

Adolescent Brain Development: Implications for Policy Makers

Claire Brindis, Dr. P.H.
Professor of Pediatrics and Health Policy
National Conference of State Legislatures
Annual Meeting – August 9, 2007
Boston, Mass.



Public Policy Analysis & Education Center for
Middle Childhood, Adolescent & Young Adult Health



In this presentation....

- Why is the focus on adolescents so important?
- What changes have occurred in the field of adolescent health that respond to recent brain development research?
- Examples of Developmentally Appropriate Policies – Graduated Driver's License, Teenage Pregnancy Prevention, 21 Critical Health Objectives for the Nation
- Implications for future policy making

ZITS Jerry Scott & Jim Borgman

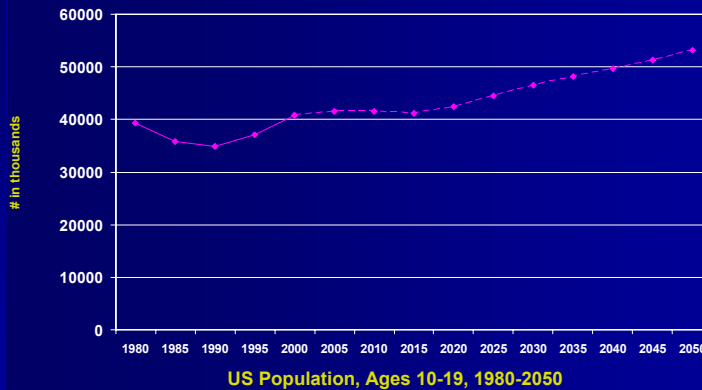


Why Focus on Adolescents and Young Adults?



Adolescents & Young Adults – *Who are they?*

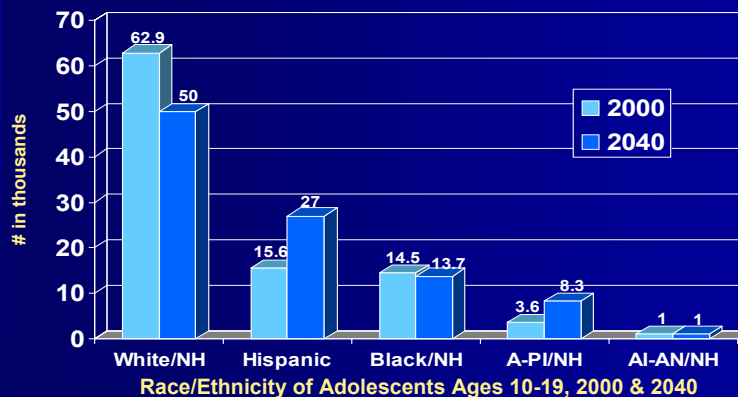
- **Between 1990 and 2020, the number of adolescents ages 10-19 is projected to increase from 35 to 42 million; representing 13% of the total population.**



Sources: U.S. Census Bureau, 2000; U.S. Census Bureau, 2002

Adolescents & Young Adults – *Who are they?*

- **The racial/ethnic diversity among adolescents will increase: the number of White, non-Hispanics will decrease by 21% between 2000 and 2040.**

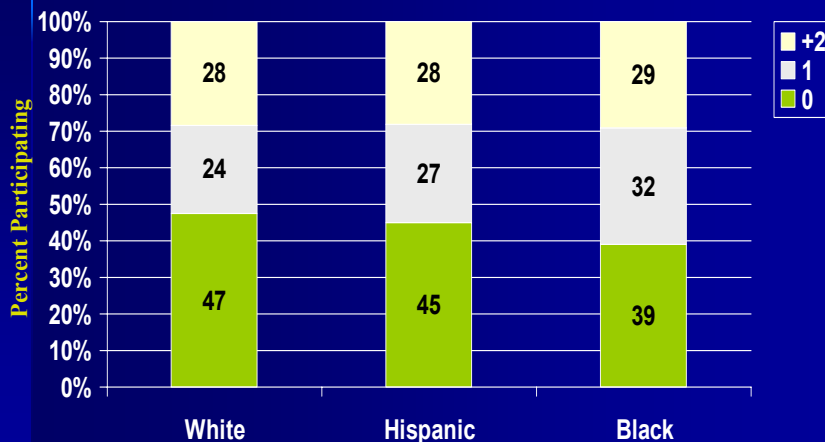


Sources: U.S. Census Bureau, 2000; U.S. Census Bureau, 2002

Why Invest in Adolescents? Ignoring prevention is costly

- Costs of risky behaviors initiated in adolescence:
 - Short Term: \$33.5 billion during adolescence¹
 - Long Term: Up to \$700 billion² over the entire life course
 - Includes consequences of tobacco and substance use, violence, unsafe sexual behavior, health productivity and premature death
 - E.g. In 2004, teen childbearing in the US cost taxpayers at least \$9.1 billion, an average of \$1430 per teen mother annually³

