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# CHRONIC STRESS AND THE RISK OF HIGH SCHOOL DROPOUT



AMERICAN PUBLIC HEALTH ASSOCIATION  
*For science. For action. For health.*

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**A variety of factors impact a student’s readiness to learn and their educational success, which research finds is a leading determinant in lifelong health. One factor that can impede such readiness is chronic stress, which can manifest in both physiological and psychological ways to undermine a student’s opportunity to learn and succeed in school. This brief provides an overview of chronic stress, with the goal of helping school-based health centers and their partners recognize chronic stress and its root causes as key intervention points to improve health and educational outcomes.**

**T**he relationship between health and education is fluid and reciprocal. Students experiencing health problems face difficulty learning, whereas young people without a high school diploma are less likely to be healthy as adults. In fact, high school graduation is the social determinant that most strongly predicts long-term health.<sup>1</sup> Students who do not graduate high school on time are less likely to attain higher education, practice health-promoting behaviors, earn living wages or access social capital.<sup>2</sup> As a result, overall

quality and years of life are significantly reduced.<sup>3</sup> For these reasons and many more, high school graduation is a public health priority and a leading health indicator for *Healthy People 2020*, the nation’s health objectives for the current decade.<sup>4</sup>

While there has been overall progress in improving on-time high school graduation rates, students of color and those living in low-income households continue to be pushed or pulled out of school at disproportionately higher rates than their peers.<sup>5</sup> In 2015, the dropout rate was 9.2 percent for His-

panic students, 6.5 percent for black students and 4.6 percent for white students.<sup>6</sup> That same year, the dropout rate was 7.2 percent among students from low-income households, compared to 4.9 percent among students from middle-income households and 3 percent for students from high-income households.<sup>7</sup> Emerging and evolving research show racism, food insecurity and homelessness are just some of the social stressors driving these disparities. Students of color living in urban areas often face socio-economic inequities that undermine their ability to learn,



Image by Jermaine Bennett, courtesy APHA’s Center for School, Health & Education

// ...young people are faced with all kinds of challenges on a daily basis. They may be homeless.

They’re dealing with issues of domestic violence, community violence. Some of them may not have food to eat on regular basis... They’re living in these under resourced environments that come with all of those challenges and then they go into the school building. They don’t leave those issues at the door, they take those issues into the school building and ultimately into the classroom.”<sup>10</sup>

