew scientific human and physical resources that will assure the Nation's capability to prevent disease; and
NIH’s Goals are to...

3. Expand the knowledge base in medical and associated [e.g. behavioral & social] sciences in order to enhance the Nation's economic well-being and ensure a continued high return on the public investment in research.
The project should make sense in the context of...

- the Institute/Program
- the Science
- Your Capabilities and Career
Context of the Institute: the NIH Mission

- “…to acquire new knowledge to help prevent, detect, diagnose & treat disease and disability.”
- To improve public health/clinical outcomes.
- To improve the lives of (older) people.
Priority Areas for Institutes

- Special Reports
- PAs and RFAs – now called FOAs
RFA versus PA:

<table>
<thead>
<tr>
<th></th>
<th>RFA</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special pool of funds?</td>
<td>Yes</td>
<td>Usually not</td>
</tr>
<tr>
<td>Special application deadlines?</td>
<td>Yes</td>
<td>Usually not</td>
</tr>
<tr>
<td>How long active?</td>
<td>Until deadline</td>
<td>3 years</td>
</tr>
<tr>
<td>Special review panel?</td>
<td>Yes</td>
<td>Usually not</td>
</tr>
</tbody>
</table>
Priority Areas (cont’.)

- Program Descriptions – go online
- *Talk to Program Staff* – one pagers
ONE-pager

1. Aims (what?)
2. Significance (why?)
3. Hypotheses (what specifically?)
4. Methods (how?)

Suggest a mechanism
Assess State-of-the-Science

- Peer Reviewed Literature


- What credible tools are available?
  - Instruments, interventions, etc.
State-of-the-Science (con’t.)

- Is a pilot study needed?

- What interim steps are necessary?
  - Validity, reliability, efficacy/effectiveness, implementation, etc.

- Current issues in community
The starting point . . .

Have a good idea

- Addresses a significant question
- Brings something new to the table
- Is project focused?
- Is project feasible?
What is a **significant** question?

- Immediate/future relevance to IC mission
  - Disease
  - Population

- Relevance to science – will it advance...
  - fundamental understanding?
  - scientific knowledge?
  - research methods and tools?
The Context of Your Career

- Research you are passionate about
- Research you want to build on
- Research that you have the training and experience to conduct

DON’T FOLLOW THE $$$$$$!!
Assess Your Research Capability

Publications, mentoring, training, clinical experience, prior grant experience, etc.

This is a grant for 1-5 years - not a career!
What kinds of support can I get? - MECHANISMS

- Training and career development
- Research
- Scientific conferences
Training & Development
Mechanisms

F31  Pre-doctoral Fellowships (Diversity)
F32  Post-doctoral Fellowships
K01  Career Development Award
K23  Clinicians training for patient-oriented research

Institutes differ; check their websites
Research grants

**R01**: Research Project Grant

**R03**: Small Research Grant

**R21**: Exploratory/Developmental Research Grant
R01 Regular Research Grant

- Maximum of 5 years
- Renewable
- No specified budget limitations
  - Prior approval required for >$500,000 in any one year
  - *Usually* requires prior NIH grant experience
R03 Small Research Grant

- Limited funding/short period of time
- 1 or 2 years @ $50K/ year

Examples:
  - Pilot/feasibility studies
  - Secondary analysis of existing data
  - Small, self-contained research projects
  - Developing new methodology or technology
R21 Exploratory/Developmental Research

- 2 years, $275K total
- Generally anticipates follow-on R01

Examples:

- Feasibility studies
- Unique/innovative use of an existing methodology to explore new science area
- High risk/high payoff
R13 Scientific Conferences

- grants.nih.gov/grants/funding/r13/index.htm
- Each IC has own rules for
  - Topics
  - Years of support
  - Budget maximum
- Advance permission required to submit an application.
It is the job of NIH staff to help good research:

- get funded,
- be properly conducted,
- follow the law
Who Are the NIH Staff?

- Program Staff
- Scientific Review Staff
- Grants Management Staff
Others Can Help...

- Your Office of Sponsored Research
- Other Researchers at your Institution
- Senior Researchers in your Field
- All Research Is Collaborative – especially important in SW
What Does NIH Want?

- Completeness
- Significance
- **Originality**
- Clarity

(A Concept Paper can help with this.)
Packaging is Important: Write Strategically

• Use the 10-25 pages wisely
• Help reviewers find what they need
• Explanatory graphics (conceptual models, timelines, etc) can be helpful
• Do not put important information in appendices
• Use brief, clear headers and sub-headers
Writing Tips

- Clarify the study’s significance
- Transform idea(s) into an exciting story
- Convey your enthusiasm for the project
- Seek & accept feedback on multiple drafts
- Present dilemmas & how to address them
- Provide evidence for all your assertions
Abstract: Language is Important

- Make diagnoses clear and specific
  - “intervention development”, “prevention”
  - “services research”, “RCT”
  - “exploratory/developmental”
  - “efficacy”, “effectiveness”, “epidemiology”
  - “children ages 0-5”, “transition to adulthood”
  - “risk and protective factors”
Specific Aims

- Hypothesis driven
- Clear focus
- Be realistic: It’s a project, not an entire career
Background & Significance

- Strong, literature-based rationale
- Thorough and accurate citations
- SO WHAT????
DO Show That....

- Your methods work
- The data trends support the hypothesis
- The data analysis is sound
- Experimental design will answer the question
- You have the abilities, support, community connections, etc. to accomplish the project
DO NOT …

- Omit a conceptual model or theory base
- Do what’s already been done
- Use out-of-date methods
- Use methods that don’t test the hypothesis
- Omit discussion of negative results
- Use inappropriate statistical analyses
The Center for Scientific Review

The Center for Scientific Review has produced a video of a mock study section meeting to provide an inside look at how NIH grant applications are reviewed for scientific and technical merit.

The video shows how outside experts assess applications and how review meetings are conducted to ensure fairness.

The video also includes information on what applicants can do to improve the chances their applications will receive a positive review.
Submitted: October/ February/ June
Council: May-June /Sept-Oct/ Jan- Feb
Award: July / December / April
Review Criteria

- Significance
- Approach
- Innovation
- Investigator
- Environment

- Budget
- Human subjects protection
- Inclusion of women, minorities, children
Your score will be ....

a raw score & a percentile (for Rs)

- **Unscored** means below 50% percentile
- **100-150** – good, but no guarantee
- **150-250** – good, but you’ll probably have to resubmit