Distribution of the Number of Health Risk Behaviors by Race/Ethnicity, 7th-12th Grade, 1995



Source: Urban Institute, *Teen Risk-Taking*, 2000

Determinants of Health

ACCESS TO CARE 10%
GENES 20%
ENVIRONMENT 20%
BEHAVIOR 50%

Changing Landscape

■ Old Paradigm

- Risk Factors
- High Risk
- Punitive
- Homogeneous
- Individualization
- Hopelessness
- Alienation
- Problems

■ New Paradigm

- Protective Factors
- Resiliency
- Educational and Restorative
- Heterogeneous
- Societal Influences
- Belief in the Future
- Connectedness
- Resources

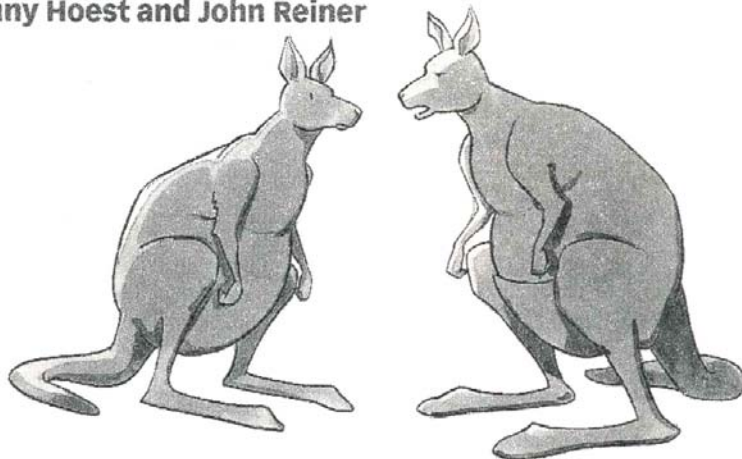
Developmental Needs of Youth



Resilience: Innate Wisdom Guiding Development

LaughParade®

By Bunny Hoest and John Reiner



"No, you can't have your old room back."

Why Invest in Adolescents?

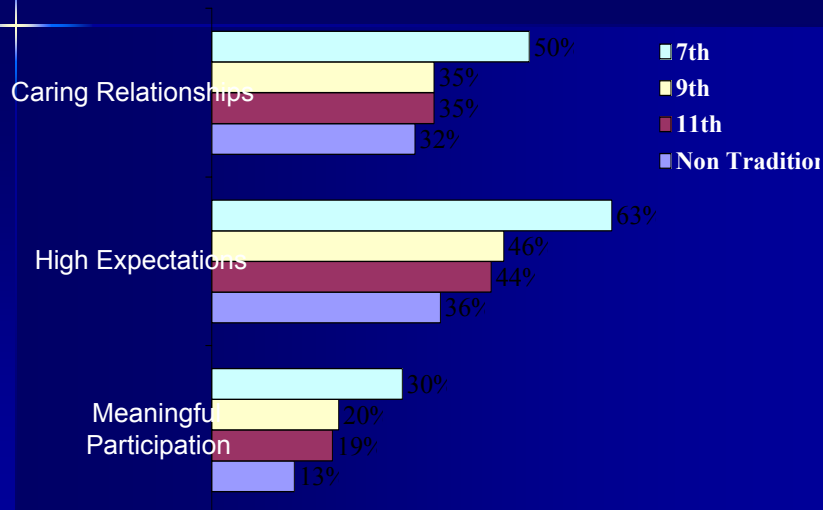
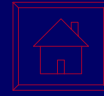
Many young people are not prepared for adulthood

- Young people should:
 - Be economically self-sufficient
 - Have healthy habits and healthy relationships
 - Be civically engaged
- Yet, less than half of all youth (43%) are prepared (Forum for Youth Investment)

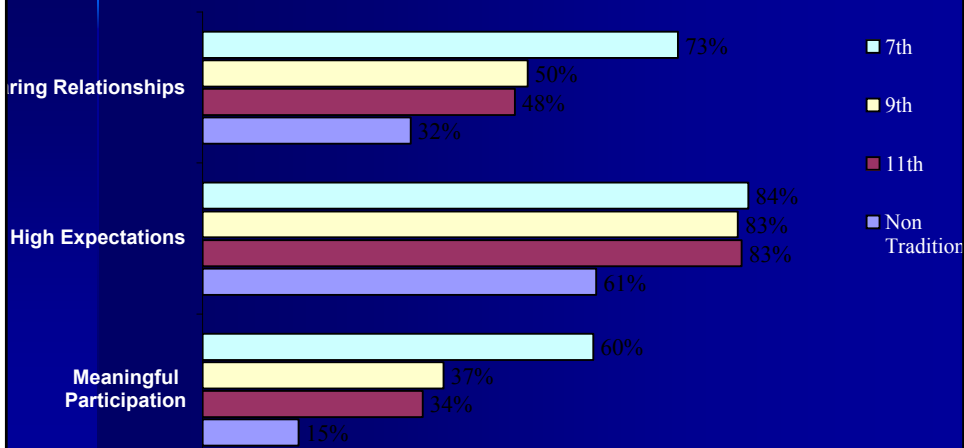
Adults' Role: Help Teens be Ready for Adulthood