— Terri D. Wright, PhD, MPH, Founder, Center for School, Health and Education

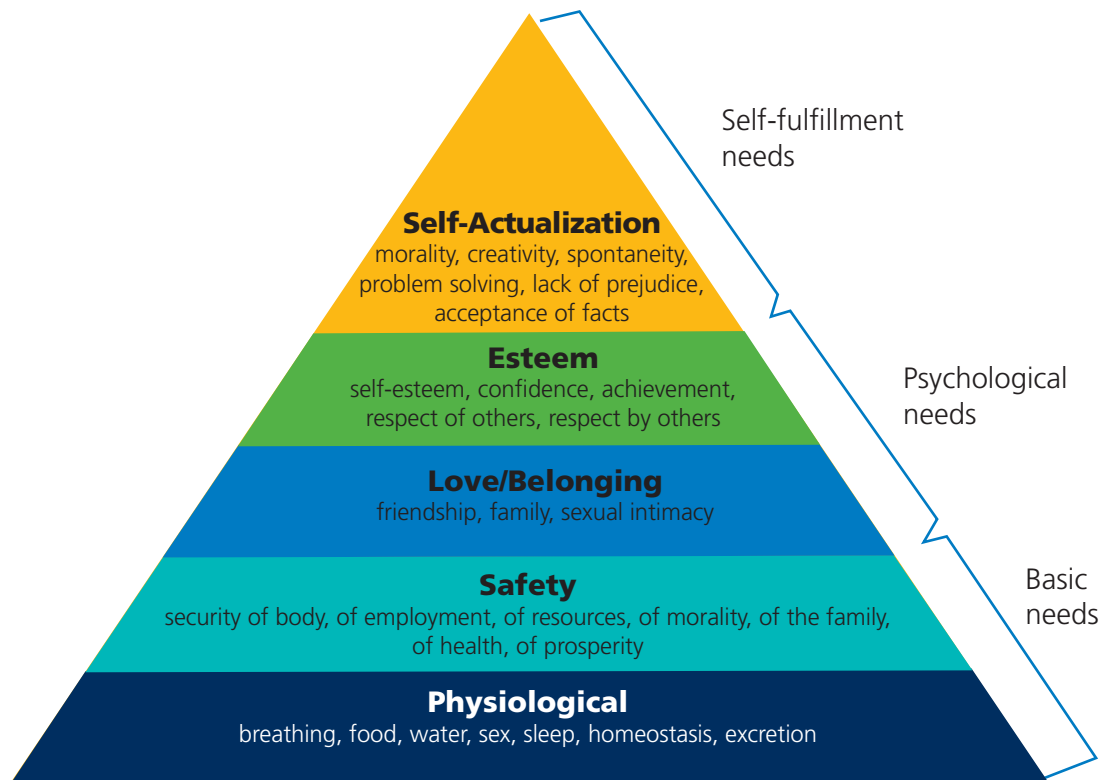


Figure 1. Maslow's Hierarchy of Needs<sup>23</sup>

cope and make healthy decisions.<sup>8</sup> Many such students are faced with chronic poverty-generated and inter-generational stressors that increase their chances of dropping out. In fact, students often drop out of school for the same reasons that put them at risk for poor health in adolescence and as adults — reasons such as homelessness, teen pregnancy, hunger, school violence, and chronic or traumatic stress. Oftentimes, each of these determinants combines to perpetuate a cycle of poverty and disparities that underscores why graduation has become a key intervention point for public health research and practice.

This issue brief highlights the effects of one graduation determinant in particular — chronic stress. If left untreated, chronic stress can contribute to fear, anxiety, depression, attention and concentration problems, an increase in impulsive or risk-taking behavior and — particularly among boys — hostility, aggression and violence. Each of these

factors alone can hinder educational success, contribute to school dropout and increase disease risk in adulthood.<sup>9</sup> Presenting as a composite, however, only exacerbates their cumulative effects. The following pages will describe the causes and impacts of chronic stress, the implications for health and education professionals, and recommendations for improving student outcomes.

### CHRONIC STRESS: A KEY BARRIER TO HIGH SCHOOL GRADUATION

By definition, chronic stress is a response to persistent social, physical and emotional pressures over an extended period of time.<sup>11</sup> Individuals who experience chronic stress are likely to have consistently high levels of cortisol, the body's primary stress-inducing hormone.<sup>12,13</sup> Signs and symptoms of chronic stress include anxiety attacks, lack of sleep and poor focus or concentration.<sup>11</sup> High levels of stress also weaken the immune system and decrease the body's ability

## Social and Environmental Determinants

### POVERTY

Poverty can drastically decrease quality of life and life expectancy, and is one of the many complex reasons that students do not complete high school.<sup>3</sup> Poverty is perpetuated by myriad institutional inequities enforced through policies such as redlining (refusing loans or insurance to people who live in areas considered a poor financial risk) and divestment in communities of color. Many families live in poverty due to inconsistent employment or having multiple jobs with insufficient income.<sup>17</sup>

## Social and Environmental Determinants

### COMMUNITY DESIGN

Historical and current policies and practices have resulted in neighborhoods that are not designed to promote health or support people in attaining good health. One example of this is the absence of local healthy food retailers and an overabundance of liquor stores and fast foods restaurants — a community environment known as a food desert. A 2009 U.S. Department of Agriculture study calculated that 10.8 percent of all households were low-income, without access to a vehicle and situated in urban areas with no grocery store within half a mile.<sup>18</sup> When healthy food options are out of reach, students are more likely to go hungry or malnourished and are forced to depend on inexpensive, calorie-dense, high-fat and sugary foods.<sup>19</sup> Other poor infrastructure examples include inadequate or unsafe transportation options and limited access to safe parks and playgrounds, all of which can serve as barriers to better health, reduced stress and school success.<sup>20</sup>

lessness and is often associated with factors such as poverty and traumatic childhood experiences.<sup>14</sup>

Over time, the health effects of chronic stress manifest physically and psychologically. As the cumulative biological burden, or allostatic load, imposed on the body by chronic stress grows, it detrimentally impacts the cardiovascular, neuroendocrine and central nervous systems.<sup>14</sup> A high allostatic load is considered a risk factor for cardiovascular disease, diabetes, depression and other diseases.<sup>15</sup> Such health outcomes — often the result of recurring experiences with “social inequity and stressful environments” — can accumulate over a person’s life span and contribute to rapid health decline, a process described as a “weathering phenomenon.”<sup>16</sup> In addition to health effects, those exposed to less than ideal circumstances from an early age are ill-equipped to achieve optimal life outcomes.

By viewing chronic stress through a cumulative life course perspective, we can better understand how graduation correlates and intersects with the quality of our life experiences.

### NEUROBIOLOGICAL UNDERPINNINGS

Reducing chronic stress among students requires a critical understanding of how stress affects neurobiological functions as well as students’ overall well-being and academic achievement.

A child’s brain goes through a highly sophisticated trajectory of development during which the prefrontal cortex is heavily influenced by both environmental and interpersonal factors.<sup>22</sup> Children growing up in chronically stressful environments are at risk for having many adverse experiences that can impair development, particularly if they

lack supportive and caring relationships. Furthermore, a growing body of research shows that exposure to ACEs such as food insecurity (see Youth and Adverse Childhood Experiences), unexpected loss of a loved one or exposure to violence can negatively impact the physiological development of essential brain systems that govern attention, memory and the learning process.<sup>13,22</sup> A recent study showed that children experiencing three or more ACEs were nearly twice as likely as children with no ACEs to have learning and behavioral problems such as a learning disability or poor impulse regulation.<sup>13</sup>

In childhood, especially during the early years, the brain’s network is highly sensitive to environmental cues. When the brain receives stress signals, it responds by increasing blood pressure and releasing adrenaline and stress hormones such as cortisol, triggering the so called “fight-or-flight” response.<sup>13</sup> When the brain receives stress signals continuously — as it can in conditions of chronic stress — the constant physiologic responses begin driving neurologic adaptations.<sup>13</sup> The result is that chronic stress can negatively impact development of the prefrontal cortex — the part of the brain that controls some of our most sophisticated intellectual functions as well as emotional and cognitive regulation.<sup>13,25</sup>

Emotionally, chronic stress makes it difficult for children to control their responses to disappointments or provocations. Overstimulation of the body’s stress response can produce behavioral problems in school such as fighting, talking back or even isolation.<sup>13,25</sup> On a cognitive level, chronic stress can delay or hinder the executive functions that govern memory, attention span and the processing of new information.<sup>13,25</sup> When these functions lag, school can

be an especially frustrating place for struggling students.

## CHRONIC STRESS AND HIGH SCHOOL DROPOUT

Students who live in urban areas are often confronted with multiple barriers to educational success (see Social and Environmental Determinants) and often face increased risk for poor brain development and not completing high school.<sup>26</sup> Collectively, poverty, poor community design and community violence indicate that urban students are unlikely to have their fundamental needs met (healthy food, stable housing, etc.). At the same time, Maslow's Hierarchy of Needs (Figure 1) suggests that physiological and safety needs are the foundations for arriving at more sophisticated developmental milestones such as esteem and resilience.<sup>27</sup> When conditions resulting in unmet needs are persistent, they impede a child's ability and motivation to function daily or attend and succeed in school.

For example, students experiencing chronic stress may fail to learn how to

read or multiply on time due to difficulties concentrating or decreased brain functionality from processing an overload of emotions. As these students progress through school and the curriculum becomes more advanced, they might begin to lag behind, which can make the path to graduation seem even more insurmountable than before. Students impacted by chronic stress may also be impulsive, distracted, distrustful or hyperactive.<sup>19</sup> All combined, the cycle of stress is continually perpetuated as motivation decreases and stress-induced behaviors are misunderstood, punished and stigmatized. The pronounced impact of chronic stress on the developing brain ends up derailing chances for educational success.

Chronic stress is also linked to student disengagement and absenteeism — in fact, more than half of all absences have been linked to chronic stress.<sup>28</sup> According to a 2015 survey, nearly one in four minority students had missed three or more days of school in the past month due to factors such as lack of transportation, drug use and school

## Social and Environmental Determinants

### COMMUNITY VIOLENCE

High crime rates and community violence can also add to a student's chronic stress. Students consistently exposed to such environments are more likely to emulate such violence in and outside of school, with such behavior compounded by a lack of social support. Behaviors may manifest as bullying, gang involvement and other risky activities.<sup>8</sup> This cycle of poor decision-making can interrupt a student's focus on learning, increase the likelihood of disciplinary actions, and disproportionately funnel them into the school-to-prison pipeline.<sup>21</sup>

## YOUTH AND ADVERSE CHILDHOOD EXPERIENCES

Childhood, and puberty in particular, is already a period marked by a number of cognitive, physical and hormonal changes. Youths' self-esteem and identity are being constantly shaped and influenced by their relationships with family, peers and role models. The presence or lack of relationships can have a significant impact on a child's confidence and ability to make healthy decisions.

A wide range of stressful experiences can negatively impact growth and development in children. These stressors or traumatic events are sometimes categorized as adverse childhood experiences, or ACEs. ACEs can consist of a variety of conditions and events, from poverty and homelessness to a parental divorce. Unfortunately, ACEs are fairly common, with half of adolescents reporting having experienced at least one ACE in 2014.<sup>24,25</sup> Excluding poverty or economic hardship from ACE scores, low-income children and youth are more than twice as likely as more affluent peers to experience three or more ACEs.<sup>24</sup>

The accumulation of ACEs leads to chronic stress and can directly impact opportunities, support and self-efficacy among school-aged children and derail their path to on-time graduation.

to compromised health, which also increases the risk of dropping out. Nationally, the cost of high school dropout is a steep one, reaching far into adulthood. Research finds that if national high school dropout rates were cut in half, the country would save \$7.3 billion annually in Medicaid spending, \$12 billion in costs related to heart disease, \$11.9 billion associated with obesity, \$8.9 billion related to smoking, and \$6.4 billion associated with alcoholism.<sup>29</sup>

## A ROLE FOR SCHOOLS AND THEIR PARTNERS

With the strategic support and collaboration of health, public health and community partners, schools — and school-based health centers, or SBHCs, in particular — are uniquely positioned to mitigate and prevent the effects of chronic stress on student well-being and success.