Prior research has shown a **strong association between adolescent connections to meaningful adults and **schools** and the prevention of every **risk** behavior studied as part of the National Longitudinal Study on Adolescent Health (Add Health).**

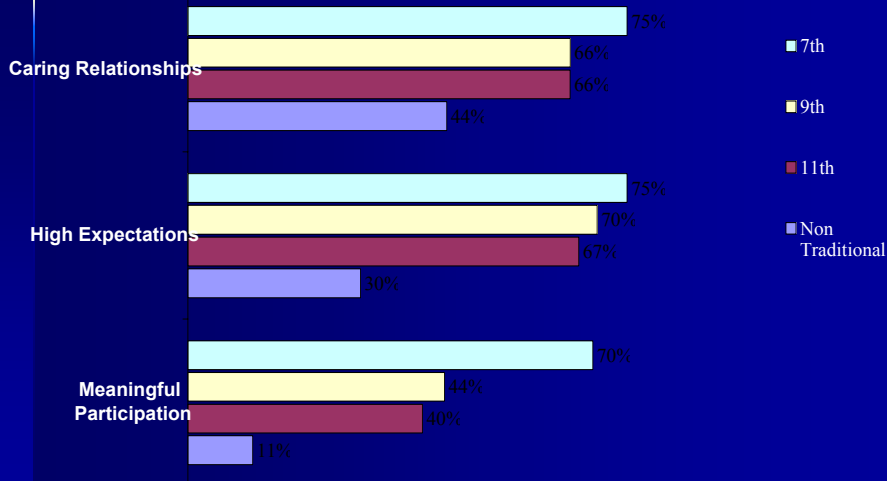
California School Data % of Students Scoring High in Each External Asset



Home % of Students Scoring High in Each External Asset



Community % of Students Scoring High in Each External Asset

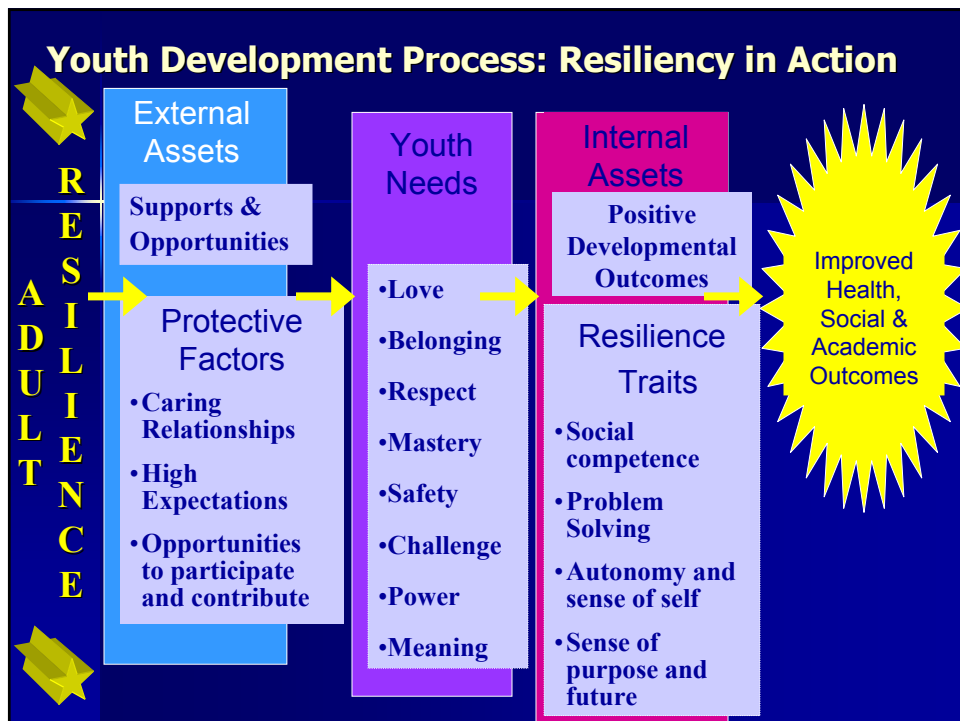


What Else Have We Learned?