As evidenced by the success of SBHCs, interventions for marginalized students are best facilitated when support services are co-located inside the school building rather than off site. Indeed, SBHCs demonstrate great promise in their ability to integrate public health-based prevention strategies into school settings and yield school-wide improvements in policy, practice and procedure.

Addressing chronic stress among students begins with professional development to strengthen staff capacity to: **collaborate across sectors** (e.g., primary care, public health, and education); **understand the root causes of mental distress** among student populations; **support and engage students as change agents** in planning and implementation processes; and **implement and evaluate strategies that promote resilience** and optimal outcomes school-wide.

To buffer the impact of chronic stress on students, APHA's Center for School, Health and Education applies an evidence-based, public health strategy for buffering the negative impact of social disadvantages on the entire student population. The strategy operates at three levels: clinical interventions with individuals and groups, inside and outside of clinical settings; primary prevention targeting the school-wide population; and systems changes such as the review, revision or creation of policies and practices in the clinic, school, school district or community. The Center for School, Health and Education recommends a number of strategies to help schools manage and intervene on chronic stress, including:

- **Individual and group strategies**, such as group therapy, healing circles, time for mindfulness and meditation during the school day, or guided yoga practice.
- **School-wide strategies, such as:**
  - implementing a de-escalation or cool-down room for students to retreat to when they need a safe, calming space to prevent outbursts and punitive disciplinary responses;
  - creating a peer or mediation court to handle disputes and/or disciplinary issues; and
  - meeting basic needs of students through a food pantry, opening access to on-site laundry facilities and showers, or co-locating community resources on the school campus.
- **Systems strategies, such as:**
  - reviewing school discipline policies and providing recommendations that acknowledge the relationship between child and adolescent development, stress and trauma, and behavior;

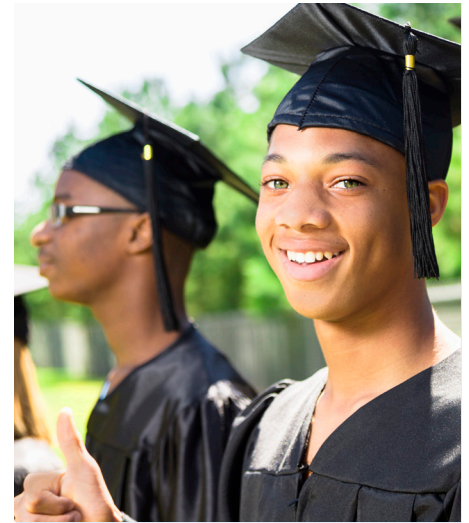


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// If we can only empower school personnel to understand what young people are going through, they're not all equally resourced [and] they do not have the coping skills. If we can help them appreciate that and understand how they can help them be successful, we can make a difference in the next generation."<sup>10</sup>

— Terri D. Wright, PhD, MPH, Founder, Center for School, Health and Education

- advocating for in-school suspension with continued instruction;
- developing a social action or advocacy program of community and school service as part of the curriculum; and
- offering professional development workshops to *all* school staff to improve interactions with students and respond with tactics that consider the context of stress and trauma.

Through the efforts of a cross-disciplinary team of school-based professionals addressing the root causes of school dropout, students can successfully avoid

and overcome these barriers and focus on graduating on time.

## CONCLUSION

There is a growing awareness of the relationship between education and lifelong health. As such, schools, primary care, public health and community partners must work together to advance school policies and practices that reduce the barriers to high school graduation, including the adverse impact of chronic stress.

Adopting school-wide policies that help students meet their most basic physical and mental health needs offers a foundation for thriving in the classroom and for pursuing the many lifelong benefits that come with education. By addressing chronic stress, schools and their partners have the potential to increase high school graduation rates and make meaningful strides in achieving health equity for the next generation.

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## **ABOUT CSHE**

APHA's Center for School, Health and Education advances school-based health care as a proven strategy for preventing school dropout. We work with health and education partners to develop and implement public health strategies school-wide to improve the well-being and educational success of all students. Learn more at [www.schoolbasedhealthcare.org](http://www.schoolbasedhealthcare.org).

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