- Importance of connectivity to meaningful adults--specifically parents
- Supervision helps to decrease risk-taking opportunities
- Effective parenting (authoritative vs. authoritarian) leads to better adolescent decision making

Connectivity as a Health Intervention

- Students who Feel Connected to School Experience ...
 - Less Emotional Distress
 - Less Likely to Use Substances
 - Less Violent or Deviant Behavior
 - Less Likely to Become Pregnant





Examples of successful models

- Graduated Driver's License
- Teenage Pregnancy Prevention

Why do most 16-year-olds drive like they're *missing a part of their brain?*

BECAUSE THEY ARE.



Even bright, mature teenagers sometimes do things they are "reverse."

But when that happens, it's not really their fault. It's because their brain hasn't finished developing. The underdeveloped area is called the dorsal lateral prefrontal cortex. It plays a critical role in decision making, problem solving, and understanding future consequences of today's actions. Problem is, it won't be fully mature until they're into their 20s.

It's one reason 16-year-old drivers have crash rates three times higher than 17-year-olds and five times higher than 18-year-olds. Car crashes injure about 300,000 teens a year. And kill nearly 8,000. Is there a way for teens to get their driving experience more safely? Is there a way their brains can be

given the time to mature as completely as their bodies? Allstate thinks so.

Graduated Driver Licensing (GDL) laws are one approach that's been proven effective at reducing teen crashes. These laws restrict the most dangerous kinds of driving teens do, such as nighttime driving and driving with teen passengers. Since North Carolina implemented one of the most comprehensive GDL laws in the country, it has seen a 20% decline in crashes involving 16-year-olds.

To find out what the GDL laws are in your state, visit Allstate.com/teen. Help educate them—and if they aren't strong enough, ask your legislator to strengthen them.

Let's help our teenagers not miss out on tomorrow just because they have something missing today.

*It's time to make the world a safer place to drive.
THAT'S ALLSTATE'S STAYD.*

 **Allstate**
You're in good hands. Auto, Life, Fire, Marine, Commercial

Research...

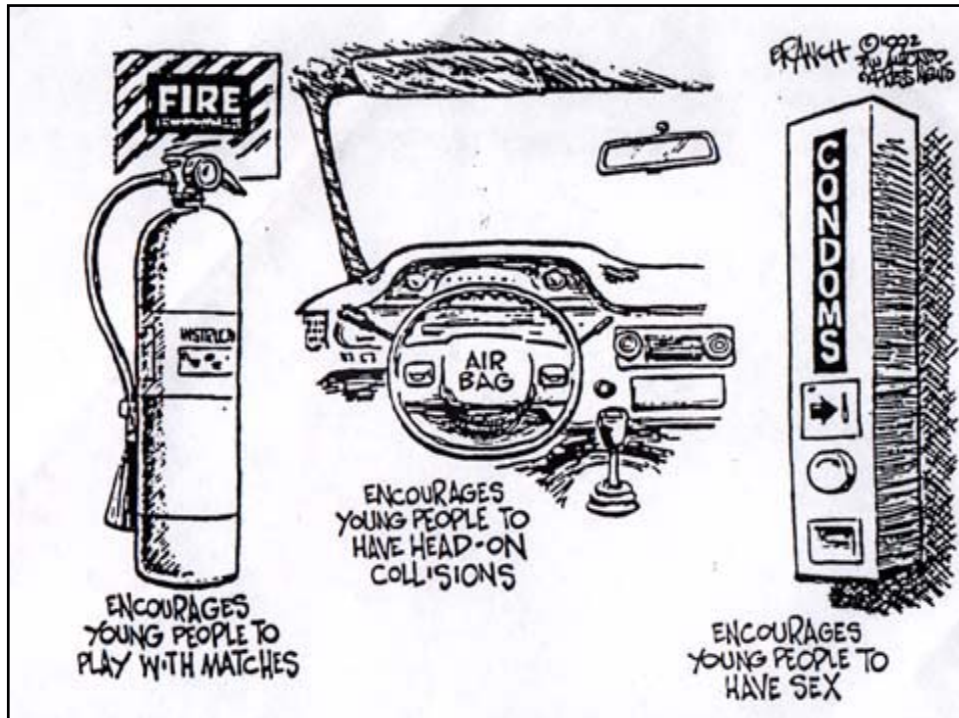
- According to research, car crashes (#1 cause of adolescent death) are more likely when:
 - Teens drive at night;
 - Teens drive without an adult in the car;
 - Teens drive with multiple passengers.

...to Practice

- Graduated Driver's License (GDL) programs phase in driving privileges. Teens who have passed their driving test have to wait before they can:
 - Drive at night;
 - Drive with multiple passengers;
 - Drive without an adult in the car.
- GDL programs have saved lives. Many lives.

Policy Changes

- Law enforcement of underage drinking laws
 - sobriety and traffic safety checkpoints,
 - reduce alcohol outlet intensity,
- Changes in policy and laws to control underage drinking
- Responsible beverage service: merchant education, partnership with officials from law enforcement, alcohol industry, and local government.



Some Good News...

- **Decrease in adolescent births due to:**
 - **Abstinence – Reduction in the proportion of adolescents who are sexually active (from 55% in 1988 to 46% in 2001) &**
 - **Access to contraceptive methods – improved condom use and use of other effective methods among teens who are sexually active.**

Investment in Prevention

- **Nationally, availability of family planning services to sexually active teens avoids:**
 - **Between 750,000 to 1.25 million pregnancies,**
 - **480,000 live births,**
 - **390,000 abortions, 120,000 miscarriages, and 10,000 ectopic pregnancies.**

State of the State

- **Body of knowledge has expanded – curricula, good clinic strategies, comprehensive youth development programs, evidence-based practices**
- **Communities can choose different strategies for different age groups and can put together a continuum of programs**

Some Successes Due to...

- **Increasing and widespread societal consensus about acceptable approaches to improving health.**
- **Sound fiscal backing--policy and program initiatives.**
- **Strategies that engage multiple and non-traditional stakeholders.**
- **Creation of new social norms of behavior.**
- **Data collection-research and evaluation.**
- **Professional commitment and advocacy.**

Why Relatively Little Change?

- **Deep rooted belief of “rugged individual” vs. community responsibility has shaped public policy.**
- **Ambivalence regarding adolescents and their role in society.**
- **Ambivalence regarding the role that government should play.**
- **Blame adolescents without acknowledging contributing role of adults.**

Why Relatively Little Change?

- **Major biological and psychological changes often test adults' limits and comfort level--resulting in a negative response from adults.**
- **Many parents and adults not equipped with the knowledge and skills to raise adolescents or the support systems that would help them through this developmental stage.**

Additional Barriers

- **Fragmentation of health services, resulting from categorical funding streams**
- **Bewildering and sometimes conflicting diversity of eligibility criteria**
- **Lack of staff trained to respond to needs of teens and their parents**
- **Lack of or inadequate reimbursement for counseling, health education and case management**

Barriers to Progress

- Many of the health, social and educational supports require long-term investments.
- Considerable controversy surrounding behavior initiated during adolescence, prevents consensus.
- Little guidance for making change-- communities feel overwhelmed with information, often lack information, skills, "political will" to select best strategies.

How do we get there?

It will require involvement of all parts of society



Federal Government Supports this Broad Approach to Adolescent Health

- **National Initiative to Improve Adolescent Health (NIIAH)**
 - Collaborative effort to improve the health, safety and well-being of adolescents and young adults
 - Aims to achieve Healthy People 2010's 21 critical health objectives for adolescents and young adults, which focus on individual health outcomes and related behaviors

What is the National Initiative?

- **Launched in a unique partnership of two federal agencies:**
 - Centers for Disease Control and Prevention's Division of Adolescent and School Health (CDC-DASH); and
 - Health Resources and Services Administration's Maternal and Child Health Bureau's Office of Adolescent Health (HRSA-MCHB-OAH).

National Initiative to Improve Adolescent Health: Philosophy & Approach

- Reducing behaviors that jeopardize health and safety and improve health outcomes are important – but not enough
- Fostering **healthy youth development** is integral to improving adolescent and young adult health
- It is critical to create a **healthy environment**, and not focus exclusively on changing individuals – adults carry primary responsibility
- A **societal commitment** is critical for creating a positive environment that supports healthy youth development and promotes healthy behaviors
- The **involvement of diverse organizations** and institutions is critical to success

National Initiative to Improve Adolescent Health: 4 Goals

- Elevate national, state and community focus on, and commitment to, the health, safety and well-being of adolescents, young adults and their families
- Increase adolescents' and young adults' access to quality health care
- Eliminate health disparities among adolescents and young adults
- Improve health and safety outcomes in areas defined by the 21 Critical Health Objectives

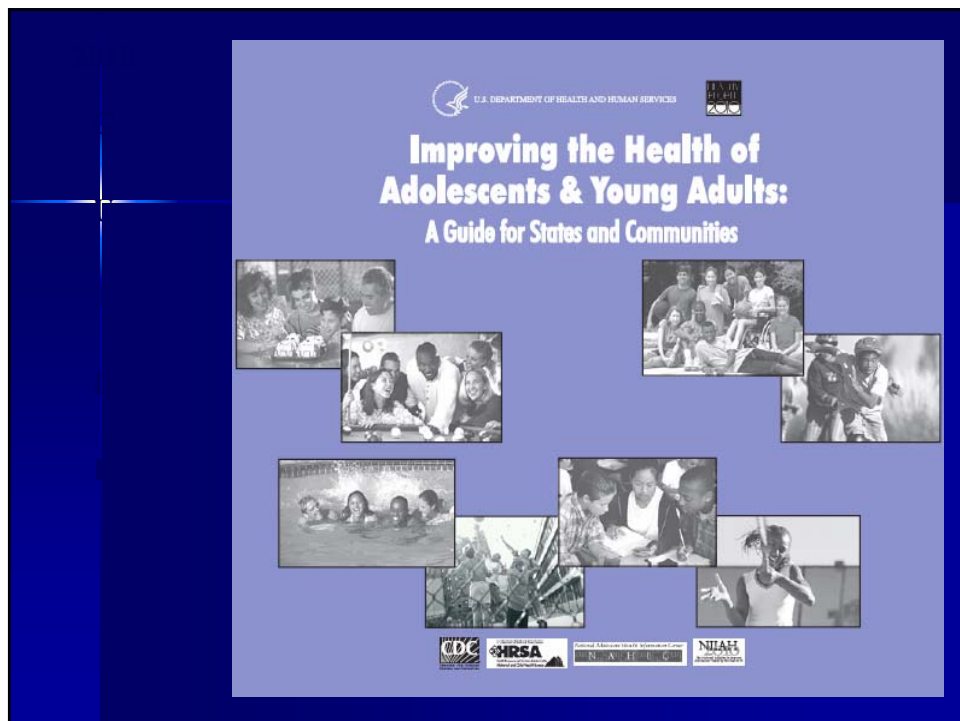
Adolescent- and Young Adult-Specific Health Objectives

- **21 Critical Health Objectives for Adolescent & Young Adult Health:**

- Include individual health outcomes (injury, disease & death), as well as related behaviors (e.g., substance abuse, physical activity, safety belt use).

- **21 Objectives fall into six general areas:**

- Mortality;
- Unintentional Injury;
- Violence;
- Mental Health and Substance Abuse;
- Reproductive Health;
- Chronic Disease Prevention.



ZITS Jerry Scott & Jim Borgman



**Given state of the state...
what are next policy
development steps?**



Adolescents' Search for Meaning

- Who am I?
- What do I love?
- How shall I live?
- What is my gift to the family of the earth?

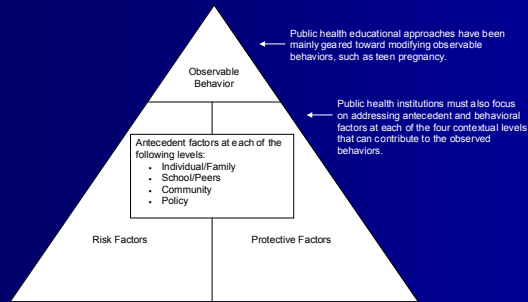


Improving the Health of Adolescents and Youth

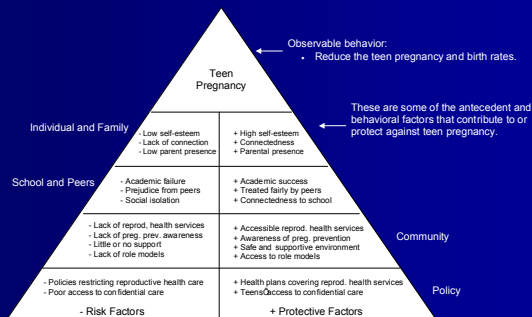
Take-home Message #1

- Develop multi-strategy programs and interventions that:
 - Respond to both the observable health behaviors and underlying causes
 - Consider the role of adolescents' adult environments

Observable Behaviors: Antecedent Risk and Protective Factors at Four Contextual Levels



Example: Teen Pregnancy and the Antecedent Risk and Protective Factors at Four Contextual Levels



Observable Behaviors: Antecedent Risk and Protective Factors at Four Contextual Levels

Observable behavior

Antecedent factors at each of the following levels:

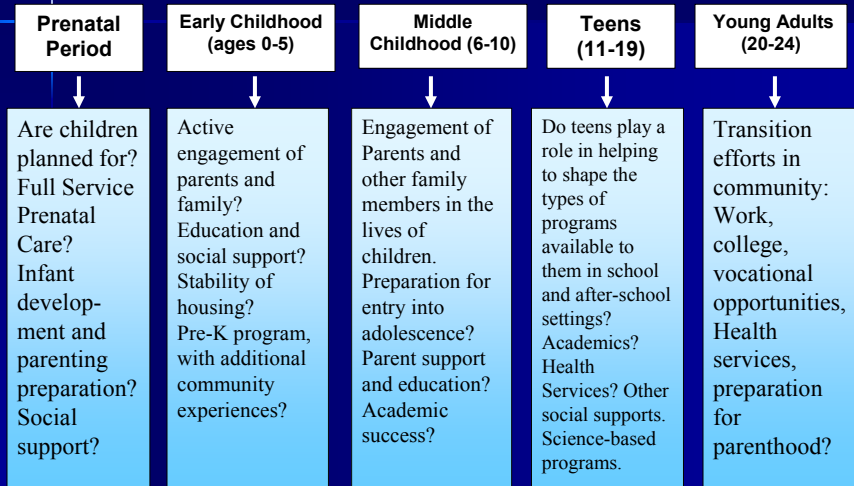
- Individual/Family
- School/Peers
- Community
- Policy

Improving the Health of Adolescents and Youth Take-home Message #2

Early Childhood Policies have implications for adolescents...

- Early childhood policies promote:
 - healthy development (access to care);
 - high quality education and early care;
 - effective parenting
 - Research points to lifelong importance of early childhood development setting stage for future development – hard wiring of brain – how children approach life, learn, manage emotions, and relate to others
 - Importance of investments in education and health – close achievement gaps

Developmental Health Prevention Strategies



Improving the Health of Adolescents and Youth

Take-home Message #3

- **Recognize special populations and how programs and policies are shaped for each:**
 - Demographically-defined;
 - Legally-defined (incarcerated, foster care, migrant groups);
 - Chronic conditions (physical, emotional);
 - Other populations (unique qualities, such as homeless, pregnant and parenting).

Improving the Health of Adolescents and Youth

Take-home Message #4

- **Develop concurrent, multi-strategy programs and interventions**
- Incorporate community planning, quality assurance and evaluation

Concurrent Health Prevention Strategies



Parents/ Family

Do parents have the opportunity to develop skills? Do they receive information about effective parenting practices? Support groups?

Coalition Task Force

Does the Coalition engage different groups in the community and work to identify common ground? Do they use needs and assets assessments?

Community Based Org's

Do CBOs work with health providers, education system, social system to help coordinate services and provide inter-agency referrals?

Youth and Peers

Do teens play a role in helping to shape the types of programs available to them in school and after-school settings? Is there peer education?

Classroom Education

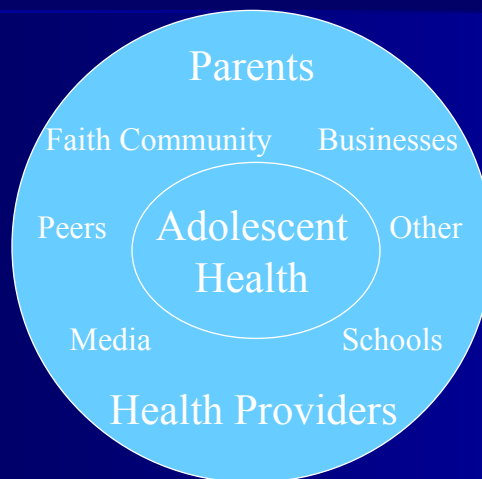
Are teachers providing the intended hours and content of instruction of well-tested curricula? Is there oversight of the quality of what is being taught?

Improving the Health of Adolescents and Youth Take-home Message #5 – **The Role of Emerging Partners**

- Support families--in order to create supportive communities -- and make the institutional changes required to address discrepancies.
- Go beyond medical and public health partners—
“non-traditional” community stakeholders—
 - School and after school
 - Junior Achievement
 - Service organizations
 - the business sector,
 - juvenile justice,
 - media,
 - the faith community
 - community-based organizationsAll have an investment in tomorrow’s future leaders.

“Healthy kids
make better students.

Philosophy



**Better students
make better
communities.”**

Improving the Health of Adolescents and Youth

Take-home Message #6

Youth Engagement

- **Recruitment, training, supervision of adolescents**
- **Advisory Boards**
- **Peer Provider Clinics**
- **Service Learning – Teen Outreach Program**

How do we help adolescents?

- Reducing risky behavior is not enough
- Need to foster healthy youth development, including resiliency and social skills
- Protect against health damaging behavior
- Help youth achieve their potential

Implications of Adolescent Brain Development

- During time of “exuberant” brain development, adolescents need opportunities to engage in:
 - Supportive decision making
 - Healthy dialogue with meaningful, caring, engaged, and competent adults
 - Develop ability to look at decisions from multiple points of view and weigh the potential consequences of their choices

Improving the Health of Adolescents and Youth **Take-home Message #7 Support Research -** **More questions than answers...**

- No easy connection between counting synapses or measuring white matter and behavior
- Culture, nutrition, and teen’s own behavior all affect brain development
- Research in other cultures reveal that teens experience no turmoil whatsoever
- Teens have the potential for performing in exemplary ways—as soldiers, as voters, etc.

Improving the Health of Adolescents and Youth
Take-home Message #8
Consider a variety of policies that impact adolescents

- Implement tax policies that promote family economic security
- Flexible work hours that enable parents to have opportunity to bond with their teens
- Support education - opportunities that enable teens to enhance brain architecture, providing the foundation for adult function and safe transitions



Resources

- National Initiative to Improve Adolescent Health by the Year 2010
<http://www.cdc.gov/HealthyYouth/NationalInitiative>
<http://nahic.ucsf.edu/nationalinitiative>
- 2010 Guide
Order It! <http://www.cdc.gov/HealthyYouth/NationalInitiative/order/>
Download it!
___ <http://nahic.ucsf.edu/2010guide>
- Partner Resources Database
<http://nahic.ucsf.edu/index.php/partnerresources/>
- Tracking Adolescent Health Policy
<http://policy.ucsf.edu/publications.html>

Resources

- Link to Useful Briefs
 - NAHIC – Best Practices Brief:
<http://nahic.ucsf.edu//downloads/niah/BestPracticesBrief.pdf>
 - Child Trends Briefs:
<http://www.childtrends.org/portalcat.cfm?LID=C6CEDAFE-34FF-4DFD-9CD745899CE5D128>
 - School Wellness websites:
<http://www.schoolhealthaward.wi.gov>

References

1. Gans JE, Alexander B, Chu RC, Elster AB. (1995) The cost of comprehensive preventive medical services for adolescents. *Archives of Pediatrics and Adolescent Medicine*, 149(11), 1226-1234.
2. Hedberg VA, Bracken AC, Stashwick CA. (1999) Long-term consequences of adolescent health behaviors: Implications for adolescent health services. *Adolescent Medicine: State of the Art Reviews*, 10(1), 137-151.
3. Hoffman SD. (2006) By the Numbers: The Public Costs of Adolescent Childbearing. The National Campaign to Prevent Teen Pregnancy Washington, DC.
4. American Academy of Pediatrics. (1999) *An analysis of the costs to provide clinical preventive services to adolescents*. Elk Grove Village, IL: Author.
5. Resnick, M.D., Bearman, P.S., Blum, R.W., Bauman, K.E., Harris, K.M., Jones, J., et al. (1997). Protecting adolescents from harm: Findings from the National Longitudinal Study on Adolescent Health. *Journal of the American Medical Association*, 278(10), 823-832.

References

6. US Census Bureau. (1999) *Resident population estimates of the United States by age and sex: April 1, 1990 to September 1, 1999*. Washington, DC: Population Estimates Program, Population Division, U.S. Census Bureau. Retrieved from the World Wide Web: <http://www.census.gov/population/estimates/nation/intfile2-1.txt>
7. Martin JA, Hamilton BE, Sutton PD, et al. (2006) Births: Final data for 2004. National vital statistics reports; vol 55 no 1. Hyattsville, MD: National Center for Health Statistics.
8. Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2006). *Monitoring the Future national survey results on drug use, 1975-2005: Volume I, Secondary school students (NIH Publication No. 06-5883)*. Bethesda, MD: National Institute on Drug Abuse.
9. National Center for Injury Prevention and Control [NCIPC]. (2006). Fatal Injury and Leading Causes of Deaths Reports [Online Database]. Atlanta, GA: Centers for Disease Control and Prevention. [Available online at URL (11/06): <http://www.cdc.gov/ncipc/wisqars/>]

References

9. Gambone MA, Klem AM, Connell JP. (2002) Finding Out What Matters for Youth: Testing Key Links in a Community Action Framework for Youth Development. Philadelphia, PA: Youth Development Strategies and Institute for Research and Reform in Education.
10. Pittman K. Blurring the lines between school and community, prevention and development – The Ready by 21 Vision [presentation]. Available at: http://www.forumforyouthinvestment.org/Files/RB21_Vision.ppt. Accessed March 19, 2006.

National Adolescent Health Information Center
&
Public Policy Analysis & Education Center for Middle
Childhood, Adolescent & Young Adult Health

WEB SITES

<http://nahic.ucsf.edu>

<http://policy.ucsf.edu>

BY EMAIL

nahic@itsa.ucsf.edu

policy@itsa.ucsf.edu

BY PHONE

415.502.4856



Public Policy Analysis & Education Center for
Middle Childhood, Adolescent & Young Adult Health

National Adolescent Health Information Center
N A H I C